

ECN publications 1998

G.J.H. van Nes
(editor)

Energy research Centre of the Netherlands (ECN)

Knowledge Agency

Westerduinweg 3

P.O. Box 1

1755 ZG Petten

The Netherlands

Tel: +31 (0)224 564326

Fax: +31 (0)224 568486

E-mail: reports@ecn.nl

WWW (Internet): <http://www.ecn.nl/library/>

WWW (Intranet): <http://www.ecnfac.nl/local/library/>

CONTENTS

1. PREFACE	1
2. ECN PUBLICATIONS BY DEPARTMENT	3
2.1 ECN Policy Studies	3
2.2 ECN Fuels Conversion and Environment	10
2.3 ECN Energy Efficiency	19
2.4 ECN Solar & Wind	23
3. ECN PUBLICATIONS BY DOCUMENT TYPE	31
3.1 C-Publications	31
3.2 I-Publications	47
3.3 R-Publications	54
3.4 RX-Publications	59
4. STATISTICAL INFORMATION	71
INDEX KEYWORDS	73
INDEX AUTHORS	81

1. PREFACE

ECN's research results are published in a number of report series, each series serving a different public, from contractors to the international scientific world. This report presents an overview of ECN publications published in 1998:

ECN publishes the following report series:

- ECN-C- publications: Contract reports containing the results of contract research;
- ECN-I- publications: Internal reports containing results for fellow colleagues, principally within ECN but also for those employed elsewhere; although reports in this series may not be in their definite form, they are not confidential and may be referred to;
- ECN-P- publications: Reports are written primarily for the non-specialist reader and cover subjects which are expected to be of general interest;
- ECN-R- publications: Research reports on the ECN research results available to the international technical and scientific world;
- ECN-RX- publications: Used for publishing preprints or reprints of journal articles that will be or have been published in a journal, or in conference or symposium proceedings;
- ECN-B- publications: Brochures.
- Other: for results and information that can't be classified in the other series;

The following ECN departments contribute to the list of publications for 1998:

- ECN Policy Studies: 34
- ECN Fuels Conversion and Environment: 47
- ECN Energy Efficiency: 21
- ECN Solar & Wind: 43
- Total: **219 reports**

The list of ECN publications can also be browsed at the World Wide Web at URL address:

<http://www.ecn.nl/library/reports/>

The electronic version contains additional bibliographical information, *including abstracts* of the publications (if available).

2. ECN PUBLICATIONS BY DEPARTMENT

(sorted out by title)

2.1 ECN Policy Studies

Bepaling bandbreedte in de ontwikkeling van het huishoudelijk elektriciteitsverbruik: vervolgonderzoek naar aanleiding van de studie 'Nieuwe apparaten en leefstijl'

Jeeninga, H.; Hilten, O. van

ECN-C--98-049

Petten : ECN, 1998. – 77 p.

Keywords: Households; Netherlands; Energy consumption; Electricity; Socio-economic factors; Leisure time activities; Appliances; Income; Forecasting; Comparative evaluations; Historical aspects; Economic development; Prices; Energy efficiency

Biomass for energy or materials?: a Western European MARKAL MATTER 1.0 model characterisation

Gielen, D.J.; Gerlagh, T.; Bos, A.J.M.

ECN-C--98-066

Petten : ECN, November 1998. – 90 p.

Keywords: Biomass; M codes; Materials; Western europe; Bioconversion; Petrochemicals; Liquid fuels; Solid fuels; Electricity; Building materials; Waste processing; Greenhouse gases; Emission; Fuel substitution; Production

Biomass for greenhouse gas emission reduction: Western European land availability

Gerlagh, T.

ECN-C--98-109

Petten : ECN, December 1998. – 30 p.

Keywords: Biomass; Availability; Air pollution abatement; Greenhouse gases; Western europe; Land use; Productivity; Forestry; European union

Characterisation of power generation options for the 21st century: report on behalf of Macro task E1

Lako, P.; Seebregts, A.J.

ECN-C--98-085

Petten : ECN, December 1998. – 57 p.

Keywords: Power generation; M codes; Western europe; Nuclear power; Thermonuclear reactors; Nuclear power plants; Cost; Cost estimation; Renewable energy sources; Pulverized fuels; Coal; Lignite; Petroleum; Natural gas; Power; Fossil-fuel power plants; Numerical data; Investment

Clean coal technology sales prospects: assessing the impacts of an EU CCT support programme

Perrels, A.H.; Lako, P.

ECN-C--98-010

Petten : ECN, February 1998. – 92 p.

Keywords: Coal preparation; Cleaning; Sales; Technology assessment; Market; Trade; Manufacturing; European union; Emission; Environmental impacts; Competition; Sulfur dioxide; Nitrogen oxides; Greenhouse gases

Convergence of energy policies: energy conservation

Harmelen, A.K. van; Oostvoorn, F. van; Oosterheert, R.J.

ECN-RX--98-009

Petten : ECN, 1998. – 48 p.

Keywords: Energy conservation; Energy policy; Energy efficiency; Sectoral analysis; Economic policy; Economic development; Institutional factors; Recommendations; Western europe; Eastern europe; Energy consumption; Industry; Service sector; Residential sector; Transportation sector; Public utilities

Convergence of energy policies: external dimension of Trans European networks

Oosterheert, R.J.; Harmelen, A.K. van; Oostvoorn, F. van

ECN-RX--98-008

Petten : ECN, April 1998. – 43 p.

Keywords: Energy policy; Eastern europe; Supply and demand; Market; Feasibility studies; Institutional factors; Recommendations; Energy conservation; European union

**ECN contribution to the 10th European conference: 'Biomass for energy and industry':
8-11 June, Würzburg, Germany**

ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-RX--98-003

Petten : ECN, 1998. – 29 p.

Keywords: Biomass; Industry; Air pollution abatement; Production; Netherlands; Western europe; Wood wastes; Gasification; Cogeneration; Fluidized beds; Circulating systems; Fluidized bed boilers; Algae; Bioreactors

ELMA: model of a liberalized electricity market

Hans, E.W.

ECN-I--97-028

Petten : ECN, 1998. – 90 p.

Keywords: Western europe; Electric utilities; European union; E codes; Market; Data analysis; Pricing regulations; Pollution regulations; Investment; Trade; Peak load; Load management; Belgium; France; Netherlands; Federal republic of germany; Electric power industry; Power generation; Prices; Mathematical models; Energy policy; Energy expenses; Allocations; Contract management; Manuals

EURIO - Keep in Touch: country reports on energy supply and energy modelling (phase 2)

Wees, M.T. van; Harmelen, A.K. van; Uytterlinde, M.A.

ECN-I--98-050

Petten : ECN, October 1998. – 152 p.

Keywords: Energy policy; Czech republic; Latvia; Lithuania; Bulgaria; Romania; Russian federation; Poland; Hungary; Slovenia; Supply and demand; Energy supplies; Energy models; Planning; Optimization; Environmental policy; Economic policy; Economic impact; Energy efficiency

Economics of power generation from imported biomass

Lako, P.; Rooijen, S.N.M. van

ECN-C--98-013

Petten : ECN, 1998. – 49 p.

Keywords: Biomass; Power generation; Netherlands; Imports; Risk assessment; Economic impact; Estonia; Uruguay; Supply and demand; Fossil-fuel power plants; Cost; Market; Cocombustion; Wood fuels; Exports

Endogenous technological learning: experiments with MARKAL: contribution to Task 2.3 of the EU-TEEM Project

; Seebregts, A.J.; Kram, T.; Schaeffer, G.J.; Stoffer, A.

ECN-C--98-064

Petten : ECN, December 1998. – 87 p.

Keywords: M codes; Technology assessment; Mathematical models; Learning; Systems analysis; Energy analysis; Energy policy; Research programs; Sensitivity analysis; Carbon dioxide; Emission; Demonstration programs; Investment; Economic development; Optimization; Market; Taxes; Data analysis

Energy efficiency indicators in the Netherlands: Dutch contribution to the project 'Cross country comparison on energy efficiency' Phase 4

Dril, A.W.N. van; Arkel, W.G. van; Dougle, P.G.; Jeeninga, H.; Kroon, P.; Uytterlinde, M.A.

ECN-C--99-038

Petten : ECN, December 1998. – 64 p.

Keywords: Energy efficiency; Netherlands; Comparative evaluations; Reviews; Data analysis; Environmental policy; Sectoral analysis; Service sector; Households; Energy demand; Energy consumption; Energy expenses; Economic development; Energy conservation; Industry; Transportation sector

European gas market developments: opportunities and threats

Oostvoorn, F. van

ECN-RX--99-008

Petten : ECN, September 1998. – 28 p.

Keywords: Market; Natural gas; Europe; Competition; Energy demand; Supply and demand; Imports; Russian federation

Extra energiebesparing nader onderzocht: achtergronddocument bij de Energiebesparingsnota 1998

Kroon, P.; Beeldman, M.; Boonekamp, P.G.M.; Bosch, A. van den; Dril, A.W.N. van; Hilten, O. van; Jeeninga, H.; Lange, T.J. de; Menkveld, M.; Ruijg, G.J.

ECN-C--98-093

Petten : ECN, November 1998. – 124 p.

Keywords: Netherlands; Energy conservation; Energy policy; Energy consumption; Economic development; Energy efficiency; Energy efficiency standards; Buildings; Financial incentives; Taxes; Sectoral analysis; Agriculture; Industry; Households; Forecasting; Transportation sector; Sensitivity analysis; Waste heat utilization; Cogeneration

Flexibiliteit in de energievoorziening voor toekomstig CO₂-beleid

Ybema, J.R.; BOS, S.; Menkveld, M.; Gielen, D.J.

ECN-C--98-003

Petten : ECN, January 1998. – 111 p.

Keywords:

Klimaatverandering en lokaal beleid: Amsterdam: beleidsopties en implementatie strategieën ter beperking van de CO₂-emissie

Schol, E.; Bosch, A. van den; Ligthart, F.A.T.M.; Römer, J.C.; Ruijg, G.J.; Schaeffer, G.J.; Dinkelman, G.H.; Kok, I.C.; Paauw, K.F.B. de

ECN-C--98-031

Petten : ECN, 1998. – 270 p.

Keywords: Netherlands; Local government; Climatic change; Regional analysis; Carbon dioxide; Emission; Air pollution abatement; Environmental impacts; Economic impact; Socio-economic factors; Environmental policy; Implementation; Risk assessment; Forecasting; Sectoral analysis; Households; Residential sector; Transportation sector; Energy conservation; Houses; Energy efficiency; Small businesses; Buildings; Energy policy

Landenvergelijking energieverbruik en -beleid: achtergronddocument bij het rapport Monitoring energieverbruik en -beleid nationale analyse 1982-1996

Uyterlinde, M.A.; Koutstaal, P.R.

ECN-I--98-033

Petten : ECN, 1998. – 77 p.

Keywords: Energy consumption; Denmark; Federal Republic of Germany; Spain; United Kingdom; Sweden; Netherlands; Energy policy; Energy analysis; Data analysis; Comparative evaluations; Energy conservation; Energy efficiency; Energy demand; Supply and demand; Environmental policy; Sectoral analysis; Industry; Households; Service sector; Economic development; Prices; Renewable energy sources; Transportation sector; Fossil fuels; Agriculture; Fisheries; Fishing industry; European Union; Carbon dioxide; Emission; Market

Long-term scenarios and the role of fusion power. Synopsis of SE0 studies, conclusions and recommendations

Lako, P. ; Ybema, J.R.; Seebregts, A.J. ; Gilli, P.V.; Kurz, R. ; Kolb, G. ; Morthorst, P.E.; Lemming, J. ; Villeneuve, B.

ECN-C--98-095

Petten : ECN, Dec 1998. – 35 p.

Keywords:

MATTER 1.0: a MARKAL energy and materials system model characterisation

Gielen, D.J.; Gerlagh, T.; Bos, A.J.M.

ECN-C--98-065

Petten : ECN, September 1998. – 51 p.

Keywords: M codes; Energy models; Greenhouse gases; Materials; Systems analysis; Mitigation; Wastes; Demand; Forecasting; Service life; Energy efficiency; Technology assessment; Recycling; Energy recovery; Material substitution; Fuel substitution

Mogelijkheden voor CO₂-reductie in 2020

Beeldman, M.; Dril, A.W.N. van; Jeeninga, H.; Koutstaal, P.R.; Kroon, P.; Lange, T.J. de; Menkveld, M.; Ybema, J.R.

ECN-C--98-041

Petten : ECN, August 1998. – 101 p.

Keywords: Carbon dioxide; Technology assessment; Emission; Air pollution abatement; Forecasting; Market; Cost benefit analysis; Sectoral analysis; Households; Service sector; Industry; Agriculture; Transportation sector; Electric utilities; Cost estimation; Trade; Permits

Mogelijkheden voor toepassing van hernieuwbare energie in de glastuinbouw 1995-2010

Lange, T.J. de; Dril, A.W.N. van; Dienst Landbouwkundig Onderzoek. Landbouw-Economisch Instituut [LEI-DLO]

ECN-I--98-038

Petten : ECN, August 1998. – 47 p.

Keywords: Renewable energy sources; Greenhouses; Netherlands; Forecasting; Socio-economic factors; Prices; Heat pumps; Wind turbines; Heat storage; Geothermal energy; Sensitivity analysis; Aquifers; Seasonal thermal energy storage; Solar energy

Monitoring energieverbruik 1982-1996: methode, resultaten en perspectieven

Boonekamp, P.G.M.

ECN-C--98-046

Petten : ECN, December 1998. – 158 p.

Keywords: Energy consumption; Data analysis; Time-series analysis; Netherlands; Evaluation; Energy conservation; Energy policy; Sectoral analysis; M codes; Energy balance; Energy sources; Households; Industry; Horticulture; Service sector; Transportation sector; Petroleum refineries; Power plants; Energy efficiency; Socio-economic factors; Supply and demand; Comparative evaluations; Sweden; Federal republic of germany; Spain; United kingdom; Denmark; Market; Agriculture; Construction industry; Buildings; Public utilities; Cogeneration

Nationale Energie Verkenningen 1995-2020: trends en thema's

Kroon, P.; Beeldman, M.; Kok, I.C.; Boonekamp, P.G.M.; Jeeninga, H.; Ybema, J.R.; Aalbers, R.F.T.; Koutstaal, P.R.; Lange, T.J. de; Hilten, O. van; Menkveld, M.

ECN-C--97-081

Petten : ECN, March 1998. – 140 p.

Keywords: Netherlands; Energy models; Forecasting; Energy demand; Prices; Sectoral analysis; Households; Houses; Buildings; Agriculture; Industry; Cogeneration; Renewable energy sources; Electric power; Natural gas; Petroleum refineries; Energy conservation; Energy consumption; Energy policy; Carbon dioxide; Emission; Taxes; Environmental policy; Cost; Supply and demand; Market; Technology assessment; Decision making

Nieuwe apparaten en leefstijl: gevolgen voor het huishoudelijk elektriciteitsverbruik in 2010

Perrels, A.H.; Jeeninga, H.; Siderius, P.J.S.; Groot, M.I.

ECN-C--98-011

Petten : ECN, April 1998. – 107 p.

Keywords: Technology assessment; Households; Netherlands; Energy consumption; Electricity; Socio-economic factors; Leisure time activities; Appliances; Income; Forecasting; Comparative evaluations; Historical aspects; Economic development; Prices; Energy efficiency

Optiedocument voor emissiereductie van broeikasgassen: inventarisatie in het kader van de Uitvoeringsnota Klimaatbeleid

Beeldman, M.; Boonekamp, P.G.M.; Dril, A.W.N. van; Gielen, D.J.; Jeeninga, H.; Koutstaal, P.R.; Kroon, P.; Lako, P.; Lange, T.J. de; Menkveld, M.; Rooijen, S.N.M. van; Ybema, J.R.; Harmelink, M.G.M.; Annema, J.A.; Booij, H.; Feimann, P.F.L.; Olivier, J.G.J.; Spakman, J.; Nagelhout, D.; Brink, R.M.M. van den

ECN-C--98-082

Petten : ECN, October 1998. – 187 p.

Keywords: Environmental policy; Greenhouse gases; Emission; Energy conservation; Transportation sector; Sectoral analysis; Renewable energy sources; Power generation; Carbon dioxide; International agreements; Air pollution abatement; Cost estimation; Financial incentives; Taxes; Trade; Households; Houses; Buildings; Service sector; Solar energy; Wind power; Biomass; Heat pumps; Methane; Agriculture; Nitrous oxide; Sulfur fluorides; Industry; Carbon dioxide fixation; Joint ventures; Implementation; Socio-economic factors; Political aspects; Economic impact; Sensitivity analysis

Post-Kyoto: effecten op het klimaatbeleid van de Europese Unie

Gielen, D.J.; Koutstaal, P.R.; Kram, T.; Rooijen, S.N.M. van

ECN-C--98-040

Petten : ECN, 1998. – 34 p.

Keywords: European union; Environmental policy; Climatic change; Environmental impacts; Air pollution abatement; Carbon dioxide; Greenhouse gases; Methane; Nitrous oxide; Cost estimation; Gross national product

Power generation options and greenhouse gas emissions

Lako, P.

ECN-RX--97-062

Petten : ECN, Jan 1998. – 21 p.

Keywords:

Prospects for bioenergy in the Netherlands: a MARKAL analysis of the long term impact of energy and CO₂ policies

Gielen, D.J.; Lako, P.; Dinkelbach, L.; Ree, R. van; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-C--97-103

Petten : ECN, February 1998. – 45 p.

Keywords:

Securing flexibility in the energy system to meet future CO₂ reduction: an inventory of hedging options

Ybema, J.R.; Menkveld, M.; Kram, T.

ECN-RX--97-074

Petten : ECN, February 1998. – 19 p.

Keywords:

Strengthening the Polish energy administration: conditions for establishment of an efficient and effective energy department

Kant, A.D.; Kaan, H.F.

ECN-C--97-011

Petten : ECN, February 1998. – 140 p.

Keywords:

Telewerken in Amsterdam: telewerkpotentieel en milieu-effecten

Vuuren, V.C. van; Arkel, W.G. van; Bosch, A. van den; Schol, E.; Bosveld, W.

ECN-C--98-092

Petten : ECN, December 1998. – 109 p.

Keywords: Netherlands; Communications; Environmental impacts; Public opinion; Energy consumption; Energy conservation; Working conditions; Houses; Office buildings; Carbon dioxide; Transport

The long-term potential of fusion power in Western Europe: MARKAL scenarios until 2100

Lako, P.; Ybema, J.R.; Seebregts, A.J.

ECN-C--98-071

Petten : ECN, December 1998. – 93 p.

Keywords: Thermonuclear reactors; M codes; Forecasting; Reviews; Energy models; Recommendations; Cost estimation; Cost; Western europe; Market; Competition; Cost benefit analysis; Power generation; Investment; Carbon dioxide; Emission; Renewable energy sources; Energy demand; Mineral resources; Fossil fuels; Prices; Technology assessment; Sensitivity analysis; Availability

The role of fusion power in energy scenarios: proposed method and review of existing scenarios

Lako, P.; Ybema, J.R.; Seebregts, A.J.

ECN-C--98-009

Petten : ECN, 1998. – 33 p.

Keywords: Energy models; Thermonuclear reactors; Western europe; Energy policy; Technology assessment; Interest rate; Climatic change; Energy demand; Availability; Fossil fuels; Prices; Renewable energy sources; Market; Cost

2.2 ECN Fuels Conversion and Environment

AEROSOL; cycle and influence on the radiation balance ; MEMORA: MEasurement and MODELing of the reduction of Radiation by Aerosol : cluster project in the National Research Programme on Global Air Pollution and Climate Change nr. 951205: report on Phase 1: 1996-1997

Brink, H.M. ten; ECN. Brandstoffen, Conversie en Milieu [BCM]; Dorland, R. van; Lelieveld, J.; Swart, D.P.J.

ECN-R--98-015

Petten : ECN, August 1998. – 48 p.

Keywords: Aerosols; Air pollution monitoring; Solar radiation; Light scattering; Sulfates; Europe; Atmospheric chemistry; Nitrates; Netherlands; Data covariances; Regional analysis; Mathematical models; Progress report

Advanced cycle technologies: improvement of IGCCs starting from the State-of-the-Art (Puertollano)

Pruschek, R. ; Jansen, D.; Ree, R. van; Korbee, R.; Smidt, R.P. de; ECN. Brandstoffen, Conversie en Milieu [BCM]; Williams, B.C.

ECN-RX--98-063

Petten : ECN, November 1998. – 38 p.

Keywords: Environmental impacts; Cost estimation; Energy efficiency; Biomass; Bench-scale experiments; Mass balance; Energy balance; Power generation; Emission; Nitrogen oxides; Heat recovery; Fuel gas; Carbon dioxide; Combined-cycle power plants; Coal gasification; Technology assessment; Systems analysis

Air pollution: a problem for the SPFC cathode?

Veldhuis, J.B.J.; Bruin, F.A. de; Mallant, R.K.A.M.; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-RX--98-048

Petten : ECN, August 1998. – 15 p.

Keywords: Organic polymers; Fuel cells; Sulfur dioxide; Ammonia; Air pollution; Cathodes; Current density; Performance; Environmental exposure; Platinum

Analysis of a gas turbine cycle with partial oxidation [ASME Paper 98-GT-33]

Korobitsyn, M.A.; ECN. Brandstoffen, Conversie en Milieu [BCM]; Kers, P.W.; Hirs, G.G.

ECN-RX--98-050

Petten : ECN, September 1998. – 7 p.

Keywords: Gas turbines; Partial oxidation processes; Stoichiometry; Nitrogen oxides; Simulation; Comparative evaluations; Exergy; Boilers; Flue gas; Performance; Combined cycles

Belang van opgeloste organische stof bij transport van contaminanten uit baggerspecie

Comans, R.N.J.; Geelhoed, P.A.; Zomeren, A. van; Geusebroek, M.; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-C--98-076

Petten : ECN, October 1998. – 46 p.

Keywords: Dredge spoil; Slurries; Pollutants; Solutes; Organic matter; Ph value; Copper; Diffusion; Validation; Leaching; Cadmium; Lead; Zinc; Nickel; Geochemistry; Bench-scale experiments; Field tests; Spatial distribution; Abundance

Bench-scale testing of HT fuel gas cleaning concepts

Kiel, J.H.A.; Schenk, E.P.; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-C--98-078

Petten : ECN, November 1998. – 51 p.

Keywords: Fuel gas; Hot gas cleanup; Bench-scale experiments; Desulfurization; Design; Halogen compounds; Removal; Adsorbents; Chemical reactors; Test facilities; Packed beds; Fluidized beds; Construction; Iron oxides; Molybdenum oxides

Bepaling van de ammoniakemissie uit geruimde varkensstallen

Otjes, R.P.; Jongejan, P.A.C.; Erisman, J.W.; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-C--98-018

Petten : ECN, 1998. – 20 p.

Keywords: Netherlands; Ammonia; Emission; Swine; Air pollution monitoring; Farms

Characterization of the leaching behaviour of cement mortars to assess long term environmental behaviour during their service life and their recycling stage

Sloot, H.A. van der; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-RX--98-026

Petten : ECN, July 1998. – 22 p.

Keywords: Leaching; Cements; Mortars; Environmental impacts; Service life; Recycling; Building materials; Solid wastes; Metals; Leachates; Ashes; Solubility; Concretes

Co-gasification of biomass and coal in entrained-flow based IGCCs

Ree, R. van; Korbee, R.; Jansen, D.; ECN. Brandstoffen, Conversie en Milieu [BCM]; Baumann, H.R.; Ullrich, N. ; Haupt, G.; Zimmermann, G.

ECN-RX--98-042

Petten : ECN, July 1998. – 12 p.

Keywords: Cocombustion; Biomass; Combined-cycle power plants; Entrainment; Coal gasification; Feasibility studies; Netherlands; Systems analysis; Mass balance; Energy balance; Computerized simulation; Investment; Power generation; Cost estimation

Co-gasification of coal and biomass in entrained-flow based IGCCs: technical, economic, environmental, and experimentally supported assessment of three concepts

Ree, R. van; Korbee, R.; Smidt, R.P. de; Jansen, D.; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-C--98-060

Petten : ECN, October 1998. – 54 p.

Keywords: Environmental impacts; Cost estimation; Energy efficiency; Biomass; Bench-scale experiments; Mass balance; Energy balance; Power generation; Emission; Nitrogen oxides; Heat recovery; Fuel gas; Carbon dioxide; Combined-cycle power plants; Coal gasification; Technology assessment; Systems analysis; Entrainment

Co-gasification of coal and biomass waste in entrained-flow gasifiers: phase 2: exploratory lab-scale experimentation

Korbee, R.; Eenkhoorn, S.; Heere, P.G.T.; Kiel, J.H.A.; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-C--98-056

Petten : ECN, December 1998. – 62 p.

Keywords: Coal gasification; Biomass; Wood wastes; Bench-scale experiments; Test facilities; Experimental data; Ashes; Conversion; Phase transformations; Combined-cycle power plants; Simulation; Systems analysis; Wood fuels; Willows

Constriction of current lines for a porous electrode and effect on electrolyte resistance

Heuveln, F.H. van; Burgers, A.R.; Bouwmeester, H.J.M.; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-RX--98-010

Petten : ECN, 1998. – 23 p.

Keywords: Solid electrolyte fuel cells; Solid electrolytes; Porous materials; Electric conductivity; Electric contacts; Finite element method; Zirconium oxides; Strontium oxides; Lanthanum compounds; Manganese oxides

Determination of anthropogenic and biogenic contribution to ambient volatile organic carbons

Slanina, J.; Tüdös, A.; Zwaagstra, O.; ECN. Brandstoffen, Conversie en Milieu [BCM]; Pio, C. ; Koppmann, R.; Czapiewski, K. von ; Larsen, B.; Kotzias, D.; European Commission. Joint Research Centre [JRC] ; Borg, K. van der

ECN-C--98-081

Petten : ECN, October 1998. – 180 p.

Keywords: Pollution sources; Carbon 14; Volatile matter; Emission; Air samplers; Sampling; Interlaboratory comparisons; Sample preparation; Data analysis; Carbonyls; Hydrocarbons; Chemical analysis; Federal republic of germany; Italy; Portugal

Development of guidelines for the design of integrated hydrogen systems

Groot, A. de; Bracht, M.; ECN. Brandstoffen, Conversie en Milieu [BCM]; Gregoire Padró, C.E. ; Schucan, T.H. ; Skolnik, E.; Energetics

ECN-RX--98-019

Petten : ECN, 1998. – 14 p.

Keywords: Recommendations; Design; Demonstration plants; Systems analysis; Hydrogen-based economy; Hydrogen storage; Hydrogen; Hydrogen production; Transport

ECN contribution to the 10th European conference: 'Biomass for energy and industry': 8-11 June, Würzburg, Germany

ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-RX--98-003

Petten : ECN, 1998. – 29 p.

Keywords: Biomass; Industry; Air pollution abatement; Production; Netherlands; Western europe; Wood wastes; Gasification; Cogeneration; Fluidized beds; Circulating systems; Fluidized bed boilers; Algae; Bioreactors

Enhancing direct-fired power plants performance by the use of gas turbine technology

Korobitsyn, M.A.; ECN. Brandstoffen, Conversie en Milieu [BCM]; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-RX--98-051

Petten : ECN, September 1998. – 10 p.

Keywords: Fossil-fuel power plants; Gas turbines; Steam turbines; Efficiency; Combined-cycle power plants; Performance; Waste heat utilization; Exhaust gases; Incinerators; Partial oxidation processes; Solid wastes; Heat transfer

Evaluatie nikkel-uitloging uit kalkzandsteen

Sloot, H.A. van der; Hoede, D.; Comans, R.N.J.; Groot, G.J. de; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-C--98-102

Petten : ECN, December 1998. – 26 p.

Keywords: Sandstones; Leaching; Building materials; Nickel; Ph value; Diffusion

Evaluation tool for selection and optimisation of hydrogen demonstration projects : application to a decentralised renewable hydrogen system

Bracht, M.; Groot, A. de; ECN. Brandstoffen, Conversie en Milieu [BCM]; Gregoire Padró, C.E. ; Schucan, T.H. ; Skolnik, E.; Energetics

ECN-RX--98-017

Petten : ECN, 1998. – 14 p.

Keywords: Demonstration programs; Hydrogen production; Evaluation; Systems analysis; Design; Hydrogen storage; Hydrogen-based economy; Hydrogen; Biomass; Gasification; Pyrolysis; Pipelines; Tanks; Compressed gases; Configuration

Evaluation tool for selection and optimization of hydrogen demonstration projects

Gregoire Padró, C.E. ; Schucan, T.H. ; Skolnik, E.; Energetics ; Bracht, M.; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-RX--97-073

Petten : ECN, 1998. – 8 p.

Keywords: Hydrogen production; Hydrogen storage; Demonstration programs; Data compilation; Design; Data acquisition; Test facilities

Green power production by co-gasification of biomass and coal in coal-fired oxygen-blown entrained-flow based IGCC processes

Ree, R. van; Korbee, R.; Smidt, R.P. de; Jansen, D.; ECN. Brandstoffen, Conversie en Milieu [BCM]; Baumann, H.R.; Ullrich, N. ; Haupt, G.; Zimmermann, G.

ECN-RX--98-059

Petten : ECN, November 1998. – 23 p.

Keywords: Biomass; Cocombustion; Coal gasification plants; Entrainment; Combined-cycle power plants; Willows; Ashes; Slags; Pyrolysis; Systems analysis; Efficiency; Carbon dioxide; Emission; Investment; Payback period; Cost benefit analysis; Feasibility studies; Comparative evaluations; Computerized simulation

Greenhouse gas emissions from the coffee industry in Costa Rica

Hensen, A.; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-C--98-036

Petten : ECN, April 1998. – 46 p.

Keywords: Greenhouse gases; Costa rica; Coffee plants; Food industry; Waste water; Water treatment plants; Emission; Chemical oxygen demand; Water pollution abatement; Anaerobic conditions; Carbon dioxide; Methane; Lakes; Air pollution monitoring

Haalbaarheidsstudie naar de verwerkbaarheid van drie reststromen middels pyrolyse

Neeft, J.P.A.; Oudhuis, A.B.J.; Burk, H. van; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-C--98-023

Petten : ECN, 1998. – 56 p.

Keywords: Waste processing; Pyrolysis; Feasibility studies; Gasification; Combustion; Scrap; Municipal wastes; Electronic equipment; Cables; Comparative evaluations; Calorific value; Ashes; Temperature range 0400-1000 k; Pilot plants; Energy efficiency; Investment

Harmonization of leaching/extraction tests and leaching of organic contaminants

Sloot, H.A. van der; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-RX--98-068

Petten : ECN, December 1998. – 11 p.

Keywords: Leaching; Extraction; Performance testing; Surface contamination; Sampling; Soils; Waste disposal; Building materials; Compost; Sewage sludge; Sediments; Wastes; Data processing; Polycyclic aromatic hydrocarbons; Organic compounds

Integration of testing protocols for evaluation of contaminant release from monolithic and granular wastes

Kosson, D.S. ; Sloot, H.A. van der; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-RX--98-004

Petten : ECN, March 1998. – 15 p.

Keywords: Leaching; Building materials; Solid wastes; Metals; Leachates; Ashes; Solubility; Granular materials; Surface contamination; Environmental impacts; Solids; Recycling; Standardization; Standards; Waste disposal; Decision making; Waste management

Inventarisatie van beleidsvragen en onderzoek rond fijn stof in Nederland

Bloemen, H.; Bree, L. van ; Krijgsheld, K. ; Brink, H.M. ten; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-R--98-016

Petten : ECN, August 1998. – 50 p.

Keywords: Particulates; Dusts; Aerosols; Netherlands; Research programs; Reviews; Evaluation; Air quality; Emission; Public health; Air pollution; Air pollution abatement; Air pollution control; Air pollution monitoring; Risk assessment

Karakteristieken percolaatwater stortlocatie Nauernasche polder: inventarisatie en classificatie

Cnubben, P.A.J.P.; Sloot, H.A. van der; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-C--97-070

Petten : ECN, 1998. – 52 p.

Keywords: Waste disposal; Classification; Leachates; Leaching; Metals; Elements; Trace amounts; Abundance; Ph value; Ashes; Geochemistry; Redox reactions; Carbon dioxide; Uptake

Kleinschalige houtverbranding: installatie en afname van twee houtkachels ten behoeve van ruimteverwarming

Dinkelbach, L.; Bodenstaff, H.; Bruyn, P.; Hemmes, W.H.; Oudhuis, A.B.J.; Zutt, J.G.M.; ECN. Brandstoffen, Conversie en Milieu [BCM]; Bakker, E.
ECN-C--98-021

Petten : ECN, 1998. – 26 p.

Keywords: Wood burning appliances; Installation; Performance testing; Oxygen; Carbon dioxide; Carbon monoxide; Hydrocarbons; Nitrogen oxides; Sulfur dioxide; Flue gas; Temperature measurement; Ashes; Mass balance; Energy balance; Combustion

Leaching of ferrochrome slag in the marine environment

Cnubben, P.A.J.P.; Sloot, H.A. van der; Hoede, D.; ECN. Brandstoffen, Conversie en Milieu [BCM]
ECN-C--98-012

Petten : ECN, 1998. – 26 p.

Keywords: Leaching; Slags; Aquatic ecosystems; Seawater; Leachates; Manganese; Chromium; Concentration ratio; Lead; Ph value; Multi-element analysis; Iron alloys; Iron oxides; Chromium oxides; Manganese oxides

MEDFLUX: development of an automatic deposition monitoring system

Vermeulen, A.T.; ECN. Brandstoffen, Conversie en Milieu [BCM]
ECN-C--98-059

Petten : ECN, 1998. – 27 p.

Keywords: Validation; Deposition; Air pollution monitoring; Air pollution monitors; Nitric acid; Nitrous acid; Nitrogen oxides; France; Portugal; Spain; Data acquisition; Data processing; Ozone; Sulfur dioxide; Hydrochloric acid; Computer codes

Measurement of the decrease of ammonia emission by manure injection relative to surface application: a field test at Zegveld

Erismann, J.W.; Otjes, R.P.; Huijsmans, J.F.M.; ECN. Brandstoffen, Conversie en Milieu [BCM]
ECN-R--98-026

Petten : ECN, December 1998. – 27 p.

Keywords: Ammonia; Emission; Manures; Netherlands; Plumes; S codes; Injection; Soils; Air pollution monitoring; Measuring methods; Comparative evaluations

Modelling fluxes and bioavailability of radiocaesium and radiostrontium in freshwaters (Mid-term report ECOPRAQ project)

Comans, R.N.J.; Koning, A. de; ... [et al.]; ECN. Brandstoffen, Conversie en Milieu [BCM]
ECN-C--98-024

Petten : ECN, March 1998. – 63 p.

Keywords: Cesium; Strontium; Biological availability; Radionuclide migration; Aquatic ecosystems; Hydrology; Sediment-water interfaces; Validation; Mathematical models; Field tests; Bench-scale experiments; Scavenging; Radiochemistry; Uptake; Radioecological concentration

Monstername en analyse zeefdoorval ICOVA

Doorn, J. van; Oudhuis, A.B.J.; Oppenraaij, J.B.H.A. van; Reijnders, H.P.E.M.; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-C--98-015

Petten : ECN, 1998. – 13 p.

Keywords: Sampling; Waste processing; Incinerators; Chemical composition; Chemical analysis; Industrial wastes; Municipal wastes; Pyrolysis

Ontwikkeling van een kortdurende test voor vormgegeven bouwstoffen, geïmmobiliseerde afvalstoffen en andere monolithische materialen

Sloot, H.A. van der; Groot, G.J. de; Hoede, D.; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-C--98-055

Petten : ECN, 1998. – 74 p.

Keywords: Building materials; Solidification; Solid wastes; Leaching; Performance testing; Standardization; Quality control; Concretes; Water saturation; Solubility; Ph value; Comparative evaluations; Automation; Sensitivity analysis; Verification; Diffusion; Ashes; Sand; Sludges; Bricks; Multi-element analysis; Elements; Metals

Operationele testen circulerend-wervelbedvergasser voor biomassa

Schenk, E.P.; Doorn, J. van; Bodegom, M.; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-C--98-075

Petten : ECN, September 1998. – 51 p.

Keywords: Gasification; Biomass; Biomass conversion plants; Performance testing; Fluidized beds; Circulating systems; Fluidized bed boilers; Willows; Wood wastes; Particle size; Wear; Dolomite; Steam; Tar; Calorific value; Fuel gas; Moisture; Operation; Start-up

Performance of ceramic membranes at elevated pressure and temperature: effect of non-ideal flow conditions in a pilot scale membrane separator

Koukou, M.K.; Papayannakos, N.; Markatos, N.C. ; Bracht, M.; Veen, H.M. van; Roskam, A.; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-RX--98-061

Petten : ECN, November 1998. – 22 p.

Keywords: Membranes; Ceramics; Fluid flow; Pressure dependence; Temperature dependence; Simulation; Hydrogen; Separation processes; Mathematical models; Silicon oxides; Methane; Nitrogen; Permeability; Partial pressure

Pressured entrained flow gasification simulator: design, construction and commissioning: executive summary

Bos, A.; Eenkhoorn, S.; Jacobs, J.M.; Kiel, J.H.A.; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-C--98-061

Petten : ECN, August 1998. – 41 p.

Keywords: Design; Construction; Gasification; Entrainment; Pressurization; Bench-scale experiments; Ashes; Gas burners; Minerals; Simulators; Test facilities; Slags; Heating rate; Commissioning; Particulates

Report on the activities of the international consultant, Prof. J. Slanina, in the project "Capacity development for NOx pollution control in Guangzhou"

Slanina, J.; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-C--98-108

Petten : ECN, December 1998. – 30 p.

Keywords: Nitrogen oxides; China; Air pollution; Emission; Road transport; Urban areas; Carbon monoxide; Ozone; Air quality; Air pollution abatement; Local government; Environmental policy

Report on the activities of the international consultant, prof. J. Slanina, in the project "Capacity development for NOx pollution control in Guiyang"

Slanina, J.; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-C--98-107

Petten : ECN, December 1998. – 64 p.

Keywords: Nitrogen oxides; China; Air pollution; Emission; Road transport; Urban areas; Carbon monoxide; Ozone; Air quality; Air pollution abatement; Local government; Environmental policy

Simulation tools for the design of industrial-scale membrane reactors

Koukou, M.K.; Papayannakos, N.; Markatos, N.C. ; Bracht, M.; Alderliesten, P.T.; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-RX--98-060

Petten : ECN, November 1998. – 12 p.

Keywords: Membranes; Simulation; Mathematical models; Computer-aided design; Chemical reactors; Performance; Ceramics; Shift processes; Water gas processes; Water gas; Dynamics; Fluid flow; Carbon monoxide; Carbon dioxide; Hydrogen; Conversion; Carbon

Speciatie van arseen in verontreinigde en gereinigde grond: onderzoek naar mogelijkheden tot verhoging van het reinigingsrendement

Comans, R.N.J.; Geelhoed, P.A.; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-C--98-110

Petten : ECN, December 1998. – 20 p.

Keywords: Arsenic; Soils; Sand; Iron hydroxides; Iron oxides; Extraction; Leaching; Ph value; Geochemistry; Cleaning; Remedial action

The influence of particle size on leaching of elements from coarse granular materials

Sloot, H.A. van der; Hoede, D.; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-C--98-045

Petten : ECN, 1998. – 62 p.

Keywords: Particle size; Leaching; Experimental data; Performance testing; Cements; Concretes; Ashes; Standardization; Compliance; Granular materials; Slags; Ph value; Phosphates; Solubility; Elements; Metals

To a sustainable energy supply system in the Netherlands: energetic, economic, and environmental boundaries

Ree, R. van; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-RX--98-065

Petten : ECN, December 1998. – 16 p.

Keywords: Biomass; Cogeneration; Netherlands; Energy efficiency; Economic impact; Environmental impacts; Power generation; Energy supplies; Energy policy; Organic wastes

Transport model calculations of NW-European methane emissions

Vermeulen, A.T.; Eisma, R.; Hensen, A.; Slanina, J.; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-RX--98-052

Petten : ECN, August 1998. – 12 p.

Keywords: Methane; Environmental transport; Western europe; Air pollution monitoring; Emission; Pollution sources; Lagrangian function; Data compilation; Temperature inversions

Trends in polymer electrolytes for secondary lithium batteries

Dias, F.B.; Plomp, L.; Veldhuis, J.B.J.; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-RX--98-041

Petten : ECN, 1998. – 56 p.

Keywords: Polymers; Electric batteries; Lithium compounds; Solid electrolytes; Gels; Composite materials; Organic solvents; Ionic conductivity; Cathodes; Anodes; Reviews; Polyethylene glycols; Stability; Electrochemistry; Acrylonitrile; Polyvinyls; Electrochemical cells

Uitlooggedrag van organische verontreinigingen uit bouwmaterialen en afvalstoffen

Sloot, H.A. van der; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-C--98-019

Petten : ECN, 1998. – 64 p.

Keywords: Leaching; Building materials; Wastes; Organic matter; Standardization; Solubility; Dissolution; Performance testing; Water; Organic compounds; Emission; Polycyclic aromatic hydrocarbons; Chrysene; Chromium; Metals; Elements; Multi-element analysis; Zinc; Polychlorinated biphenyls; Concretes; Cements; Sludges; Soils; Ph value; Ashes; Asphalts; Sand

Validatie van de methaan-emissie-reductie op stortplaats Nauerna

Hensen, A.; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-C--98-052

Petten : ECN, June 1998. – 33 p.

Keywords: Netherlands; Sanitary landfills; Methane; Emission; Validation; Nitrous oxide; Plumes; Extraction; Abundance; Meteorology; Gaussian processes; Comparative evaluations; Data covariances

Zelf-vormende en zelf-herstellende afdichtingen: ontwerp- en optimalisatiecriteria

Cnubben, P.A.J.P.; Sloot, H.A. van der; Geusebroek, M.; ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN-C--98-014

Petten : ECN, 1998. – 42 p.

Keywords: Sanitary landfills; Nonradioactive waste management; Nonradioactive waste disposal; Field tests; Diffusion; Hydraulic conductivity; Sand; Magnesium carbonates; Fly ash; Limestone; Sealing materials; Magnetite; Solubility; Permeability; Slags; Ashes; Building materials; Leaching; Leaks; Calcium hydroxides

2.3 ECN Energy Efficiency

A microstructural study of F82H-MOD: plate, powder HIP and EB and TIG weldments

Schuring, E.W.

ECN-R--98-013

Petten : ECN, 1998. – 68 p.

Keywords: Microstructure; Ferritic steels; Martensitic steels; Hot pressing; Plates; Powders; Welded joints; Electron beam welding; Gas tungsten-arc welding; Grain boundaries; Carbides; Segregation; Hardness; Tantalum oxides; Zirconium oxides; Titanium oxides; Tungsten oxides; Inclusions

A photovoltaic data acquisition program for supervision monitoring of a large number of AC-modules

Baltus, C.W.A.; Kuijper, F.J.; Oostrum, H.E.; Middelman, B.C. ; Rössler, E. ; Nordmann, T.

ECN-RX--98-053

Petten : ECN, July 1998. – 4 p.

Keywords: Photovoltaic power supplies; Data acquisition systems; Data acquisition; Inverters; Monitoring

Analyse elektriciteitsverbruik ECN in het kader van demand side management: interim-rapport

Wijk, J.J. van; Selow, E.R. van

ECN-I--98-041

Petten : ECN, July 1998. – p.

Keywords:

Aspects of suspensions and sol processing for the manufacturing of high performance ceramic membranes

Bonekamp, B.C.; Pex, P.P.A.C.

ECN-RX--98-024

Petten : ECN, June 1998. – 18 p.

Keywords: Ceramics; Membranes; Chemical preparation; Permeability; Microstructure; Defects; Surface area; Sols; Surface coating

Corrosion of stainless steel coatings applied by different thermal spray techniques

Correia, L.A.; Laas, L.J.

ECN-RX--98-055

Petten : ECN, October 1998. – 17 p.

Keywords: Corrosion; Stainless steel-316; Sprayed coatings; Microstructure; Porosity; Permeability; Corrosion protection; Sodium chlorides; Sulfuric acid

Eco-efficiency van een chemische warmtepomp

Spoelstra, S.

ECN-I--98-048

Petten : ECN, October 1998. – p.

Keywords: Chemical heat pumps; Efficiency; Exergy; Service life; Life cycle analysis; Lca; Cost benefit analysis; Design; Boilers

Elektrisch geleidende keramiek

Rak, Z.S.; Correia, L.A.; Petrovsky, V.J.

ECN-RX--98-054

Petten : ECN, October 1998. – 22 p.

Keywords: Electric conductivity; Electric conductors; Aluminium oxides; Titanium nitrides; Silicon nitrides; Tantalum nitrides; Hot pressing; Microstructure; Mechanical properties; Thermal stresses

Fibre reinforced CMC with organometallic delivered matrix

Rak, Z.S.

ECN-RX--98-025

Petten : ECN, 1998. – 17 p.

Keywords: Ceramics; Carbon nitrides; Silicon nitrides; Density; Microstructure; Carbon fibers; Thermodynamic properties; Mechanical properties; Pyrolysis; Porosity; Flexural strength; Young modulus

Geavanceerd regelen: de intelligente oplossing

Selow, E.R. van; Ouden, A.C.B. den; Wijk, J.J. van

ECN-I--98-010

Petten : ECN, 1998. – 12 p.

Keywords: Control systems; Fuzzy logic; Neural networks; Electric heating; Steam generation; Water heaters; Process control

Identification and visualization of energy-consumption patterns

Selow, E.R. van; Wijk, J.J. van; Jehee, J.N.T.

ECN-RX--98-058

Petten : ECN, October 1998. – 10 p.

Keywords: Energy consumption; Data analysis; Electricity; Regression analysis; Time-series analysis; Computer calculations; Ecn; Power demand

Implementatieplan verwerking shredderafval

Nauta, J.P.; Reijnders, H.P.E.M.; Oudhuis, A.B.J.

ECN-C--98-086

Petten : ECN, October 1998. – 31 p.

Keywords: Shredders; Scrap; Municipal wastes; Waste processing; Materials recovery; Chemical composition; Comparative evaluations; Recycling; Licensing regulations; Legislation

Microstructural investigation of the NESC-1 clad layer and base material

Schuring, E.W.

ECN-I--97-047

Petten : ECN, 1998. – 29 p.

Keywords: Microstructure; Heat affected zone; Hardness; Austenitic steels; Martensitic steels; Layers; Segregation; Brittleness; Ceramics; Chemical composition

Neuro-fuzzy control in a steam boiler at Hoogovens

Selow, E.R. van; Ouden, A.C.B. den; Wijk, J.J. van

ECN-I--98-009

Petten : ECN, 1998. – 44 p.

Keywords: Metal industry; Smelters; Boilers; Fuzzy logic; Netherlands; Nitrogen oxides; Air pollution control; Computerized control systems; Energy efficiency; Neural networks; Process control; Nonlinear problems; Performance; Fuel-air ratio; Systems analysis

Neuro-fuzzy control in a steam boiler

Selow, E.R. van; Ouden, A.C.B. den

ECN-RX--98-030

Petten : ECN, 1998. – 7 p.

Keywords: Metal industry; Smelters; Boilers; Fuzzy logic; Netherlands; Nitrogen oxides; Air pollution control; Computerized control systems; Energy efficiency; Neural networks; Process control; Nonlinear problems; Performance; Fuel-air ratio; Systems analysis

New trends in powder injection moulding

Rak, Z.S.

ECN-RX--98-018

Petten : ECN, 1998. – 19 p.

Keywords: Powders; Ceramics; Molding; Shape; Binders; Structure factors; Process control; Sintering; Surface finishing; Defects; Reviews

Photocatalytic reactor for chemical processes

Rak, Z.S.

ECN-I--98-045

Petten : ECN, 1998. – 34 p.

Keywords: Chemical reactors; Catalysis; Photochemical reactions; Titanium oxides; Sol-gel process; Chemical vapor deposition; Hydrogen production; Methanol; Carbon dioxide; Visible radiation; Chromium ions; Iron ions; Catalysts; Photochemistry; Cost; Thin films

Physical model testing for characterising the AWS

Rademakers, L.W.M.M.; Schie, R.G. van; Schuitema, R.; Vriesema, B.; Gardner, F.

ECN-RX--98-056

Petten : ECN, 1998. – 8 p.

Keywords: Wave energy converters; Functional models; Performance testing; Equations of motion; Scale models; Test facilities; Energy efficiency

Praktijkexperiment alternatieve energiebron voor LAE-signaleringsborden: tussenrapportage: installatie- en opstartfase

Ijpelaan, R.; Schie, R.G. van

ECN-C--98-062

Petten : ECN, August 1998. – 39 p.

Keywords: Railways; Photovoltaic power supplies; Wind power; Electric generators; Signals; Data analysis; Capacity; Netherlands; Installation; Site selection; Cost benefit analysis

Storage, transformation and transport of heat along the thermochemical route

Bach, P.W.; Haije, W.G.

ECN-RX--98-013

Petten : ECN, 1998. – 15 p.

Keywords: Thermochemical heat storage; Heat transfer; Thermal conduction; Thermochemical processes; Phase change materials; Enthalpy

Technical and economic evaluation on the use of membrane reactors for the dehydrogenation of propane to propylene

Veen, H.M. van; Alderliesten, P.T.

ECN-RX--97-021

Petten : ECN, 1998. – 21 p.

Keywords: Propylene; Membranes; Ceramics; Dehydrogenation; Isothermal processes; Thermodynamics; Cracking; Prices; Feasibility studies; Coke; Bench-scale experiments; Adiabatic processes

Uitgangspunten levenscyclusanalyse biolicht-project

Overbeek, J.P.; Warmer, C.J.; Braam, J.

ECN-C--98-053

Petten : ECN, June 1998. – 54 p.

Keywords: Vehicles; Transportation sector; Data compilation; Service life; Reinforced plastics; Composite materials

2.4 ECN Solar & Wind

3D-simulaties van mc-Si-zonnecellen: gebruikershandleiding en enige voorbeelden van berekeningen met ISE-TCAD

Soppe, W.J.; Heide, A.S.H. van der; ECN. Duurzame Energie, Zon & Wind

ECN-C--98-088

Petten : ECN, November 1998. – 56 p.

Keywords: Computer program documentation; Manuals; Silicon solar cells; Three-dimensional calculations; I codes; Computerized simulation; Geometry; Charge carriers; Recombination; Carrier density; Polycrystals; Computer calculations

A program for modelling surface recombination velocities

Burgers, A.R.; ECN. Duurzame Energie, Zon & Wind

ECN-I--98-018

Petten : ECN, 1998. – 24 p.

Keywords: S codes; Computer program documentation; Velocity; Recombination; Defects; Graded band gaps; Gaussian processes; Passivation; Charge density; Silicon solar cells

An engineering model for yawed conditions, developed on the basis of wind tunnel measurements

Schepers, J.G.; ECN. Duurzame Energie, Zon & Wind

ECN-RX--98-057

Petten : ECN, October 1998. – 11 p.

Keywords: Wind tunnels; Wind turbines; Turbulence; Wind; Rotors; Validation; Mathematical models; Wind loads; Field tests; Test facilities; Forecasting; Velocity; Rotation

Attacking limiting factors in 10.10 cm² multicrystalline silicon, emitter wrap-through solar cell design and processing

Schönecker, A.; Weeber, A.W.; Sinke, W.C.; ECN. Duurzame Energie, Zon & Wind; Zechner, C.; Kress, A.; Fath, P.

ECN-RX--98-032

Petten : ECN, 1998. – 6 p.

Keywords: Silicon; Silicon solar cells; Polycrystals; Limiting values; Manufacturing; Design; Two-dimensional calculations; Passivation; Fill factors; Electric conductivity; Energy efficiency; Recombination

Bepaling arrayvermogen van de PV-installatie te Zandvoort

Baltus, C.W.A.; Wiggelinkhuizen, E.J.; Eikelboom, J.A.

ECN-C--97-094

Petten : ECN, March 1998. – 25 p.

Keywords: Photovoltaic power supplies; Houses; Netherlands; Solar cell arrays; Capacity; Electric conductivity; Performance testing

Certificatie kleine windturbines: toetsing certificatiesysteem

Hulle, F.J.L. van; Soullie, P.P.; Dam, J.J.D. van; ECN. Duurzame Energie, Zon & Wind

ECN-C--97-068

Petten : ECN, 1998. – 24 p.

Keywords: Certification; Horizontal axis turbines; Performance testing; Verification; Netherlands; Acoustic measurements; Dynamic loads; Static loads; Stresses

Cost-effective MC-Si cell processing by screenprinting on remote-PECVD layers

Soppe, W.J.; Weeber, A.W.; Moor, H.H.C. de; Sinke, W.C.; ECN. Duurzame Energie, Zon & Wind; Lauinger, T.; Auer, R.; Lenkeit, B.; Aberle, A.

ECN-RX--98-039

Petten : ECN, 1998. – 5 p.

Keywords: Silicon solar cells; Screen printing; Cost; Chemical vapor deposition; Antireflection coatings; Silicon nitrides; Passivation; Energy efficiency; Titanium oxides; Electric conductivity; Ionic conductivity; Charge carriers; Carrier lifetime; Recombination; Spectral response; Quantum efficiency

Dye-sensitized nanocrystalline TiO₂ solar cells on flexible substrates

Sommeling, P.M.; Späth, M.; Roosmalen, J.A.M. van; ECN. Duurzame Energie, Zon & Wind; Meyer, T.B.; Meyer, A.F.; Kohle, O.

ECN-RX--98-040

Petten : ECN, 1998. – 6 p.

Keywords: Dyes; Organic solar cells; Titanium oxides; Substrates; Organic polymers; Foils; Flexibility; Energy efficiency; Glass; Manufacturing; Stability; Spectral density; Power density

Efficient residential lighting in Peru: vol. 1: marketing study for the introduction of compact fluorescent lamps

Akker, J.H.A. van den; Baken, T.; ECN. Duurzame Energie, Zon & Wind

ECN-C--97-071

Petten : ECN, 1998. – 70 p.

Keywords: Lighting systems; Fluorescent lamps; Peru; Marketing; Energy efficiency; Households; Market; Light bulbs; Small businesses; Financial incentives; Energy demand; Energy conservation; Sales; Financing; Planning; Institutional factors; Program management

Efficient residential lighting in Peru: vol. 2: impacts of the introduction of compact fluorescent lamps

Akker, J.H.A. van den; ECN. Duurzame Energie, Zon & Wind

ECN-C--97-072

Petten : ECN, 1998. – 52 p.

Keywords: Lighting systems; Fluorescent lamps; Peru; Marketing; Energy efficiency; Households; Market; Light bulbs; Small businesses; Financial incentives; Energy demand; Energy conservation; Sales; Financing; Planning; Institutional factors; Program management; Cost benefit analysis; Socio-economic factors; Economic analysis; Environmental impacts; Electricity; Energy consumption

Emitter diffusion using an IR belt furnace

Goris, M.J.A.A.; Moor, H.H.C. de; Weeber, A.W.; Kossen, E.J.; Beeke, H.G. ter; ECN. Duurzame Energie, Zon & Wind; Frisson, L. ; Szlufcik, J.

ECN-RX--98-031

Petten : ECN, 1998. – 6 p.

Keywords: Silicon solar cells; Polycrystals; Silicon; Diffusion; Furnaces; Performance; Quantum efficiency; Nitrogen; Air; Temperature range 1000-4000 K; Electric conductivity; Phosphorus

Energie-infrastructuur Amsterdam: aspecten voor woningcorporaties

Gilijamse, W.; Menkveld, M.; Ruijg, G.J.; Scheepers, M.J.J.; Beeldman, M.

ECN-C--98-077

Petten : ECN, October 1998. – 80 p.

Keywords: Netherlands; Urban areas; Energy conservation; Residential buildings; Heat distribution systems; Cogeneration; Water heating; Space heating; Energy demand; Internal combustion engines; Environmental effects; Cost estimation; Management

European wind turbine standards II. Part 5. Site evaluation (European wind turbine standards II. Project results)

Dekker, J.; Pierik, J.

ECN-C--99-073

Petten : ECN, Jun 1998. – 51577589 p.

Keywords:

European wind turbine standards II: executive summary

Dekker, J.W.M.; Pierik, J.T.G.; ECN. Duurzame Energie, Zon & Wind

ECN-C--98-096

Petten : ECN, December 1998. – 34 p.

Keywords: Standardization; Standards; Wind turbines; Europe; Wind; Dynamic loads; Failures; Design; Materials testing; Performance testing; Airfoils; Site characterization; Velocity

Evaluation of the 7th international course on implementation of wind energy, ECN, March 30 - April 10, 1998

Dekker, J.W.M.; ECN. Duurzame Energie, Zon & Wind; Rijs, R.P.P.

ECN-C--98-047

Petten : ECN, 1998. – 47 p.

Keywords: Education; Educational facilities; Educational tools; Wind power; Implementation; Developing countries; Evaluation; Technology transfer; Scientific personnel

First experiences with double layer stencil printing for low cost production solar cells

Hoornstra, J.; Moor, H.H.C. de; ECN. Duurzame Energie, Zon & Wind; Roberts, S.; Bruton, T.M.

ECN-RX--98-036

Petten : ECN, 1998. – 6 p.

Keywords: Manufacturing; Silicon solar cells; Screen printing; Substrates; Comparative evaluations; Electric conductivity; Metallography; Line widths

Gedrag van het PV-systeem op Houttuinen Zuid 41 te Apeldoorn

Baltus, C.W.A.; Wiggelinkhuizen, E.J.; ECN. Duurzame Energie, Zon & Wind

ECN-C--98-001

Petten : ECN, 1998. – 29 p.

Keywords: Photovoltaic power supplies; Houses; Netherlands; Performance; Progress report; Inverters; Capacity; Efficiency; Solar radiation

Implementation of bending: torsion coupling in the design of a wind turbine rotor blade

Goeij, W.C. de

ECN-I--98-047

Petten : ECN, October 1998. – 149 p.

Keywords:

Improvement of low cost ceramic substrates for use in thin film silicon solar cells

Keitz, A. von; Roosmalen, J.A.M. van; Tool, C.J.J.; Schiermeier, S.E.A.; Fung, F.; Christie, G.M.; ECN. Duurzame Energie, Zon & Wind; Zutphen, A.J.M.M. van
ECN-RX--98-045

Petten : ECN, 1998. – 6 p.

Keywords: Thin films; Silicon solar cells; Ceramics; Substrates; Cost; Energy efficiency; Casting; Plasma arc spraying; Impurities; Layers; Recrystallization; Grain size; Porosity; Liquid phase epitaxy; Chemical vapor deposition; Morphology; Aluminium oxides; Roughness; Elasticity; Thermal expansion; Nucleation

Integratie van ontwikkelde energiebesparende componenten in bestaande gebouwconcepten: tussenrapportage onderzoeksjaar 1996-1997

Wilde, P.J.C.J. de; ECN. Duurzame Energie, Zon & Wind
ECN-I--98-011

Petten : ECN, 1998. – 106 p.

Keywords: Buildings; Energy conservation; Design; Computerized simulation; Computer codes; Computer-aided design; Mathematical models; Functional models; Computer calculations

Internationale normen voor windturbines: verslag van de werkzaamheden in 1997

Hulle, F.J.L. van; ECN. Duurzame Energie, Zon & Wind
ECN-C--98-017

Petten : ECN, 1998. – 90 p.

Keywords: Wind turbines; Standardization; Performance testing; Rotors; Materials testing; Certification; Standards; Dynamic loads; Static loads; Occupational safety; Acoustic measurements; Meetings

LPE-growth of crystalline silicon layers on ceramic substrates

Schiermeier, S.E.A.; Tool, C.J.J.; Roosmalen, J.A.M. van; Laas, L.J.; Keitz, A. von; Sinke, W.C.; ECN. Duurzame Energie, Zon & Wind
ECN-RX--98-034

Petten : ECN, 1998. – 6 p.

Keywords: Silicon; Layers; Substrates; Liquid phase epitaxy; Ceramics; Crystal growth; Thin films; Crystal growth methods

Ladingsdrager-recombinatie in (multi)kristallijn silicium zonnecellen: CV-MOS en Donker I-V

Eikelboom, D.W.K.
ECN-C--99-011

Petten : ECN, August 1998. – 88 p.

Keywords: Charge carriers; Recombination; Silicon solar cells; Polycrystals; Electric conductivity; Capacity; Electric measuring instruments; Performance testing; Semiconductor diodes; Mos solar cells; P-n junctions; Design

Long-term stability of nanocrystalline dye-sensitized solar cells

Rijnberg, E.; Kroon, J.M.; Wienke, J.A.; Hinsch, A.; Roosmalen, J.A.M. van; Sinke, W.C.; ECN. Duurzame Energie, Zon & Wind; Scholtens, B.J.R.; Vries, J.G. de; Koster, C.G. de; Duchateau, A.L.L.; Maes, I.C.H.; Henderickx, H.J.W.

ECN-RX--98-033

Petten : ECN, 1998. – 8 p.

Keywords: Titanium oxides; Organic solar cells; Dyes; Stability; Field tests; Bench-scale experiments; Aging; Performance testing; Electric conductivity; Additives; Water; Ethanol; Sealing materials; Liquid column chromatography; Illuminance; Fill factors; Daylighting

Monitoring van zes AC-modules op het ECN-testveld te Petten: evaluatieperiode november 1997 - februari 1998

Wiggelinkhuizen, E.J.; Baltus, C.W.A.; ECN. Duurzame Energie, Zon & Wind

ECN-C--98-070

Petten : ECN, September 1998. – 33 p.

Keywords: Photovoltaic power supplies; Inverters; Performance testing; Field tests; Energy yield; Solar radiation; Monitoring; Systems analysis; Netherlands

Multicrystalline silicon solar cells

Sinke, W.C.; ECN. Duurzame Energie, Zon & Wind

ECN-RX--98-012

Petten : ECN, 1998. – 14 p.

Keywords: Silicon; Fabrication; Polycrystals; Silicon solar cells; Casting; Crystal defects; Grain boundaries; Impurities; Monocrystals; Passivation; Gettering; Energy efficiency

Numerical quantification of crosstalk in load measurements on the DEBRA blade

Hamelink, J.; Heijdra, J.J.; Borg, N.J.C.M. van der; ECN. Duurzame Energie, Zon & Wind

ECN-C--98-073

Petten : ECN, October 1998. – 21 p.

Keywords: Shear; Rotors; Horizontal axis turbines; Computerized simulation; Dynamic loads; Mechanical vibrations; Strain gages; Comparative evaluations; Data covariances; Sensitivity

Overview of standards and guidelines for photovoltaic (PV) systems: ed. 2

Rijt, P.J.N.M. van de; ECN. Duurzame Energie, Zon & Wind

ECN-I--98-020

Petten : ECN, April 1998. – 22 p.

Keywords: Photovoltaic power supplies; Standards; Recommendations; Regulations; Europe; Japan; Usa; Canada

PRODETO computer program: user's manual

Braam, H.; ECN. Duurzame Energie, Zon & Wind

ECN-C--97-096

Petten : ECN, 1998. – 33 p.

Keywords: P codes; Rotors; Fatigue; Horizontal axis turbines; Reliability; Bending; Data analysis; Calibration; Safety; Parametric analysis; Computer calculations; Hermite polynomials; Regression analysis; Manuals; Computer program documentation

PRODETO-computer program: theory and program structure

Braam, H.; ECN. Duurzame Energie, Zon & Wind; Ronold, K.O. ; Christensen, C.J.

ECN-C--97-093

Petten : ECN, 1998. – 55 p.

Keywords: P codes; Rotors; Fatigue; Horizontal axis turbines; Reliability; Bending; Data analysis; Calibration; Safety; Parametric analysis; Computer calculations; Hermite polynomials; Regression analysis

Proposed procedure for the evaluation of uncertainties in load measurements on wind turbines

Borg, N.J.C.M. van der; Dam, J.J.D. van; ECN. Duurzame Energie, Zon & Wind

ECN-C--98-006

Petten : ECN, 1998. – 20 p.

Keywords: Load analysis; Data covariances; Horizontal axis turbines; Dynamic loads; Static loads; Calibration; Wind; Velocity

Rural lighting: a comparison of lamps for domestic lighting in developing countries

Nieuwenhout, F.D.J.; Rijt, P.J.N.M. van de; Wiggelinkhuizen, E.J.; ECN. Duurzame Energie, Zon & Wind; Plas, R.J. van der; The World Bank

ECN-RX--98-035

Petten : ECN, 1998. – 6 p.

Keywords: Developing countries; Lighting systems; Light bulbs; Comparative evaluations; Luminosity

Silicon solar cells structured by reactive ion etching and processed with screen printing

Burgers, A.R.; Tool, C.J.J.; Hylton, J.D.; Weeber, A.W.; ECN. Duurzame Energie, Zon en Wind; Verholen, A.G.B.J.; Gardeniers, J.G.E.; Boer, M.J. de; Elwenspoek, M.C.; Twente University . MESA Research Institute

ECN-RX--98-037

Petten : ECN, July 1998. – 4 p.

Keywords: Silicon solar cells; Etching; Screen printing; Crystallography; Polycrystals; Texture; Spectral reflectance; Quantum efficiency

The April 95 procedure to measure the pressure coefficient C_p on a wind turbine in the field: with the December 1998 proposal for a C_p -derivation

Corten, G.P.; ECN. Duurzame Energie, Zon & Wind

ECN-RX--98-066

Petten : ECN, December 1998. – 25 p.

Keywords: Field tests; Wind turbine arrays; Wind turbines; Pressure coefficient; Aerodynamics; Hydrostatics; Pressure measurement; Data processing; Turbulent flow; Equations

The Stall Flag method: proof of concept

Corten, G.P.; ECN. Duurzame Energie, Zon & Wind

ECN-RX--98-001

Petten : ECN, 1998. – 13 p.

Keywords: Horizontal axis turbines; Rotors; Flow visualization; Validation; Aerodynamics; Performance; Three-dimensional calculations; Data acquisition; Wind; Velocity

The experimental quantification of specific uncertainty sources in wind turbine blade load measurements

Borg, N.J.C.M. van der; Dam, J.J.D. van; ECN. Duurzame Energie, Zon & Wind
ECN-C--97-105

Petten : ECN, 1998. – 30 p.

Keywords: Horizontal axis turbines; Data covariances; Dynamic loads; Strains; Torsion; Shear; Simulation; Solar radiation; Temperature dependence; Static loads; Bending; Calibration

The performance of dye-sensitised solar cells with a one-facial, monolithic layer built-up prepared by screen printing

Hinsch, A.; Kinderman, R.; Späth, M.; Rijnberg, E.; Roosmalen, J.A.M. van; ECN. Duurzame Energie, Zon & Wind

ECN-RX--98-038

Petten : ECN, 1998. – 6 p.

Keywords: Organic solar cells; Dyes; Screen printing; Thin films; Electric conductivity; Thickness; Layers; Titanium oxides; Semiconductor diodes; Performance

The suitability of several methods to quantify energy losses in PV systems

Baltus, C.W.A.; Borg, N.J.C.M. van der; Dijk, V.A.P. van; Reinders, A.H.M.E. ; Kil, A.J. ; Zolingen, R.J.C. van

ECN-C--98-098

Petten : ECN, December 1998. – 37 p.

Keywords: Photovoltaic power supplies; Energy losses; Interconnected power systems; Comparative evaluations; Data analysis; Systems analysis; Field tests

WAKEFARM: nabij zog model en ongestoord wind snelheidsveld

Schepers, J.G.; ECN. Duurzame Energie, Zon & Wind

ECN-C--98-016

Petten : ECN, 1998. – 36 p.

Keywords: Wind turbines; Turbulent flow; Turbulence; Field tests; Wind; Velocity; Computer calculations; W codes; Wind tunnels; U codes

Wind energy in Kazakhstan: pt. 2: pilot project in Akmola Oblast

Hulle, F.J.L. van; Boer, A.T. de; Baigarin, K.

ECN-C--98-100

Petten : ECN, December 1998. – 59 p.

Keywords: Kazakhstan; Wind turbines; Wind power; Demonstration programs; Water supply; Feasibility studies; Operation; Maintenance; Program management; Environmental effects; Legal aspects; Energy demand

Windenergiepotentieel te Coe, Bütgenbach en Amel (België)

Hulle, F.J.L. van

ECN-C--98-054

Petten : ECN, September 1998. – 60 p.

Keywords: Wind power; Availability; Belgium; Site characterization; Wind; Wind turbines; Monitoring; Velocity; Turbulence; Data analysis

Zonnige toekomst met gelijkstroom?

Pellis, J.; Rijt, P.J.N.M. van de; ECN. Duurzame Energie, Zon & Wind
ECN-RX--98-020

Petten : ECN, 1998. – 13 p.

Keywords: Direct current; Photovoltaic power supplies; Houses; Electricity; Energy conservation; Electric appliances; Inverters; Dc to dc converters

Jansen, J.C.; Ligthart, F.A.T.M.; ECN. Duurzame Energie, Zon & Wind
ECN-C--98-074

Petten : ECN, September 1998. – 27 p.

Keywords: China; Greenhouses; Energy efficiency; Microclimates; Renewable energy sources; Feasibility studies; Space heating; Program management

3. ECN PUBLICATIONS BY DOCUMENT TYPE

(sorted out by publication number)

3.1 C-Publications

ECN-C--97-011

Kant, A.D.; Kaan, H.F.

Strengthening the Polish energy administration: conditions for establishment of an efficient and effective energy department

Petten : ECN, February 1998. – 140 p.

Keywords:

ECN-C--97-068

Hulle, F.J.L. van; Soullie, P.P.; Dam, J.J.D. van; ECN. Duurzame Energie, Zon & Wind

Certificatie kleine windturbines: toetsing certificatiesysteem

Petten : ECN, 1998. – 24 p.

Keywords: Certification; Horizontal axis turbines; Performance testing; Verification; Netherlands; Acoustic measurements; Dynamic loads; Static loads; Stresses

ECN-C--97-070

Cnubben, P.A.J.P.; Sloot, H.A. van der; ECN. Brandstoffen, Conversie en Milieu [BCM]

Karakteristieken percolaatwater stortlocatie Nauernasche polder: inventarisatie en classificatie

Petten : ECN, 1998. – 52 p.

Keywords: Waste disposal; Classification; Leachates; Leaching; Metals; Elements; Trace amounts; Abundance; Ph value; Ashes; Geochemistry; Redox reactions; Carbon dioxide; Uptake

ECN-C--97-071

Akker, J.H.A. van den; Baken, T.; ECN. Duurzame Energie, Zon & Wind

Efficient residential lighting in Peru: vol. 1: marketing study for the introduction of compact fluorescent lamps

Petten : ECN, 1998. – 70 p.

Keywords: Lighting systems; Fluorescent lamps; Peru; Marketing; Energy efficiency; Households; Market; Light bulbs; Small businesses; Financial incentives; Energy demand; Energy conservation; Sales; Financing; Planning; Institutional factors; Program management

ECN-C--97-072

Akker, J.H.A. van den; ECN. Duurzame Energie, Zon & Wind

Efficient residential lighting in Peru: vol. 2: impacts of the introduction of compact fluorescent lamps

Petten : ECN, 1998. – 52 p.

Keywords: Lighting systems; Fluorescent lamps; Peru; Marketing; Energy efficiency; Households; Market; Light bulbs; Small businesses; Financial incentives; Energy demand; Energy conservation; Sales; Financing; Planning; Institutional factors; Program management; Cost benefit analysis; Socio-economic factors; Economic analysis; Environmental impacts; Electricity; Energy consumption

ECN-C--97-081

Kroon, P.; Beeldman, M.; Kok, I.C.; Boonekamp, P.G.M.; Jeeninga, H.; Ybema, J.R.; Aalbers, R.F.T.; Koutstaal, P.R.; Lange, T.J. de; Hilten, O. van; Menkveld, M.

Nationale Energie Verkenningen 1995-2020: trends en thema's

Petten : ECN, March 1998. – 140 p.

Keywords: Netherlands; Energy models; Forecasting; Energy demand; Prices; Sectoral analysis; Households; Houses; Buildings; Agriculture; Industry; Cogeneration; Renewable energy sources; Electric power; Natural gas; Petroleum refineries; Energy conservation; Energy consumption; Energy policy; Carbon dioxide; Emission; Taxes; Environmental policy; Cost; Supply and demand; Market; Technology assessment; Decision making

ECN-C--97-093

Braam, H.; ECN. Duurzame Energie, Zon & Wind; Ronold, K.O. ; Christensen, C.J.

PRODETO-computer program: theory and program structure

Petten : ECN, 1998. – 55 p.

Keywords: P codes; Rotors; Fatigue; Horizontal axis turbines; Reliability; Bending; Data analysis; Calibration; Safety; Parametric analysis; Computer calculations; Hermite polynomials; Regression analysis

ECN-C--97-094

Baltus, C.W.A.; Wiggelinkhuizen, E.J.; Eikelboom, J.A.

Bepaling arrayvermogen van de PV-installatie te Zandvoort

Petten : ECN, March 1998. – 25 p.

Keywords: Photovoltaic power supplies; Houses; Netherlands; Solar cell arrays; Capacity; Electric conductivity; Performance testing

ECN-C--97-095

Veltkamp, A.C.; Smit-Groen, V.M.; ECN. Nuclear Research and Consultancy Group [NRG]

Immobilisatie van langlevende splijttingsproducten: een literatuurstudie

Petten : ECN, 1998. – 73 p.

Keywords: Cesium 135; Technetium 99; Iodine 129; Solidification; Radioactive waste disposal; Fission products; Actinides; Leaching; High-level radioactive wastes; Vitrification; Synthetic materials; Borosilicate glass; Underground storage; Synthetic rocks; Spent fuel storage

ECN-C--97-096

Braam, H.; ECN. Duurzame Energie, Zon & Wind

PRODETO computer program: user's manual

Petten : ECN, 1998. – 33 p.

Keywords: P codes; Rotors; Fatigue; Horizontal axis turbines; Reliability; Bending; Data analysis; Calibration; Safety; Parametric analysis; Computer calculations; Hermite polynomials; Regression analysis; Manuals; Computer program documentation

ECN-C--97-103

Gielen, D.J.; Lako, P.; Dinkelbach, L.; Ree, R. van; ECN. Brandstoffen, Conversie en Milieu [BCM]

Prospects for bioenergy in the Netherlands: a MARKAL analysis of the long term impact of energy and CO₂ policies

Petten : ECN, February 1998. – 45 p.

Keywords:

ECN-C--97-105

Borg, N.J.C.M. van der; Dam, J.J.D. van; ECN. Duurzame Energie, Zon & Wind

The experimental quantification of specific uncertainty sources in wind turbine blade load measurements

Petten : ECN, 1998. – 30 p.

Keywords: Horizontal axis turbines; Data covariances; Dynamic loads; Strains; Torsion; Shear; Simulation; Solar radiation; Temperature dependence; Static loads; Bending; Calibration

ECN-C--98-001

Baltus, C.W.A.; Wiggelinkhuizen, E.J.; ECN. Duurzame Energie, Zon & Wind

Gedrag van het PV-systeem op Houttuinen Zuid 41 te Apeldoorn

Petten : ECN, 1998. – 29 p.

Keywords: Photovoltaic power supplies; Houses; Netherlands; Performance; Progress report; Inverters; Capacity; Efficiency; Solar radiation

ECN-C--98-002

Cordfunke, E.H.P.; Huntelaar, M.E.

Enthalpies of fusion of MCCI related materials: interim report THMO thermochemical modelling and data

Petten : ECN, 1998. – 23 p.

Keywords: Fusion heat; Radiation protection; Magnesium oxides; Calcium oxides; Strontium oxides; Barium oxides; Aluminium oxides; Zirconium oxides; Silicon oxides; Strontium silicates; Magnesium silicates; Barium silicates; Lanthanum silicates; Cesium silicates; Zirconates; Fission product release

ECN-C--98-003

Ybema, J.R.; BOS, S.; Menkveld, M.; Gielen, D.J.

Flexibiliteit in de energievoorziening voor toekomstig CO₂-beleid

Petten : ECN, January 1998. – 111 p.

Keywords:

ECN-C--98-006

Borg, N.J.C.M. van der; Dam, J.J.D. van; ECN. Duurzame Energie, Zon & Wind

Proposed procedure for the evaluation of uncertainties in load measurements on wind turbines

Petten : ECN, 1998. – 20 p.

Keywords: Load analysis; Data covariances; Horizontal axis turbines; Dynamic loads; Static loads; Calibration; Wind; Velocity

ECN-C--98-009

Lako, P.; Ybema, J.R.; Seebregts, A.J.

The role of fusion power in energy scenarios: proposed method and review of existing scenarios

Petten : ECN, 1998. – 33 p.

Keywords: Energy models; Thermonuclear reactors; Western europe; Energy policy; Technology assessment; Interest rate; Climatic change; Energy demand; Availability; Fossil fuels; Prices; Renewable energy sources; Market; Cost

ECN-C--98-010

Perrels, A.H.; Lako, P.

Clean coal technology sales prospects: assessing the impacts of an EU CCT support programme

Petten : ECN, February 1998. – 92 p.

Keywords: Coal preparation; Cleaning; Sales; Technology assessment; Market; Trade; Manufacturing; European union; Emission; Environmental impacts; Competition; Sulfur dioxide; Nitrogen oxides; Greenhouse gases

ECN-C--98-011

Perrels, A.H.; Jeeninga, H.; Siderius, P.J.S.; Groot, M.I.

Nieuwe apparaten en leefstijl: gevolgen voor het huishoudelijk elektriciteitsverbruik in 2010

Petten : ECN, April 1998. – 107 p.

Keywords: Technology assessment; Households; Netherlands; Energy consumption; Electricity; Socio-economic factors; Leisure time activities; Appliances; Income; Forecasting; Comparative evaluations; Historical aspects; Economic development; Prices; Energy efficiency

ECN-C--98-012

Cnubben, P.A.J.P.; Slood, H.A. van der; Hoede, D.; ECN. Brandstoffen, Conversie en Milieu [BCM]

Leaching of ferrochrome slag in the marine environment

Petten : ECN, 1998. – 26 p.

Keywords: Leaching; Slags; Aquatic ecosystems; Seawater; Leachates; Manganese; Chromium; Concentration ratio; Lead; Ph value; Multi-element analysis; Iron alloys; Iron oxides; Chromium oxides; Manganese oxides

ECN-C--98-013

Lako, P.; Rooijen, S.N.M. van

Economics of power generation from imported biomass

Petten : ECN, 1998. – 49 p.

Keywords: Biomass; Power generation; Netherlands; Imports; Risk assessment; Economic impact; Estonia; Uruguay; Supply and demand; Fossil-fuel power plants; Cost; Market; Cocombustion; Wood fuels; Exports

ECN-C--98-014

Cnubben, P.A.J.P.; Slood, H.A. van der; Geusebroek, M.; ECN. Brandstoffen, Conversie en Milieu [BCM]

Zelf-vormende en zelf-herstellende afdichtingen: ontwerp- en optimalisatiecriteria

Petten : ECN, 1998. – 42 p.

Keywords: Sanitary landfills; Nonradioactive waste management; Nonradioactive waste disposal; Field tests; Diffusion; Hydraulic conductivity; Sand; Magnesium carbonates; Fly ash; Limestone; Sealing materials; Magnetite; Solubility; Permeability; Slags; Ashes; Building materials; Leaching; Leaks; Calcium hydroxides

ECN-C--98-015

Doorn, J. van; Oudhuis, A.B.J.; Oppenraaij, J.B.H.A. van; Reijnders, H.P.E.M.; ECN. Brandstoffen, Conversie en Milieu [BCM]

Monstername en analyse zeefdoorval ICOVA

Petten : ECN, 1998. – 13 p.

Keywords: Sampling; Waste processing; Incinerators; Chemical composition; Chemical analysis; Industrial wastes; Municipal wastes; Pyrolysis

ECN-C--98-016

Schepers, J.G.; ECN. Duurzame Energie, Zon & Wind

WAKEFARM: nabij zog model en ongestoord wind snelheidsveld

Petten : ECN, 1998. – 36 p.

Keywords: Wind turbines; Turbulent flow; Turbulence; Field tests; Wind; Velocity; Computer calculations; W codes; Wind tunnels; U codes

ECN-C--98-017

Hulle, F.J.L. van; ECN. Duurzame Energie, Zon & Wind

Internationale normen voor windturbines: verslag van de werkzaamheden in 1997

Petten : ECN, 1998. – 90 p.

Keywords: Wind turbines; Standardization; Performance testing; Rotors; Materials testing; Certification; Standards; Dynamic loads; Static loads; Occupational safety; Acoustic measurements; Meetings

ECN-C--98-018

Otjes, R.P.; Jongejan, P.A.C.; Erisman, J.W.; ECN. Brandstoffen, Conversie en Milieu [BCM]

Bepaling van de ammoniakemissie uit geruimde varkensstallen

Petten : ECN, 1998. – 20 p.

Keywords: Netherlands; Ammonia; Emission; Swine; Air pollution monitoring; Farms

ECN-C--98-019

Sloot, H.A. van der; ECN. Brandstoffen, Conversie en Milieu [BCM]

Uitlooggedrag van organische verontreinigingen uit bouwmaterialen en afvalstoffen

Petten : ECN, 1998. – 64 p.

Keywords: Leaching; Building materials; Wastes; Organic matter; Standardization; Solubility; Dissolution; Performance testing; Water; Organic compounds; Emission; Polycyclic aromatic hydrocarbons; Chrysene; Chromium; Metals; Elements; Multi-element analysis; Zinc; Polychlorinated biphenyls; Concretes; Cements; Sludges; Soils; Ph value; Ashes; Asphalts; Sand

ECN-C--98-021

Dinkelbach, L.; Bodenstaff, H.; Bruyn, P.; Hemmes, W.H.; Oudhuis, A.B.J.; Zutt, J.G.M.; ECN. Brandstoffen, Conversie en Milieu [BCM]; Bakker, E.

Kleinschalige houtverbranding: installatie en afname van twee houtkachels ten behoeve van ruimteverwarming

Petten : ECN, 1998. – 26 p.

Keywords: Wood burning appliances; Installation; Performance testing; Oxygen; Carbon dioxide; Carbon monoxide; Hydrocarbons; Nitrogen oxides; Sulfur dioxide; Flue gas; Temperature measurement; Ashes; Mass balance; Energy balance; Combustion

ECN-C--98-023

Neeft, J.P.A.; Oudhuis, A.B.J.; Burk, H. van; ECN. Brandstoffen, Conversie en Milieu [BCM]

Haalbaarheidsstudie naar de verwerkbaarheid van drie reststromen middels pyrolyse

Petten : ECN, 1998. – 56 p.

Keywords: Waste processing; Pyrolysis; Feasibility studies; Gasification; Combustion; Scrap; Municipal wastes; Electronic equipment; Cables; Comparative evaluations; Calorific value; Ashes; Temperature range 0400-1000 K; Pilot plants; Energy efficiency; Investment

ECN-C--98-024

Comans, R.N.J.; Koning, A. de; ... [et al.]; ECN. Brandstoffen, Conversie en Milieu [BCM]
Modelling fluxes and bioavailability of radiocaesium and radiostrontium in freshwaters (Mid-term report ECOPRAQ project)

Petten : ECN, March 1998. – 63 p.

Keywords: Cesium; Strontium; Biological availability; Radionuclide migration; Aquatic ecosystems; Hydrology; Sediment-water interfaces; Validation; Mathematical models; Field tests; Bench-scale experiments; Scavenging; Radiochemistry; Uptake; Radioecological concentration

ECN-C--98-031

Schol, E.; Bosch, A. van den; Ligthart, F.A.T.M.; Römer, J.C.; Ruijg, G.J.; Schaeffer, G.J.; Dinkelmann, G.H.; Kok, I.C.; Paauw, K.F.B. de

Klimaatverandering en lokaal beleid: Amsterdam: beleidsopties en implementatie strategieën ter beperking van de CO₂-emissie

Petten : ECN, 1998. – 270 p.

Keywords: Netherlands; Local government; Climatic change; Regional analysis; Carbon dioxide; Emission; Air pollution abatement; Environmental impacts; Economic impact; Socio-economic factors; Environmental policy; Implementation; Risk assessment; Forecasting; Sectoral analysis; Households; Residential sector; Transportation sector; Energy conservation; Houses; Energy efficiency; Small businesses; Buildings; Energy policy

ECN-C--98-032

Rensman, J.W.; Broek, F.P. van den; Jong, M.; Osch, E.V. van

10 DPA 600 K fracture toughness of 316L(N) ERHII plate material: ITER Task T214, NET deliverables GB5 ECN-4 and GB6 ECN-4

Petten : ECN, 1998. – 23 p.

Keywords: Fracture properties; Stainless steel-316l; Iter tokamak; Breeding blankets; Powder metallurgy; Materials testing; Physical radiation effects; Post-irradiation examination; Hfr reactor; Hot pressing; Joints; Powders; Wall effects; First wall; Helium; Atomic displacements

ECN-C--98-033

Rensman, J.W.; Broek, F.P. van den; Jong, M.; Osch, E.V. van

Fracture toughness of neutron irradiated solid and powder HIP 316L(N): ITER Task T214, NET deliverable GB6 ECN-5

Petten : ECN, 1998. – 35 p.

Keywords: Fracture properties; Stainless steel-316l; Iter tokamak; Breeding blankets; Powder metallurgy; Materials testing; Physical radiation effects; Post-irradiation examination; Hfr reactor; Hot pressing; Joints; Powders; Wall effects; First wall; Helium; Atomic displacements

ECN-C--98-034

Rensman, J.W.; Tjoa, G.L.; Boskeljon, J.; Hoepen, J. van; Osch, E.V. van

Low cycle fatigue properties of neutron irradiated solid-HIP 316L(N): ITER task T214, NET deliverable GB6 ECN-5

Petten : ECN, 1998. – 26 p.

Keywords: Iter tokamak; Stainless steel-316l; Breeding blankets; Hfr reactor; Joints; Post-irradiation examination; Hot pressing; First wall; Atomic displacements; Helium; Temperature range 0273-0400 k; Temperature range 0400-1000 k; Stresses; Strains; Hardening; Ductility; Fatigue

ECN-C--98-035

Osch, E.V. van; Tjoa, G.L.; Boskeljon, J.; Hoepen, J. van

Tensile properties of neutron irradiated solid-HIP 316(N): ITER Task T214, NET deliverable GB6 ECN-5

Petten : ECN, 1998. – 22 p.

Keywords: Iter tokamak; Tensile properties; Stainless steel-316l; Breeding blankets; Hfr reactor; Joints; Post-irradiation examination; Hot pressing; First wall; Atomic displacements; Helium; Temperature range 0273-0400 k; Temperature range 0400-1000 k; Stresses; Strains; Hardening; Ductility

ECN-C--98-036

Hensen, A.; ECN. Brandstoffen, Conversie en Milieu [BCM]

Greenhouse gas emissions from the coffee industry in Costa Rica

Petten : ECN, April 1998. – 46 p.

Keywords: Greenhouse gases; Costa rica; Coffee plants; Food industry; Waste water; Water treatment plants; Emission; Chemical oxygen demand; Water pollution abatement; Anaerobic conditions; Carbon dioxide; Methane; Lakes; Air pollution monitoring

ECN-C--98-040

Gielen, D.J.; Koutstaal, P.R.; Kram, T.; Rooijen, S.N.M. van

Post-Kyoto: effecten op het klimaatbeleid van de Europese Unie

Petten : ECN, 1998. – 34 p.

Keywords: European union; Environmental policy; Climatic change; Environmental impacts; Air pollution abatement; Carbon dioxide; Greenhouse gases; Methane; Nitrous oxide; Cost estimation; Gross national product

ECN-C--98-041

Beeldman, M.; Dril, A.W.N. van; Jeeninga, H.; Koutstaal, P.R.; Kroon, P.; Lange, T.J. de; Menk-veld, M.; Ybema, J.R.

Mogelijkheden voor CO₂-reductie in 2020

Petten : ECN, August 1998. – 101 p.

Keywords: Carbon dioxide; Technology assessment; Emission; Air pollution abatement; Forecasting; Market; Cost benefit analysis; Sectoral analysis; Households; Service sector; Industry; Agriculture; Transportation sector; Electric utilities; Cost estimation; Trade; Permits

ECN-C--98-043

Schuring, E.W.; D'Hulst, D.S.; Osch, E.V. van

Laser welding of irradiated 316L(N) ERHII 1MM plate: NET task deliverable PSM1 GB6 ECN-1

Petten : ECN, 1998. – 36 p.

Keywords: Hfr reactor; Laser welding; Stainless steel-316l; Iter tokamak; Helium; Breeding blankets; Weldability; Tensile properties; Fractography; Microstructure; Hardness; Metallography; Physical radiation effects; Cracking; Gas tungsten-arc welding; Stress analysis; Brittleness; Heat affected zone; Dendrites; Grain boundaries

ECN-C--98-044

Schuring, E.W.; D'Hulst, D.S.; Osch, E.V. van

TIG rewelding facility in ECN Hot Cell Laboratory: installation, first experiments and optimisations NET deliverable PSM1 GB5 ECN-2 en GB6 ECN-1

Petten : ECN, 1998. – 32 p.

Keywords: Test facilities; Hot cells; Hfr reactor; Microstructure; Hardness; Tungsten; Laser welding; Gas tungsten-arc welding; Stainless steel-316l; Iter tokamak; Helium; Welded joints; Performance

ECN-C--98-045

Sloot, H.A. van der; Hoede, D.; ECN. Brandstoffen, Conversie en Milieu [BCM]

The influence of particle size on leaching of elements from coarse granular materials

Petten : ECN, 1998. – 62 p.

Keywords: Particle size; Leaching; Experimental data; Performance testing; Cements; Concretes; Ashes; Standardization; Compliance; Granular materials; Slags; Ph value; Phosphates; Solubility; Elements; Metals

ECN-C--98-046

Boonekamp, P.G.M.

Monitoring energieverbruik 1982-1996: methode, resultaten en perspectieven

Petten : ECN, December 1998. – 158 p.

Keywords: Energy consumption; Data analysis; Time-series analysis; Netherlands; Evaluation; Energy conservation; Energy policy; Sectoral analysis; M codes; Energy balance; Energy sources; Households; Industry; Horticulture; Service sector; Transportation sector; Petroleum refineries; Power plants; Energy efficiency; Socio-economic factors; Supply and demand; Comparative evaluations; Sweden; Federal republic of germany; Spain; United kingdom; Denmark; Market; Agriculture; Construction industry; Buildings; Public utilities; Cogeneration

ECN-C--98-047

Dekker, J.W.M.; ECN. Duurzame Energie, Zon & Wind; Rijs, R.P.P.

Evaluation of the 7th international course on implementation of wind energy, ECN, March 30 - April 10, 1998

Petten : ECN, 1998. – 47 p.

Keywords: Education; Educational facilities; Educational tools; Wind power; Implementation; Developing countries; Evaluation; Technology transfer; Scientific personnel

ECN-C--98-048

Schaaf, B. van der

Assesment of advanced materials development in the European Fusion Long-term Technology Programme: report to the FTSC-P by the Advanced Materials Working Group

Petten : ECN, August 1998. – 35 p.

Keywords: Thermonuclear reactors; Silicon carbides; Vanadium alloys; Titanium alloys; Chromium alloys; Coordinated research programs; Ceramics; Physical properties; Recycling; Comparative evaluations

ECN-C--98-049

Jeeninga, H.; Hilten, O. van

Bepaling bandbreedte in de ontwikkeling van het huishoudelijk elektriciteitsverbruik: vervolgonderzoek naar aanleiding van de studie 'Nieuwe apparaten en leefstijl'

Petten : ECN, 1998. – 77 p.

Keywords: Households; Netherlands; Energy consumption; Electricity; Socio-economic factors; Leisure time activities; Appliances; Income; Forecasting; Comparative evaluations; Historical aspects; Economic development; Prices; Energy efficiency

ECN-C--98-050

Bolech, M. ; Cordfunke, E.H.P. ; Huntelaar, M.E.; ECN. Nuclear Research and Consultancy Group [NRG]

Vapour pressure measurements in the Ce-La-Si-Zr-O system by Knudsen effusion mass spectrometry: interim report THMO Thermochemical Modelling and Data

Petten : ECN, 1998. – 33 p.

Keywords: Silicon oxides; Cerium oxides; Lanthanum oxides; Zirconium oxides; Vapor pressure; Knudsen flow; Binary mixtures; Temperature range 1000-4000 K; Mass spectroscopy; Sample preparation; Thermodynamic activity

ECN-C--98-052

Hensen, A.; ECN. Brandstoffen, Conversie en Milieu [BCM]

Validatie van de methaan-emissie-reductie op stortplaats Nauerna

Petten : ECN, June 1998. – 33 p.

Keywords: Netherlands; Sanitary landfills; Methane; Emission; Validation; Nitrous oxide; Plumes; Extraction; Abundance; Meteorology; Gaussian processes; Comparative evaluations; Data covariances

ECN-C--98-053

Overbeek, J.P.; Warmer, C.J.; Braam, J.

Uitgangspunten levenscyclusanalyse biolicht-project

Petten : ECN, June 1998. – 54 p.

Keywords: Vehicles; Transportation sector; Data compilation; Service life; Reinforced plastics; Composite materials

ECN-C--98-054

Hulle, F.J.L. van

Windenergiepotentieel te Coe, Büttgenbach en Amel (België)

Petten : ECN, September 1998. – 60 p.

Keywords: Wind power; Availability; Belgium; Site characterization; Wind; Wind turbines; Monitoring; Velocity; Turbulence; Data analysis

ECN-C--98-055

Sloot, H.A. van der; Groot, G.J. de; Hoede, D.; ECN. Brandstoffen, Conversie en Milieu [BCM]

Ontwikkeling van een kortdurende test voor vormgegeven bouwstoffen, geïmmobiliseerde afvalstoffen en andere monolithische materialen

Petten : ECN, 1998. – 74 p.

Keywords: Building materials; Solidification; Solid wastes; Leaching; Performance testing; Standardization; Quality control; Concretes; Water saturation; Solubility; pH value; Comparative evaluations; Automation; Sensitivity analysis; Verification; Diffusion; Ashes; Sand; Sludges; Bricks; Multi-element analysis; Elements; Metals

ECN-C--98-056

Korbee, R.; Eenkhoorn, S.; Heere, P.G.T.; Kiel, J.H.A.; ECN. Brandstoffen, Conversie en Milieu [BCM]

Co-gasification of coal and biomass waste in entrained-flow gasifiers: phase 2: exploratory lab-scale experimentation

Petten : ECN, December 1998. – 62 p.

Keywords: Coal gasification; Biomass; Wood wastes; Bench-scale experiments; Test facilities; Experimental data; Ashes; Conversion; Phase transformations; Combined-cycle power plants; Simulation; Systems analysis; Wood fuels; Willows

ECN-C--98-057

Konings, R.J.M.; Bakker, K.; Boerrigter, H.; Damen, P.G.M.; Gruppelaar, H.; Huntelaar, M.E.; Kloosterman, J.L.; Konings, R.J.M.

Recycling van actiniden en splijtingsproducten: jaarverslag onderzoeksprogramma 1997

Petten : ECN, July 1998. – 41 p.

Keywords: Reprocessing; Recycling; Actinides; Research programs; Evaluation; Fissionable materials; Transmutation; Burnup; Plutonium dioxide; Mixed oxide fuels; Water cooled reactors; Radiation protection; Htr reactor; Uranium dioxide; Thorium oxides; Toxicity; Thermal conductivity; Computer calculations; Fuel cycle; Reactor physics; Americium oxides; Supported liquid membranes; Rare earths; Zirconium oxides; Yttrium oxides

ECN-C--98-059

Vermeulen, A.T.; ECN. Brandstoffen, Conversie en Milieu [BCM]

MEDFLUX: development of an automatic deposition monitoring system

Petten : ECN, 1998. – 27 p.

Keywords: Validation; Deposition; Air pollution monitoring; Air pollution monitors; Nitric acid; Nitrous acid; Nitrogen oxides; France; Portugal; Spain; Data acquisition; Data processing; Ozone; Sulfur dioxide; Hydrochloric acid; Computer codes

ECN-C--98-060

Ree, R. van; Korbee, R.; Smidt, R.P. de; Jansen, D.; ECN. Brandstoffen, Conversie en Milieu [BCM]

Co-gasification of coal and biomass in entrained-flow based IGCCs: technical, economic, environmental, and experimentally supported assessment of three concepts

Petten : ECN, October 1998. – 54 p.

Keywords: Environmental impacts; Cost estimation; Energy efficiency; Biomass; Bench-scale experiments; Mass balance; Energy balance; Power generation; Emission; Nitrogen oxides; Heat recovery; Fuel gas; Carbon dioxide; Combined-cycle power plants; Coal gasification; Technology assessment; Systems analysis; Entrainment

ECN-C--98-061

Bos, A.; Eenkhoorn, S.; Jacobs, J.M.; Kiel, J.H.A.; ECN. Brandstoffen, Conversie en Milieu [BCM]

Pressured entrained flow gasification simulator: design, construction and commissioning: executive summary

Petten : ECN, August 1998. – 41 p.

Keywords: Design; Construction; Gasification; Entrainment; Pressurization; Bench-scale experiments; Ashes; Gas burners; Minerals; Simulators; Test facilities; Slags; Heating rate; Commissioning; Particulates

ECN-C--98-062

Ijpelaan, R.; Schie, R.G. van

Praktijkexperiment alternatieve energiebron voor LAE-signaleringsborden: tussenrapportage: installatie- en opstartfase

Petten : ECN, August 1998. – 39 p.

Keywords: Railways; Photovoltaic power supplies; Wind power; Electric generators; Signals; Data analysis; Capacity; Netherlands; Installation; Site selection; Cost benefit analysis

ECN-C--98-064

; Seebregts, A.J.; Kram, T.; Schaeffer, G.J.; Stoffer, A.

Endogenous technological learning: experiments with MARKAL: contribution to Task 2.3 of the EU-TEEM Project

Petten : ECN, December 1998. – 87 p.

Keywords: M codes; Technology assessment; Mathematical models; Learning; Systems analysis; Energy analysis; Energy policy; Research programs; Sensitivity analysis; Carbon dioxide; Emission; Demonstration programs; Investment; Economic development; Optimization; Market; Taxes; Data analysis

ECN-C--98-065

Gielen, D.J.; Gerlagh, T.; Bos, A.J.M.

MATTER 1.0: a MARKAL energy and materials system model characterisation

Petten : ECN, September 1998. – 51 p.

Keywords: M codes; Energy models; Greenhouse gases; Materials; Systems analysis; Mitigation; Wastes; Demand; Forecasting; Service life; Energy efficiency; Technology assessment; Recycling; Energy recovery; Material substitution; Fuel substitution

ECN-C--98-066

Gielen, D.J.; Gerlagh, T.; Bos, A.J.M.

Biomass for energy or materials?: a Western European MARKAL MATTER 1.0 model characterisation

Petten : ECN, November 1998. – 90 p.

Keywords: Biomass; M codes; Materials; Western europe; Bioconversion; Petrochemicals; Liquid fuels; Solid fuels; Electricity; Building materials; Waste processing; Greenhouse gases; Emission; Fuel substitution; Production

ECN-C--98-070

Wiggelinkhuizen, E.J.; Baltus, C.W.A.; ECN. Duurzame Energie, Zon & Wind

Monitoring van zes AC-modules op het ECN-testveld te Petten: evaluatieperiode november 1997 - februari 1998

Petten : ECN, September 1998. – 33 p.

Keywords: Photovoltaic power supplies; Inverters; Performance testing; Field tests; Energy yield; Solar radiation; Monitoring; Systems analysis; Netherlands

ECN-C--98-071

Lako, P.; Ybema, J.R.; Seebregts, A.J.

The long-term potential of fusion power in Western Europe: MARKAL scenarios until 2100

Petten : ECN, December 1998. – 93 p.

Keywords: Thermonuclear reactors; M codes; Forecasting; Reviews; Energy models; Recommendations; Cost estimation; Cost; Western europe; Market; Competition; Cost benefit analysis; Power generation; Investment; Carbon dioxide; Emission; Renewable energy sources; Energy demand; Mineral resources; Fossil fuels; Prices; Technology assessment; Sensitivity analysis; Availability

ECN-C--98-073

Hamelink, J.; Heijdra, J.J.; Borg, N.J.C.M. van der; ECN. Duurzame Energie, Zon & Wind

Numerical quantification of crosstalk in load measurements on the DEBRA blade

Petten : ECN, October 1998. – 21 p.

Keywords: Shear; Rotors; Horizontal axis turbines; Computerized simulation; Dynamic loads; Mechanical vibrations; Strain gages; Comparative evaluations; Data covariances; Sensitivity

ECN-C--98-074

Jansen, J.C.; Ligthart, F.A.T.M.; ECN. Duurzame Energie, Zon & Wind

Petten : ECN, September 1998. – 27 p.

Keywords: China; Greenhouses; Energy efficiency; Microclimates; Renewable energy sources; Feasibility studies; Space heating; Program management

ECN-C--98-075

Schenk, E.P.; Doorn, J. van; Bodegom, M.; ECN. Brandstoffen, Conversie en Milieu [BCM]

Operationele testen circulerend-wervelbedvergasser voor biomassa

Petten : ECN, September 1998. – 51 p.

Keywords: Gasification; Biomass; Biomass conversion plants; Performance testing; Fluidized beds; Circulating systems; Fluidized bed boilers; Willows; Wood wastes; Particle size; Wear; Dolomite; Steam; Tar; Calorific value; Fuel gas; Moisture; Operation; Start-up

ECN-C--98-076

Comans, R.N.J.; Geelhoed, P.A.; Zomeren, A. van; Geusebroek, M.; ECN. Brandstoffen, Conversie en Milieu [BCM]

Belang van opgeloste organische stof bij transport van contaminanten uit baggerspecie

Petten : ECN, October 1998. – 46 p.

Keywords: Dredge spoil; Slurries; Pollutants; Solutes; Organic matter; Ph value; Copper; Diffusion; Validation; Leaching; Cadmium; Lead; Zinc; Nickel; Geochemistry; Bench-scale experiments; Field tests; Spatial distribution; Abundance

ECN-C--98-077

Gilijamse, W.; Menkveld, M.; Ruijg, G.J.; Scheepers, M.J.J.; Beeldman, M.

Energie-infrastructuur Amsterdam: aspecten voor woningcorporaties

Petten : ECN, October 1998. – 80 p.

Keywords: Netherlands; Urban areas; Energy conservation; Residential buildings; Heat distribution systems; Cogeneration; Water heating; Space heating; Energy demand; Internal combustion engines; Environmental effects; Cost estimation; Management

ECN-C--98-078

Kiel, J.H.A.; Schenk, E.P.; ECN. Brandstoffen, Conversie en Milieu [BCM]

Bench-scale testing of HT fuel gas cleaning concepts

Petten : ECN, November 1998. – 51 p.

Keywords: Fuel gas; Hot gas cleanup; Bench-scale experiments; Desulfurization; Design; Halogen compounds; Removal; Adsorbents; Chemical reactors; Test facilities; Packed beds; Fluidized beds; Construction; Iron oxides; Molybdenum oxides

ECN-C--98-081

Slanina, J.; Tüdös, A.; Zwaagstra, O.; ECN. Brandstoffen, Conversie en Milieu [BCM]; Pio, C. ; Koppmann, R.; Czapiewski, K. von ; Larsen, B.; Kotzias, D.; European Commission. Joint Research Centre [JRC] ; Borg, K. van der

Determination of anthropogenic and biogenic contribution to ambient volatile organic carbons

Petten : ECN, October 1998. – 180 p.

Keywords: Pollution sources; Carbon 14; Volatile matter; Emission; Air samplers; Sampling; Interlaboratory comparisons; Sample preparation; Data analysis; Carbonyls; Hydrocarbons; Chemical analysis; Federal republic of germany; Italy; Portugal

ECN-C--98-082

Beeldman, M.; Boonekamp, P.G.M.; Dril, A.W.N. van; Gielen, D.J.; Jeeninga, H.; Koutstaal, P.R.; Kroon, P.; Lako, P.; Lange, T.J. de; Menkveld, M.; Rooijen, S.N.M. van; Ybema, J.R.; Harmelink, M.G.M.; Annema, J.A.; Booij, H.; Feimann, P.F.L.; Olivier, J.G.J.; Spakman, J.; Nagelhout, D.; Brink, R.M.M. van den

Optiedocument voor emissiereductie van broeikasgassen: inventarisatie in het kader van de Uitvoeringsnota Klimaatbeleid

Petten : ECN, October 1998. – 187 p.

Keywords: Environmental policy; Greenhouse gases; Emission; Energy conservation; Transportation sector; Sectoral analysis; Renewable energy sources; Power generation; Carbon dioxide; International agreements; Air pollution abatement; Cost estimation; Financial incentives; Taxes; Trade; Households; Houses; Buildings; Service sector; Solar energy; Wind power; Biomass; Heat pumps; Methane; Agriculture; Nitrous oxide; Sulfur fluorides; Industry; Carbon dioxide fixation; Joint ventures; Implementation; Socio-economic factors; Political aspects; Economic impact; Sensitivity analysis

ECN-C--98-085

Lako, P.; Seebregts, A.J.

Characterisation of power generation options for the 21st century: report on behalf of Macro task E1

Petten : ECN, December 1998. – 57 p.

Keywords: Power generation; M codes; Western europe; Nuclear power; Thermonuclear reactors; Nuclear power plants; Cost; Cost estimation; Renewable energy sources; Pulverized fuels; Coal; Lignite; Petroleum; Natural gas; Power; Fossil-fuel power plants; Numerical data; Investment

ECN-C--98-086

Nauta, J.P.; Reijnders, H.P.E.M.; Oudhuis, A.B.J.

Implementatieplan verwerking shredderafval

Petten : ECN, October 1998. – 31 p.

Keywords: Shredders; Scrap; Municipal wastes; Waste processing; Materials recovery; Chemical composition; Comparative evaluations; Recycling; Licensing regulations; Legislation

ECN-C--98-088

Soppe, W.J.; Heide, A.S.H. van der; ECN. Duurzame Energie, Zon & Wind

3D-simulaties van mc-Si-zonnecellen: gebruikershandleiding en enige voorbeelden van berekeningen met ISE-TCAD

Petten : ECN, November 1998. – 56 p.

Keywords: Computer program documentation; Manuals; Silicon solar cells; Three-dimensional calculations; I codes; Computerized simulation; Geometry; Charge carriers; Recombination; Carrier density; Polycrystals; Computer calculations

ECN-C--98-091

Voors, P.I.; Baard, J.H.; ECN. Nuclear Research and Consultancy Group [NRG]

NVN 5694 intralaboratorium-validatie: haalbaarheidsstudie voor interlaboratorium-validatie

Petten : ECN, November 1998. – 100 p.

Keywords: Interlaboratory comparisons; Polonium 210; Lead 210; Validation; Calibration standards; Sample preparation; Radioactivity; Milk products; Data covariances; Gas condensates; Fiberglass; Sediments; Sea bed; Filters

ECN-C--98-092

Vuuren, V.C. van; Arkel, W.G. van; Bosch, A. van den; Schol, E.; Bosveld, W.

Telewerken in Amsterdam: telewerkpotentieel en milieu-effecten

Petten : ECN, December 1998. – 109 p.

Keywords: Netherlands; Communications; Environmental impacts; Public opinion; Energy consumption; Energy conservation; Working conditions; Houses; Office buildings; Carbon dioxide; Transport

ECN-C--98-093

Kroon, P.; Beeldman, M.; Boonekamp, P.G.M.; Bosch, A. van den; Dril, A.W.N. van; Hilten, O. van; Jeeninga, H.; Lange, T.J. de; Menkveld, M.; Ruijg, G.J.

Extra energiebesparing nader onderzocht: achtergronddocument bij de Energiebesparingsnota 1998

Petten : ECN, November 1998. – 124 p.

Keywords: Netherlands; Energy conservation; Energy policy; Energy consumption; Economic development; Energy efficiency; Energy efficiency standards; Buildings; Financial incentives; Taxes; Sectoral analysis; Agriculture; Industry; Households; Forecasting; Transportation sector; Sensitivity analysis; Waste heat utilization; Cogeneration

ECN-C--98-095

Lako, P. ; Ybema, J.R.; Seebregts, A.J. ; Gilli, P.V.; Kurz, R. ; Kolb, G. ; Morthorst, P.E.; Lemming, J. ; Villeneuve, B.

Long-term scenarios and the role of fusion power. Synopsis of SEO studies, conclusions and recommendations

Petten : ECN, Dec 1998. – 35 p.

Keywords:

ECN-C--98-096

Dekker, J.W.M.; Pierik, J.T.G.; ECN. Duurzame Energie, Zon & Wind

European wind turbine standards II: executive summary

Petten : ECN, December 1998. – 34 p.

Keywords: Standardization; Standards; Wind turbines; Europe; Wind; Dynamic loads; Failures; Design; Materials testing; Performance testing; Airfoils; Site characterization; Velocity

ECN-C--98-098

Baltus, C.W.A.; Borg, N.J.C.M. van der; Dijk, V.A.P. van; Reinders, A.H.M.E. ; Kil, A.J. ; Zolingen, R.J.C. van

The suitability of several methods to quantify energy losses in PV systems

Petten : ECN, December 1998. – 37 p.

Keywords: Photovoltaic power supplies; Energy losses; Interconnected power systems; Comparative evaluations; Data analysis; Systems analysis; Field tests

ECN-C--98-100

Hulle, F.J.L. van; Boer, A.T. de; Baigarin, K.

Wind energy in Kazakhstan: pt. 2: pilot project in Akmola Oblast

Petten : ECN, December 1998. – 59 p.

Keywords: Kazakhstan; Wind turbines; Wind power; Demonstration programs; Water supply; Feasibility studies; Operation; Maintenance; Program management; Environmental effects; Legal aspects; Energy demand

ECN-C--98-102

Sloot, H.A. van der; Hoede, D.; Comans, R.N.J.; Groot, G.J. de; ECN. Brandstoffen, Conversie en Milieu [BCM]

Evaluatie nikkel-uitloging uit kalkzandsteen

Petten : ECN, December 1998. – 26 p.

Keywords: Sandstones; Leaching; Building materials; Nickel; Ph value; Diffusion

ECN-C--98-106

Stempniewicz, M.; Hart, J.; ECN. Nuclear Research and Consultancy Group [NRG]

Post-test analyses of PANDA test P7

Petten : ECN, December 1998. – 54 p.

Keywords: Reactor safety experiments; Reactor safety; BWR type reactors; Test facilities; After-heat removal; Depressurization systems; Computerized simulation; Computer calculations; Comparative evaluations; Experimental data; Helium

ECN-C--98-107

Slanina, J.; ECN. Brandstoffen, Conversie en Milieu [BCM]

Report on the activities of the international consultant, prof. J. Slanina, in the project "Capacity development for NOx pollution control in Guiyang"

Petten : ECN, December 1998. – 64 p.

Keywords: Nitrogen oxides; China; Air pollution; Emission; Road transport; Urban areas; Carbon monoxide; Ozone; Air quality; Air pollution abatement; Local government; Environmental policy

ECN-C--98-108

Slanina, J.; ECN. Brandstoffen, Conversie en Milieu [BCM]

Report on the activities of the international consultant, Prof. J. Slanina, in the project "Capacity development for NOx pollution control in Guangzhou"

Petten : ECN, December 1998. – 30 p.

Keywords: Nitrogen oxides; China; Air pollution; Emission; Road transport; Urban areas; Carbon monoxide; Ozone; Air quality; Air pollution abatement; Local government; Environmental policy

ECN-C--98-109

Gerlagh, T.

Biomass for greenhouse gas emission reduction: Western European land availability

Petten : ECN, December 1998. – 30 p.

Keywords: Biomass; Availability; Air pollution abatement; Greenhouse gases; Western europe; Land use; Productivity; Forestry; European union

ECN-C--98-110

Comans, R.N.J.; Geelhoed, P.A.; ECN. Brandstoffen, Conversie en Milieu [BCM]

Speciatie van arseen in verontreinigde en gereinigde grond: onderzoek naar mogelijkheden tot verhoging van het reinigingsrendement

Petten : ECN, December 1998. – 20 p.

Keywords: Arsenic; Soils; Sand; Iron hydroxides; Iron oxides; Extraction; Leaching; Ph value; Geochemistry; Cleaning; Remedial action

ECN-C--99-011

Eikelboom, D.W.K.

Ladingsdrager-recombinatie in (multi)kristallijn silicium zonnecellen: CV-MOS en Donker I-V

Petten : ECN, August 1998. – 88 p.

Keywords: Charge carriers; Recombination; Silicon solar cells; Polycrystals; Electric conductivity; Capacity; Electric measuring instruments; Performance testing; Semiconductor diodes; Mos solar cells; P-n junctions; Design

ECN-C--99-038

Dril, A.W.N. van; Arkel, W.G. van; Dougle, P.G.; Jeeninga, H.; Kroon, P.; Uytterlinde, M.A.

Energy efficiency indicators in the Netherlands: Dutch contribution to the project 'Cross country comparison on energy efficiency' Phase 4

Petten : ECN, December 1998. – 64 p.

Keywords: Energy efficiency; Netherlands; Comparative evaluations; Reviews; Data analysis; Environmental policy; Sectoral analysis; Service sector; Households; Energy demand; Energy consumption; Energy expenses; Economic development; Energy conservation; Industry; Transportation sector

ECN-C--99-073

Dekker, J.; Pierik, J.

European wind turbine standards II. Part 5. Site evaluation (European wind turbine standards II. Project results)

Petten : ECN, Jun 1998. – 51577589 p.

Keywords:

3.2 I-Publications

ECN-I--97-028

Hans, E.W.

ELMA: model of a liberalized electricity market

Petten : ECN, 1998. – 90 p.

Keywords: Western europe; Electric utilities; European union; E codes; Market; Data analysis; Pricing regulations; Pollution regulations; Investment; Trade; Peak load; Load management; Belgium; France; Netherlands; Federal republic of germany; Electric power industry; Power generation; Prices; Mathematical models; Energy policy; Energy expenses; Allocations; Contract management; Manuals

ECN-I--97-035

Bakker, N.; Beemsterboer, C.J.J.

Visualisatie van de spanningswisselingen in cyclisch belaste componenten

Petten : ECN, July 1998. – 62 p.

Keywords: Stress analysis; Stress intensity factors; S-n diagram; Dynamic loads; Static loads; Finite element method; Fatigue; Geometry; Reactors; Reactor components

ECN-I--97-039

Verwey, J.J.; Hogenbirk, A.

Radiation dose-distribution calculations with MCNP at ECN

Petten : ECN, 1998. – 18 p.

Keywords: Monte carlo method; Radiation dose distributions; Dose-response relationships; Liver; Patients; Internal irradiation; Gamma sources

ECN-I--97-047

Schuring, E.W.

Microstructural investigation of the NESC-1 clad layer and base material

Petten : ECN, 1998. – 29 p.

Keywords: Microstructure; Heat affected zone; Hardness; Austenitic steels; Martensitic steels; Layers; Segregation; Brittleness; Ceramics; Chemical composition

ECN-I--98-002

Ketema, D.J.

Neutron metrology in the HFR: steel irradiation: R276-09 (MANIA)

Petten : ECN, 1998. – 32 p.

Keywords: Hfr reactor; Austenitic steels; Water cooled reactors; Physical radiation effects; Atomic displacements; Reactivity; Fast neutrons; Thermal neutrons; Damaging neutron fluence; Stainless steel-316l; First wall; Net tokamak; Interstitial helium generation

ECN-I--98-003

Ketema, D.J.

Neutron metrology in the HFR: steel irradiation: R276-10 (MANIA)

Petten : ECN, 1998. – 32 p.

Keywords: Hfr reactor; Austenitic steels; Water cooled reactors; Physical radiation effects; Atomic displacements; Reactivity; Fast neutrons; Thermal neutrons; Damaging neutron fluence; Stainless steel-316; First wall; Net tokamak; Interstitial helium generation

ECN-I--98-004

Ketema, D.J.

Neutron metrology in the HFR: steel irradiation: R276-11 (MANIA)

Petten : ECN, 1998. – 32 p.

Keywords: Hfr reactor; Austenitic steels; Water cooled reactors; Physical radiation effects; Atomic displacements; Reactivity; Fast neutrons; Thermal neutrons; Damaging neutron fluence; Stainless steel-316; First wall; Net tokamak; Interstitial helium generation

ECN-I--98-008

Freudenreich, W.E.; Ketema, D.J.

Experiment R268-06/07/08 (SIWAS 06/07/08): activity calculations

Petten : ECN, 1998. – 41 p.

Keywords: Atomic displacements; Sample holders; Chemical composition; Transmutation; Reactivity; Neutron fluence; Austenitic steels; Martensitic steels; Stainless steel-316

ECN-I--98-009

Selow, E.R. van; Ouden, A.C.B. den; Wijk, J.J. van

Neuro-fuzzy control in a steam boiler at Hoogovens

Petten : ECN, 1998. – 44 p.

Keywords: Metal industry; Smelters; Boilers; Fuzzy logic; Netherlands; Nitrogen oxides; Air pollution control; Computerized control systems; Energy efficiency; Neural networks; Process control; Nonlinear problems; Performance; Fuel-air ratio; Systems analysis

ECN-I--98-010

Selow, E.R. van; Ouden, A.C.B. den; Wijk, J.J. van

Geavanceerd regelen: de intelligente oplossing

Petten : ECN, 1998. – 12 p.

Keywords: Control systems; Fuzzy logic; Neural networks; Electric heating; Steam generation; Water heaters; Process control

ECN-I--98-011

Wilde, P.J.C.J. de; ECN. Duurzame Energie, Zon & Wind

Integratie van ontwikkelde energiebesparende componenten in bestaande gebouwconcepten: tussenrapportage onderzoeksjaar 1996-1997

Petten : ECN, 1998. – 106 p.

Keywords: Buildings; Energy conservation; Design; Computerized simulation; Computer codes; Computer-aided design; Mathematical models; Functional models; Computer calculations

ECN-I--98-013

Laan, J.G. van der; Bakker, K.; Fokkens, J.H.; Haverkate, B.R.W.; Sciolla, C.M.; Conrad, R.; European Commission. Joint Research Centre [JRC]. Institute for Advanced Materials [IAM]

In-pile testing of HCPB submodules: feasibility study for the European Blanket Project: final report

Petten : ECN, 1998. – 43 p.

Keywords: In pile loops; Breeding blankets; Feasibility studies; Helium cooled reactors; Pebble bed reactors; Performance testing; Ceramics; Systems analysis; Thermal analysis; Structure factors; Power density; Temperature distribution; Lithium; Burnup; Design; Irradiation capsules; Post-irradiation examination

ECN-I--98-014

Ketema, D.J.

Neutron metrology in the HFR: stainless steel compact tension and tensile specimens irradiation experiment R312-01/02 (SINTEX): evaluation report

Petten : ECN, 1998. – 62 p.

Keywords: Hfr reactor; Stainless steels; Austenitic steels; Water cooled reactors; Physical radiation effects; Tensile properties; Surface tension; Atomic displacements; Reactivity; Fast neutrons; Thermal neutrons; Damaging neutron fluence; Interstitial helium generation**ECN-I--98-016**

Lycklama &grave; Nijeholt, J.A.

CFD modelling of the simplified Johnson Matthey membrane module

Petten : ECN, 1998. – 35 p.

Keywords: Flow models; Membranes; Functional models; Hydrogen; Mass transfer; Three-dimensional calculations; Boundary conditions; Pipes; Cylinders; Counter current; Binary mixtures; Hydrodynamics; Velocity**ECN-I--98-018**

Burgers, A.R.; ECN. Duurzame Energie, Zon & Wind

A program for modelling surface recombination velocities

Petten : ECN, 1998. – 24 p.

Keywords: S codes; Computer program documentation; Velocity; Recombination; Defects; Graded band gaps; Gaussian processes; Passivation; Charge density; Silicon solar cells**ECN-I--98-019**

Oppe, J.; Haas, J.B.M. de; Kuijper, J.C.

PANTHERMIX (PANTHER-THERMIX): user manual

Petten : ECN, 1998. – 27 p.

Keywords: P codes; Computer program documentation; Hydraulics; Power distribution; Temperature distribution; Time dependence; Steady-state conditions; Transients; Geometry; Manuals**ECN-I--98-020**

Rijt, P.J.N.M. van de; ECN. Duurzame Energie, Zon & Wind

Overview of standards and guidelines for photovoltaic (PV) systems: ed. 2

Petten : ECN, April 1998. – 22 p.

Keywords: Photovoltaic power supplies; Standards; Recommendations; Regulations; Europe; Japan; Usa; Canada**ECN-I--98-021**

Dassel, G.; Buurveld, H.A.

Gamma spectrometry of SIWAS R268-07: gamma scan wires 1 through 5

Petten : ECN, 1998. – 94 p.

Keywords: Cobalt 58; Manganese 54; Cobalt 60; Gamma spectroscopy; Atomic displacements; Experimental data; Irradiation procedures; Stainless steel-316; Neutron fluence; Peaks

ECN-I--98-022

Freudenreich, W.E.; Ketema, D.J.

Experiment R285-08 (ILAS 8): activity calculations

Petten : ECN, 1998. – 23 p.

Keywords: Atomic displacements; Sample holders; Chemical composition; Transmutation; Stainless steels; Reactivity; Neutron fluence

ECN-I--98-027

Baard, J.H.; Ketema, D.J.; Hoving, A.H.

Neutron metrology in the HFR: steel irradiation R287-03 (CHARIOT-03)

Petten : ECN, June 1998. – 50 p.

Keywords: Hfr reactor; Water cooled reactors; Physical radiation effects; Tensile properties; Surface tension; Atomic displacements; Reactivity; Fast neutrons; Thermal neutrons; Damaging neutron fluence; Interstitial helium generation; Sample holders; Monte carlo method; Experimental data; Ferritic steels; Martensitic steels; Charpy test

ECN-I--98-028

Ketema, D.J.; ECN. Nuclear Research and Consultancy Group [NRG]

Neutron metrology in the HFR: Irradiation of Low Activation Steel specimens (ILAS) : evaluation report

Petten : ECN, 1998. – 46 p.

Keywords: Hfr reactor; Stainless steels; Austenitic steels; Water cooled reactors; Physical radiation effects; Tensile properties; Surface tension; Atomic displacements; Reactivity; Fast neutrons; Thermal neutrons; Damaging neutron fluence; Interstitial helium generation; Sample holders; Monte carlo method; Experimental data

ECN-I--98-033

Uyterlinde, M.A.; Koutstaal, P.R.

Landenvergelijking energieverbruik en -beleid: achtergronddocument bij het rapport Monitoring energieverbruik en -beleid nationale analyse 1982-1996

Petten : ECN, 1998. – 77 p.

Keywords: Energy consumption; Denmark; Federal Republic of Germany; Spain; United Kingdom; Sweden; Netherlands; Energy policy; Energy analysis; Data analysis; Comparative evaluations; Energy conservation; Energy efficiency; Energy demand; Supply and demand; Environmental policy; Sectoral analysis; Industry; Households; Service sector; Economic development; Prices; Renewable energy sources; Transportation sector; Fossil fuels; Agriculture; Fisheries; Fishing industry; European Union; Carbon dioxide; Emission; Market

ECN-I--98-034

Tjoa, G.L.; Boef, R. den; Bakker, J.B.M.; Beers, M.; European Commission. Joint Research Centre [JRC]. Institute for Advanced Materials [IAM]

Faciliteit voor kerfslagproeven aan onbestraald materiaal en de invloed van de kerffabricage op het kerfslaggedrag

Petten : ECN, 1998. – 43 p.

Keywords: Charpy test; Test facilities; Chromium steels; Comparative evaluations; Bench-scale experiments; Chromium alloys; Notches

ECN-I--98-036

Roelofs, F.; ECN. Nuclear Research and Consultancy Group [NRG]

Koppeling STAR-ANSYS

Petten : ECN, December 1998. – 25 p.

Keywords: A codes; S codes; Geometry; Steady-state conditions; Laminar flow; Turbulent flow; Heat transfer; Tensile properties; Finite element method

ECN-I--98-037

Freudenreich, W.E.; Ketema, D.J.; ECN. Nuclear Research and Consultancy Group [NRG]

Experiments R312-03/04 (SINEXT-03/04): activity calculations

Petten : ECN, 1998. – 16 p.

Keywords: Atomic displacements; Sample holders; Chemical composition; Transmutation; Stainless steels; Reactivity; Neutron fluence

ECN-I--98-038

Lange, T.J. de; Dril, A.W.N. van; Dienst Landbouwkundig Onderzoek. Landbouw-Economisch Instituut [LEI-DLO]

Mogelijkheden voor toepassing van hernieuwbare energie in de glastuinbouw 1995-2010

Petten : ECN, August 1998. – 47 p.

Keywords: Renewable energy sources; Greenhouses; Netherlands; Forecasting; Socio-economic factors; Prices; Heat pumps; Wind turbines; Heat storage; Geothermal energy; Sensitivity analysis; Aquifers; Seasonal thermal energy storage; Solar energy

ECN-I--98-039

Baard, J.H.; Appelman, K.H.; Ketema, D.J.; ECN. Nuclear Research and Consultancy Group [NRG]

Neutron metrology in the HFR: vanadium irradiation R287-01 (CHARIOT-01)

Petten : ECN, 1998. – 37 p.

Keywords: Hfr reactor; Vanadium alloys; Austenitic steels; Water cooled reactors; Physical radiation effects; Tensile properties; Surface tension; Atomic displacements; Reactivity; Fast neutrons; Thermal neutrons; Damaging neutron fluence; Interstitial helium generation; Sample holders; Monte carlo method; Experimental data

ECN-I--98-040

Ketema, D.J.

Neutron metrology in the HFR: Irradiation of Low Activation Steel Specimens R285-05 (ILAS): evaluation report

Petten : ECN, June 1998. – 46 p.

Keywords: Hfr reactor; Water cooled reactors; Physical radiation effects; Tensile properties; Surface tension; Atomic displacements; Reactivity; Fast neutrons; Thermal neutrons; Damaging neutron fluence; Interstitial helium generation; Sample holders; Monte carlo method; Experimental data; Ferritic steels; Martensitic steels; Charpy test; Stainless steels

ECN-I--98-041

Wijk, J.J. van; Selow, E.R. van

Analyse elektriciteitsverbruik ECN in het kader van demand side management: interim-rapport

Petten : ECN, July 1998. – p.

Keywords:

ECN-I--98-042

Kikstra, J.F.

Conceptual design for the energy conversion system of the ACACIA nuclear cogeneration plant

Petten : ECN, July 1998. – 27 p.

Keywords: Dual-purpose power plants; Cogeneration; Htgr type reactors; Design; Energy conversion; Combined cycles; Gas turbines; Steam generation; Energy efficiency; Sensitivity analysis

ECN-I--98-044

Goos, C.; ECN. Nuclear Research and Consultancy Group [NRG]

Modelonderzoek naar het compactiegedrag van nat zoutgruis: stage-verslag

Petten : ECN, December 1998. – 31 p.

Keywords: Compacting; Salt caverns; Radioactive waste disposal; Particulates; Shape; Cubic lattices; Salts; Creep; Mathematical models; Experimental data; Theoretical data; Fcc lattices; Porosity; Salt deposits

ECN-I--98-045

Rak, Z.S.

Photocatalytic reactor for chemical processes

Petten : ECN, 1998. – 34 p.

Keywords: Chemical reactors; Catalysis; Photochemical reactions; Titanium oxides; Sol-gel process; Chemical vapor deposition; Hydrogen production; Methanol; Carbon dioxide; Visible radiation; Chromium ions; Iron ions; Catalysts; Photochemistry; Cost; Thin films

ECN-I--98-047

Goeij, W.C. de

Implementation of bending: torsion coupling in the design of a wind turbine rotor blade

Petten : ECN, October 1998. – 149 p.

Keywords:

ECN-I--98-048

Spoelstra, S.

Eco-efficiency van een chemische warmtepomp

Petten : ECN, October 1998. – p.

Keywords: Chemical heat pumps; Efficiency; Exergy; Service life; Life cycle analysis; Lca; Cost benefit analysis; Design; Boilers

ECN-I--98-050

Wees, M.T. van; Harmelen, A.K. van; Uytterlinde, M.A.

EURIO - Keep in Touch: country reports on energy supply and energy modelling (phase 2)

Petten : ECN, October 1998. – 152 p.

Keywords: Energy policy; Czech republic; Latvia; Lithuania; Bulgaria; Romania; Russian federation; Poland; Hungary; Slovenia; Supply and demand; Energy supplies; Energy models; Planning; Optimization; Environmental policy; Economic policy; Economic impact; Energy efficiency

ECN-I--98-051

Baard, J.H.; ECN. Nuclear Research and Consultancy Group [NRG]

Nuclear Data Library Table (version November 1998)

Petten : ECN, November 1998. – 70 p.

Keywords: Nuclear data collections; Neutron fluence; Half-life; Decay; Radioisotopes; Cross sections; Kerma; Radioactivity

ECN-I--98-056

Haas, J.B.M. de; Wallerbos, E.J.M.; Technische Universiteit Delft. Interfacultair Reactor Instituut [IRI]

Analysis of the HTTR with Monte-Carlo and diffusion theory: an IRI-ECN intercomparison [IRI-131-99-004]

Petten : ECN, September 1998. – 45 p.

Keywords:

ECN-I--98-057

Pijlgroms, B.J.; ECN. Nuclear Research and Consultancy Group [NRG]

MCNP calculations for the HCPB Submodules In-pile Test

Petten : ECN, November 1998. – 41 p.

Keywords: Monte carlo method; Pebble bed reactors; Physical radiation effects; Neutronic damage functions; Tritium; Breeding blankets; Power density; Cross sections; In pile loops; Reaction kinetics; Helium cooled reactors; Neutron flux

ECN-I--98-061

Verkerk, E.C.

Resonance treatment with the subgroep method in WIMS

Petten : ECN, October 1998. – 16 p.

Keywords: Shielding; Collisions; Resonance; Cross sections; Computer calculations; W codes; Resonance absorption; Neutron flux; Resonance integrals; Dilution; Hydrogen; Probability; Spatial distribution; Geometry

ECN-I--98-066

Bakker, K.; ECN. Nuclear Research and Consultancy Group [NRG]

Thermal and mechanical analyses for the HCPB submodules in-pile test

Petten : ECN, December 1998. – 34 p.

Keywords: Helium cooled reactors; Thermal analysis; Mechanical tests; Temperature distribution; Stress analysis; Pebble bed reactors

3.3 R-Publications

ECN-R--97-007

Bende, E.E.

Maximisation of the doppler effect in thermal reactors

Petten : ECN, 1998. – 57 p.

Keywords: Doppler coefficient; Doppler effect; Thermal reactors; Reactivity; Geometry; Thorium 232; Plutonium 240; Uranium 238; Calculation methods; Resonance escape probability; Dancoff correction; Resonance integrals; Inhour equation; Neutron slowing-down theory; Moderator-fuel ratio

ECN-R--97-012

Freudenreich, W.E.; Gruppelaar, H.; Hogenbirk, A.; Koning, A.J.

Accelerator-driven-systems TH-ADS benchmark calculations: results of stage 1

Petten : ECN, 1998. – 35 p.

Keywords: Benchmarks; Uranium 233; Enriched uranium; Void coefficient; Reactivity; Power distribution; Burnup; Spallation; Reactor physics; Accelerators; Monte carlo method; Nuclear data collections; Multiplication factors

ECN-R--97-015

Siccama, N.B.; Koning, H.

Afterheat removal from a helium reactor under accident conditions

Petten : ECN, 1998. – 43 p.

Keywords: Heat transfer; After-heat removal; Helium cooled reactors; Benchmarks; Reactor accidents; C codes; Computer calculations; Boundary conditions; Temperature dependence; Reactor cores; Forced convection

ECN-R--97-016

Roelofs, F.; Bakker, N.

Dynamische analyses reactorgebouw theoretische grondslagen

Petten : ECN, 1998. – 107 p.

Keywords: Static loads; Dynamic loads; Reactors; Construction; Mathematical models; Harmonics; Numerical analysis; Fourier transformation; Eigenfrequency; Eigenvalues; Eigenvectors; Stochastic processes; Finite element method

ECN-R--97-017

Kruijf, W.J.M. de; Freudenreich, W.E.

On the use of WIMS-7 for calculations on accelerator-driven systems

Petten : ECN, 1998. – 27 p.

Keywords: Benchmarks; Burnup; Reactor physics; Accelerators; Multiplication factors; W codes; Computer calculations; Liquid metal cooled reactors; Neutron spectra; Transmutation; Criticality; Void coefficient; Power distribution; Monte carlo method; Spallation; Power density; Spectral functions

ECN-R--98-002

; Schaaf, B. van der; ... [et al.]; ECN. Nuclear Research and Consultancy Group [NRG]

ITER ISDC assessment for blanket test module application

Petten : ECN, October 1998. – 45 p.

Keywords: Iter tokamak; Design; Breeding blankets; Austenitic steels; Martensitic steels; Ferritic steels; Program management

ECN-R--98-003

Komen, E.M.J.; Houkema, M.

CFD modelling of natural convection: validation report

Petten : ECN, 1998. – 54 p.

Keywords: Natural convection; Computer calculations; Theoretical data; Experimental data; Comparative evaluations; C codes; Geometry; Boundary conditions; Turbulence; Laminar flow; Turbulent flow; Equations; Two-dimensional calculations; Validation; Reynolds number; Heat transfer; Isotherms; Velocity; Cavities

ECN-R--98-004

Haverkate, B.R.W.

High temperature gas cooled reactor applications and future prospects: proceedings of an IAEA Technical Committee Meeting held in Petten, the Netherlands, 10-12 November 1997

Petten : ECN, September 1998. – 246 p.

Keywords: Indonesia; Gas cooled reactors; Evaluation; Reactor safety; Coal liquefaction; Natural gas fields; Natural gas

ECN-R--98-005

Haverkate, B.R.W.; ECN. Nuclear Research and Consultancy Group [NRG]

High temperature engineering research facilities and experiments: proceedings of an OECD/NEA workshop held in Petten, the Netherlands, 12-14 November, 1997

Petten : ECN, September 1998. – 214 p.

Keywords: China; Research and test reactors; Reactor safety experiments; Pebble bed reactors; Htgr type reactors; Design; Reactor technology; Reactor operation; Systems analysis; Performance testing; Depressurization; Reactor safety; Pressure dependence; Simulation

ECN-R--98-007

Kloosterman, J.L.

Multirecycling of plutonium in advanced PWRs

Petten : ECN, 1998. – 85 p.

Keywords: Reprocessing; Plutonium oxides; Pwr type reactors; Moderator-fuel ratio; Void coefficient; Temperature coefficient; Boron; Reactivity worths; Toxicity; Americium; Curium; Spent fuels; Uranium oxides; Mass balance; Burnup; Criticality; Computer calculations; Mixed oxide fuels; Reactor lattice parameters

ECN-R--98-008

Gruppelaar, H.; Kloosterman, J.L.; Konings, R.J.M.; ECN. Nuclear Research and Consultancy Group [NRG]

Advanced technologies for the reduction of nuclear waste

Petten : ECN, 1998. – 103 p.

Keywords: Radioactive waste processing; Technology assessment; Reviews; Transmutation; Actinides; Fission products; Uranium; Plutonium; Recycling; Transuranium elements; Thorium cycle; Mixed oxide fuels; Neptunium; Americium; Curium; Forecasting

ECN-R--98-009

Damen, P.G.M.; Kloosterman, J.L.

Recycling of plutonium: a study on the recycling of plutonium produced in the nuclear power plants of the Netherlands

Petten : ECN, June 1998. – 64 p.

Keywords: Plutonium recycle; Plutonium; Netherlands; Borssele reactor; Dodewaard reactor; Mixed oxide fuels; Candu type reactors; Pwr type reactors; Htr reactor; Fast reactors

ECN-R--98-010

Kloosterman, J.L.; Khorochev, M.

Multirecycling of actinides in thorium based fuels

Petten : ECN, 1998. – 28 p.

Keywords: Reprocessing; Spent fuels; Thorium oxides; Actinides; Uranium 235; Temperature coefficient; Highly enriched uranium; Moderately enriched uranium; Void coefficient; Boron; Reactivity worths; Burnup; Toxicity; Plutonium 238; Protactinium; Slightly enriched uranium; Burnable poisons; Moderator-fuel ratio; Reactor lattice parameters

ECN-R--98-011

Koning, A.J.; ECN. Nuclear Research and Consultancy Group [NRG]; Chadwick, M.B.; Young, P.G.

ENDF/B-VI neutron and proton data files up to 150 MeV for ⁶³Cu and ⁶⁵Cu

Petten : ECN, 1998. – 19 p.

Keywords: Copper 63; Copper 65; Data compilation; Cross sections; Nuclear reactions; Direct reactions; Theoretical data; Experimental data; Comparative evaluations; Neutrons; Protons; Recoils; Particles; Nuclear data collections; MeV range 100-1000

ECN-R--98-012

Koning, A.J.; ECN. Nuclear Research and Consultancy Group [NRG]; Chadwick, M.B.; Macfarlane, R.E.; Mashnik, S.; Wilson, W.B.

Neutron and proton transmutation-activation cross section libraries to 150 MeV for application in accelerator-driven systems and radioactive ion beam target-design studies

Petten : ECN, 1998. – 120 p.

Keywords: Nuclear data collections; Cross sections; Transmutation; Radioactive wastes; Mev range 100-1000; Accelerators; Radioactive ion beams; Activation analysis; Neutrons; Protons; Tritium production reactors; Mev range 10-100; Nuclear models; Benchmarks; Excitation functions; Data analysis; Evaluated data

ECN-R--98-013

Schuring, E.W.

A microstructural study of F82H-MOD: plate, powder HIP and EB and TIG weldments

Petten : ECN, 1998. – 68 p.

Keywords: Microstructure; Ferritic steels; Martensitic steels; Hot pressing; Plates; Powders; Welded joints; Electron beam welding; Gas tungsten-arc welding; Grain boundaries; Carbides; Segregation; Hardness; Tantalum oxides; Zirconium oxides; Titanium oxides; Tungsten oxides; Inclusions

ECN-R--98-014

Gruppelaar, H.; Kloosterman, J.L.; Pijlgroms, B.J.; ... [et al.]

Status of pseudo fission product cross sections for fast reactors: results of the SWG17, International Working Party on Evaluation Coordination of the Nuclear Science Committee, NEA-OECD

Petten : ECN, August 1998. – 95 p.

Keywords: Fbr type reactors; Reactivity; Neutron spectra; Adjoint flux; Benchmarks; Capture; Cross sections; Experimental data; Fission products; Inelastic scattering; Multigroup theory; One-group theory; Nuclear data collections

ECN-R--98-015

Brink, H.M. ten; ECN. Brandstoffen, Conversie en Milieu [BCM]; Dorland, R. van; Lelieveld, J.; Swart, D.P.J.

AEROSOL; cycle and influence on the radiation balance ; MEMORA: MEasurement and MOdeling of the reduction of Radiation by Aerosol : cluster project in the National Research Programme on Global Air Pollution and Climate Change nr. 951205: report on Phase 1: 1996-1997

Petten : ECN, August 1998. – 48 p.

Keywords: Aerosols; Air pollution monitoring; Solar radiation; Light scattering; Sulfates; Europe; Atmospheric chemistry; Nitrates; Netherlands; Data covariances; Regional analysis; Mathematical models; Progress report

ECN-R--98-016

Bloemen, H.; Bree, L. van ; Krijgsheld, K. ; Brink, H.M. ten; ECN. Brandstoffen, Conversie en Milieu [BCM]

Inventarisatie van beleidsvragen en onderzoek rond fijn stof in Nederland

Petten : ECN, August 1998. – 50 p.

Keywords: Particulates; Dusts; Aerosols; Netherlands; Research programs; Reviews; Evaluation; Air quality; Emission; Public health; Air pollution; Air pollution abatement; Air pollution control; Air pollution monitoring; Risk assessment

ECN-R--98-020

Pijlgroms, B.J.; Hogenbirk, A.; Oppe, J.; ECN. Nuclear Research and Consultancy Group [NRG]

Acceleration of the MCNP branch of the OCTOPUS depletion code system

Petten : ECN, September 1998. – 36 p.

Keywords: Monte carlo method; Burnup; Cross sections; Validation; Computer program documentation; Activation analysis; O codes; Computer calculations; Criticality; Neutron transport; Photon transport; Data processing

ECN-R--98-022

Freudenreich, W.E.; Gruppelaar, H.

Accelerator driven systems. ADS benchmark calculations. Results of stage 2. Radiotoxic waste transmutation

Petten : ECN, Dec 1998. – 28 p.

Keywords:

ECN-R--98-023

Bende, E.E.; ECN. Nuclear Research and Consultancy Group [NRG]

Unit-cell calculations for plutonium fuelled HTR pebbles

Petten : ECN, December 1998. – 43 p.

Keywords: Pebble bed reactors; Burnup; W codes; Monte carlo method; S codes; Temperature dependence; Reactivity coefficients; Plutonium; Computer calculations; Reactor cells

ECN-R--98-024

Schuring, E.W.

Metallographic and fractographic investigations for NESC-1: pre- and post-test characterisation of cladding, base material and large through- and under-clad defects B and R [NESC-DOC-DEAG(98)20]

Petten : ECN, December 1998. – 96 p.

Keywords:

ECN-R--98-026

Erisman, J.W.; Otjes, R.P.; Huijsmans, J.F.M.; ECN. Brandstoffen, Conversie en Milieu [BCM]

Measurement of the decrease of ammonia emission by manure injection relative to surface application: a field test at Zegveld

Petten : ECN, December 1998. – 27 p.

Keywords: Ammonia; Emission; Manures; Netherlands; Plumes; S codes; Injection; Soils; Air pollution monitoring; Measuring methods; Comparative evaluations

3.4 RX-Publications

ECN-RX--97-021

Veen, H.M. van; Alderliesten, P.T.

Technical and economic evaluation on the use of membrane reactors for the dehydrogenation of propane to propylene

Petten : ECN, 1998. – 21 p.

Keywords: Propylene; Membranes; Ceramics; Dehydrogenation; Isothermal processes; Thermodynamics; Cracking; Prices; Feasibility studies; Coke; Bench-scale experiments; Adiabatic processes

ECN-RX--97-062

Lako, P.

Power generation options and greenhouse gas emissions

Petten : ECN, Jan 1998. – 21 p.

Keywords:

ECN-RX--97-066

Siccama, N.B.; Koning, H.

Afterheat removal from a helium reactor under accident conditions: CFD calculations for the code-to-code benchmark analyses on the thermal behaviour for the gas turbine modular helium reactor

Petten : ECN, 1998. – 11 p.

Keywords: Heat transfer; After-heat removal; Helium cooled reactors; Benchmarks; Reactor accidents; C codes; Computer calculations; Boundary conditions; Temperature dependence; Reactor cores; Forced convection

ECN-RX--97-067

Siccama, N.B.; Koning, H.

Results of the GT-MHR benchmark with the CFX code: afterheat removal from a helium reactor under accident conditions

Petten : ECN, 1998. – 25 p.

Keywords: Heat transfer; After-heat removal; Helium cooled reactors; Benchmarks; Reactor accidents; C codes; Computer calculations; Boundary conditions; Temperature dependence; Reactor cores; Forced convection

ECN-RX--97-068

Götz, W.W.J.

Onzekeerheid rond onderbrekingen in de elektriciteitslevering

Petten : ECN, 1998. – 17 p.

Keywords: Reliability; Failures; Outages; Power systems; Simulation

ECN-RX--97-073

Gregoire Padró, C.E. ; Schucan, T.H. ; Skolnik, E.; Energetics ; Bracht, M.; ECN. Brandstoffen, Conversie en Milieu [BCM]

Evaluation tool for selection and optimization of hydrogen demonstration projects

Petten : ECN, 1998. – 8 p.

Keywords: Hydrogen production; Hydrogen storage; Demonstration programs; Data compilation; Design; Data acquisition; Test facilities

ECN-RX--97-074

Ybema, J.R.; Menkveld, M.; Kram, T.

Securing flexibility in the energy system to meet future CO₂ reduction: an inventory of hedging options

Petten : ECN, February 1998. – 19 p.

Keywords:

ECN-RX--98-001

Corten, G.P.; ECN. Duurzame Energie, Zon & Wind

The Stall Flag method: proof of concept

Petten : ECN, 1998. – 13 p.

Keywords: Horizontal axis turbines; Rotors; Flow visualization; Validation; Aerodynamics; Performance; Three-dimensional calculations; Data acquisition; Wind; Velocity

ECN-RX--98-002

Osch, E.V. van; Horsten, M.G.; Vries, M.I. de

Irradiation testing of 316L(N)-IG austenitic stainless steel for ITER

Petten : ECN, 1998. – 24 p.

Keywords: Iter tokamak; Stainless steel-316l; Tensile properties; Fracture properties; Temperature range 0400-1000 k; Ductility; Hardening; Post-irradiation examination; Welded joints; Hot pressing; Hfr reactor; First wall

ECN-RX--98-003

ECN. Brandstoffen, Conversie en Milieu [BCM]

ECN contribution to the 10th European conference: 'Biomass for energy and industry': 8-11 June, Würzburg, Germany

Petten : ECN, 1998. – 29 p.

Keywords: Biomass; Industry; Air pollution abatement; Production; Netherlands; Western eu-rope; Wood wastes; Gasification; Cogeneration; Fluidized beds; Circulating systems; Fluidized bed boilers; Algae; Bioreactors

ECN-RX--98-004

Kosson, D.S. ; Sloot, H.A. van der; ECN. Brandstoffen, Conversie en Milieu [BCM]

Integration of testing protocols for evaluation of contaminant release from monolithic and granular wastes

Petten : ECN, March 1998. – 15 p.

Keywords: Leaching; Building materials; Solid wastes; Metals; Leachates; Ashes; Solubility; Granular materials; Surface contamination; Environmental impacts; Solids; Recycling; Standardization; Standards; Waste disposal; Decision making; Waste management

ECN-RX--98-007

Haverkate, B.R.W.; Heek, A.I. van; Jehee, J.N.T.

Nuclear cogeneration based on HTR technology

Petten : ECN, 1998. – 15 p.

Keywords: Cogeneration; Dual-purpose power plants; Helium cooled reactors; Pebble bed reactors; Loss of coolant; Loss of flow; Netherlands; Design; Systems analysis; Reactor safety; Licensing; Cost estimation; Market

ECN-RX--98-008

Oosterheert, R.J.; Harmelen, A.K. van; Oostvoorn, F. van

Convergence of energy policies: external dimension of Trans European networks

Petten : ECN, April 1998. – 43 p.

Keywords: Energy policy; Eastern europe; Supply and demand; Market; Feasibility studies; Institutional factors; Recommendations; Energy conservation; European union

ECN-RX--98-009

Harmelen, A.K. van; Oostvoorn, F. van; Oosterheert, R.J.

Convergence of energy policies: energy conservation

Petten : ECN, 1998. – 48 p.

Keywords: Energy conservation; Energy policy; Energy efficiency; Sectoral analysis; Economic policy; Economic development; Institutional factors; Recommendations; Western europe; Eastern europe; Energy consumption; Industry; Service sector; Residential sector; Transportation sector; Public utilities

ECN-RX--98-010

Heuveln, F.H. van; Burgers, A.R.; Bouwmeester, H.J.M.; ECN. Brandstoffen, Conversie en Milieu [BCM]

Constriction of current lines for a porous electrode and effect on electrolyte resistance

Petten : ECN, 1998. – 23 p.

Keywords: Solid electrolyte fuel cells; Solid electrolytes; Porous materials; Electric conductivity; Electric contacts; Finite element method; Zirconium oxides; Strontium oxides; Lanthanum compounds; Manganese oxides

ECN-RX--98-011

Kloosterman, J.L.

Multiple recycling of plutonium in advanced PWRs

Petten : ECN, 1998. – 10 p.

Keywords: Reprocessing; Plutonium; Pwr type reactors; Moderator-fuel ratio; Void coefficient; Temperature coefficient; Boron; Reactivity; Toxicity; Americium; Curium; Spent fuels

ECN-RX--98-012

Sinke, W.C.; ECN. Duurzame Energie, Zon & Wind

Multicrystalline silicon solar cells

Petten : ECN, 1998. – 14 p.

Keywords: Silicon; Fabrication; Polycrystals; Silicon solar cells; Casting; Crystal defects; Grain boundaries; Impurities; Monocrystals; Passivation; Gettering; Energy efficiency

ECN-RX--98-013

Bach, P.W.; Haije, W.G.

Storage, transformation and transport of heat along the thermochemical route

Petten : ECN, 1998. – 15 p.

Keywords: Thermochemical heat storage; Heat transfer; Thermal conduction; Thermochemical processes; Phase change materials; Enthalpy

ECN-RX--98-014

Koning, A.J.; ECN. Nuclear Research and Consultancy Group [NRG]

NEANSC working party on evaluation cooperation: subgroup 13: Intermediate Energy data final report and recommendations for follow-up

Petten : ECN, 1998. – 15 p.

Keywords: Nuclear data collections; Accelerators; Data compilation; Transmutation; Radio-active waste processing; Evaluation; Cross sections; Intermediate structure; Nuclear reactions; Experimental data

ECN-RX--98-015

Koning, A.J.; ECN. Nuclear Research and Consultancy Group [NRG]; Delaroche, J.-P.; Bersillon, O.; CEA. Centre d'Etudes de Bruyeres-le-Chatel

Nuclear data for accelerator-driven systems: nuclear models experiments and data libraries

Petten : ECN, 1998. – 31 p.

Keywords: Nuclear data collections; Accelerator facilities; Mev range 100-1000; Neutrons; Protons; Evaluated data; Computer calculations; Theoretical data; Experimental data; Data compilation; Cross sections; Optical models; Direct reactions; Elastic scattering; Neutron reactions

ECN-RX--98-017

Bracht, M.; Groot, A. de; ECN. Brandstoffen, Conversie en Milieu [BCM]; Gregoire Padró, C.E. ; Schucan, T.H. ; Skolnik, E.; Energetics

Evaluation tool for selection and optimisation of hydrogen demonstration projects : application to a decentralised renewable hydrogen system

Petten : ECN, 1998. – 14 p.

Keywords: Demonstration programs; Hydrogen production; Evaluation; Systems analysis; Design; Hydrogen storage; Hydrogen-based economy; Hydrogen; Biomass; Gasification; Pyrolysis; Pipelines; Tanks; Compressed gases; Configuration

ECN-RX--98-018

Rak, Z.S.

New trends in powder injection moulding

Petten : ECN, 1998. – 19 p.

Keywords: Powders; Ceramics; Molding; Shape; Binders; Structure factors; Process control; Sintering; Surface finishing; Defects; Reviews

ECN-RX--98-019

Groot, A. de; Bracht, M.; ECN. Brandstoffen, Conversie en Milieu [BCM]; Gregoire Padró, C.E. ; Schucan, T.H. ; Skolnik, E.; Energetics

Development of guidelines for the design of integrated hydrogen systems

Petten : ECN, 1998. – 14 p.

Keywords: Recommendations; Design; Demonstration plants; Systems analysis; Hydrogen-based economy; Hydrogen storage; Hydrogen; Hydrogen production; Transport

ECN-RX--98-020

Pellis, J.; Rijt, P.J.N.M. van de; ECN. Duurzame Energie, Zon & Wind

Zonnige toekomst met gelijkstroom?

Petten : ECN, 1998. – 13 p.

Keywords: Direct current; Photovoltaic power supplies; Houses; Electricity; Energy conservation; Electric appliances; Inverters; Dc to dc converters

ECN-RX--98-022

Dodd, D.H.; Grupa, J.; Heijdra, J.J.; Prij, J.; ECN. Nuclear Research and Consultancy Group [NRG]

A repository design for the retrievable disposal of radioactive waste in rock salt

Petten : ECN, 1998. – 17 p.

Keywords: Design; Evaluation; Netherlands; Salt deposits; Radioactive waste disposal; High-level radioactive wastes

ECN-RX--98-024

Bonekamp, B.C.; Pex, P.P.A.C.

Aspects of suspensions and sol processing for the manufacturing of high performance ceramic membranes

Petten : ECN, June 1998. – 18 p.

Keywords: Ceramics; Membranes; Chemical preparation; Permeability; Microstructure; Defects; Surface area; Sols; Surface coating

ECN-RX--98-025

Rak, Z.S.

Fibre reinforced CMC with organometallic delivered matrix

Petten : ECN, 1998. – 17 p.

Keywords: Ceramics; Carbon nitrides; Silicon nitrides; Density; Microstructure; Carbon fibers; Thermodynamic properties; Mechanical properties; Pyrolysis; Porosity; Flexural strength; Young modulus

ECN-RX--98-026

Sloot, H.A. van der; ECN. Brandstoffen, Conversie en Milieu [BCM]

Characterization of the leaching behaviour of cement mortars to assess long term environmental behaviour during their service life and their recycling stage

Petten : ECN, July 1998. – 22 p.

Keywords: Leaching; Cements; Mortars; Environmental impacts; Service life; Recycling; Building materials; Solid wastes; Metals; Leachates; Ashes; Solubility; Concretes

ECN-RX--98-027

Koning, A.J.

Workshop on nuclear reaction data and nuclear reactors: physics, design and safety

Petten : ECN, 1998. – 33 p.

Keywords: Nuclear data collections; Reactor physics; Reactor kinetics; Nuclear reactions; Mathematical models; Quantum mechanics; Nuclear physics; Nuclear reaction analysis; Classification; Exciton model; Classical mechanics; Inelastic scattering; Palladium isotopes; Cross sections

ECN-RX--98-029

Verbakel, W.F.A.R.; Schram, R.P.C.; ECN. Nuclear Research and Consultancy Group [NRG]

Design of a Visual Inspection and Nuclide Identification System for High level radioactive waste (VINISH)

Petten : ECN, 1998. – 10 p.

Keywords: Design; High-level radioactive wastes; Inspection; Identification systems; Radioactivity; Containers; Gamma radiation; Gamma detection; Counting rates; Monte carlo method; Collimators; Shielding; Boundary conditions

ECN-RX--98-030

Selow, E.R. van; Ouden, A.C.B. den
Neuro-fuzzy control in a steam boiler
Petten : ECN, 1998. – 7 p.

Keywords: Metal industry; Smelters; Boilers; Fuzzy logic; Netherlands; Nitrogen oxides; Air pollution control; Computerized control systems; Energy efficiency; Neural networks; Process control; Nonlinear problems; Performance; Fuel-air ratio; Systems analysis

ECN-RX--98-031

Goris, M.J.A.A.; Moor, H.H.C. de; Weeber, A.W.; Kossen, E.J.; Beeke, H.G. ter; ECN. Duurzame Energie, Zon & Wind; Frisson, L. ; Szlufcik, J.
Emitter diffusion using an IR belt furnace
Petten : ECN, 1998. – 6 p.

Keywords: Silicon solar cells; Polycrystals; Silicon; Diffusion; Furnaces; Performance; Quantum efficiency; Nitrogen; Air; Temperature range 1000-4000 K; Electric conductivity; Phosphorus

ECN-RX--98-032

Schönecker, A.; Weeber, A.W.; Sinke, W.C.; ECN. Duurzame Energie, Zon & Wind; Zechner, C.; Kress, A.; Fath, P.
Attacking limiting factors in 10.10 cm² multicrystalline silicon, emitter wrap-through solar cell design and processing
Petten : ECN, 1998. – 6 p.

Keywords: Silicon; Silicon solar cells; Polycrystals; Limiting values; Manufacturing; Design; Two-dimensional calculations; Passivation; Fill factors; Electric conductivity; Energy efficiency; Recombination

ECN-RX--98-033

Rijnberg, E.; Kroon, J.M.; Wienke, J.A.; Hinsch, A.; Roosmalen, J.A.M. van; Sinke, W.C.; ECN. Duurzame Energie, Zon & Wind; Scholtens, B.J.R.; Vries, J.G. de; Koster, C.G. de; Duchateau, A.L.L.; Maes, I.C.H.; Henderickx, H.J.W.
Long-term stability of nanocrystalline dye-sensitized solar cells
Petten : ECN, 1998. – 8 p.

Keywords: Titanium oxides; Organic solar cells; Dyes; Stability; Field tests; Bench-scale experiments; Aging; Performance testing; Electric conductivity; Additives; Water; Ethanol; Sealing materials; Liquid column chromatography; Illuminance; Fill factors; Daylighting

ECN-RX--98-034

Schiermeier, S.E.A.; Tool, C.J.J.; Roosmalen, J.A.M. van; Laas, L.J.; Keitz, A. von; Sinke, W.C.; ECN. Duurzame Energie, Zon & Wind
LPE-growth of crystalline silicon layers on ceramic substrates
Petten : ECN, 1998. – 6 p.

Keywords: Silicon; Layers; Substrates; Liquid phase epitaxy; Ceramics; Crystal growth; Thin films; Crystal growth methods

ECN-RX--98-035

Nieuwenhout, F.D.J.; Rijt, P.J.N.M. van de; Wiggelinkhuizen, E.J.; ECN. Duurzame Energie, Zon & Wind; Plas, R.J. van der; The World Bank
Rural lighting: a comparison of lamps for domestic lighting in developing countries
Petten : ECN, 1998. – 6 p.

Keywords: Developing countries; Lighting systems; Light bulbs; Comparative evaluations; Luminosity

ECN-RX--98-036

Hoorstra, J.; Moor, H.H.C. de; ECN. Duurzame Energie, Zon & Wind; Roberts, S.; Bruton, T.M.
First experiences with double layer stencil printing for low cost production solar cells
 Petten : ECN, 1998. – 6 p.

Keywords: Manufacturing; Silicon solar cells; Screen printing; Substrates; Comparative evaluations; Electric conductivity; Metallography; Line widths

ECN-RX--98-037

Burgers, A.R.; Tool, C.J.J.; Hylton, J.D.; Weeber, A.W.; ECN. Duurzame Energie, Zon en Wind; Verholen, A.G.B.J.; Gardeniers, J.G.E.; Boer, M.J. de; Elwenspoek, M.C.; Twente University . MESA Research Institute
Silicon solar cells structured by reactive ion etching and processed with screen printing
 Petten : ECN, July 1998. – 4 p.

Keywords: Silicon solar cells; Etching; Screen printing; Crystallography; Polycrystals; Texture; Spectral reflectance; Quantum efficiency

ECN-RX--98-038

Hinsch, A.; Kinderman, R.; Späth, M.; Rijnberg, E.; Roosmalen, J.A.M. van; ECN. Duurzame Energie, Zon & Wind
The performance of dye-sensitised solar cells with a one-facial, monolithic layer built-up prepared by screen printing
 Petten : ECN, 1998. – 6 p.

Keywords: Organic solar cells; Dyes; Screen printing; Thin films; Electric conductivity; Thickness; Layers; Titanium oxides; Semiconductor diodes; Performance

ECN-RX--98-039

Soppe, W.J.; Weeber, A.W.; Moor, H.H.C. de; Sinke, W.C.; ECN. Duurzame Energie, Zon & Wind; Lauinger, T.; Auer, R.; Lenkeit, B.; Aberle, A.
Cost-effective MC-Si cell processing by screenprinting on remote-PECVD layers
 Petten : ECN, 1998. – 5 p.

Keywords: Silicon solar cells; Screen printing; Cost; Chemical vapor deposition; Antireflection coatings; Silicon nitrides; Passivation; Energy efficiency; Titanium oxides; Electric conductivity; Ionic conductivity; Charge carriers; Carrier lifetime; Recombination; Spectral response; Quantum efficiency

ECN-RX--98-040

Sommeling, P.M.; Späth, M.; Roosmalen, J.A.M. van; ECN. Duurzame Energie, Zon & Wind; Meyer, T.B.; Meyer, A.F.; Kohle, O.
Dye-sensitized nanocrystalline TiO₂ solar cells on flexible substrates
 Petten : ECN, 1998. – 6 p.

Keywords: Dyes; Organic solar cells; Titanium oxides; Substrates; Organic polymers; Foils; Flexibility; Energy efficiency; Glass; Manufacturing; Stability; Spectral density; Power density

ECN-RX--98-041

Dias, F.B.; Plomp, L.; Veldhuis, J.B.J.; ECN. Brandstoffen, Conversie en Milieu [BCM]
Trends in polymer electrolytes for secondary lithium batteries
 Petten : ECN, 1998. – 56 p.

Keywords: Polymers; Electric batteries; Lithium compounds; Solid electrolytes; Gels; Composite materials; Organic solvents; Ionic conductivity; Cathodes; Anodes; Reviews; Polyethylene glycols; Stability; Electrochemistry; Acrylonitrile; Polyvinyls; Electrochemical cells

ECN-RX--98-042

Ree, R. van; Korbee, R.; Jansen, D.; ECN. Brandstoffen, Conversie en Milieu [BCM]; Baumann, H.R.; Ullrich, N. ; Haupt, G.; Zimmermann, G.

Co-gasification of biomass and coal in entrained-flow based IGCCs

Petten : ECN, July 1998. – 12 p.

Keywords: Cocombustion; Biomass; Combined-cycle power plants; Entrainment; Coal gasification; Feasibility studies; Netherlands; Systems analysis; Mass balance; Energy balance; Computerized simulation; Investment; Power generation; Cost estimation

ECN-RX--98-045

Keitz, A. von; Roosmalen, J.A.M. van; Tool, C.J.J.; Schiermeier, S.E.A.; Fung, F.; Christie, G.M.; ECN. Duurzame Energie, Zon & Wind; Zutphen, A.J.M.M. van

Improvement of low cost ceramic substrates for use in thin film silicon solar cells

Petten : ECN, 1998. – 6 p.

Keywords: Thin films; Silicon solar cells; Ceramics; Substrates; Cost; Energy efficiency; Casting; Plasma arc spraying; Impurities; Layers; Recrystallization; Grain size; Porosity; Liquid phase epitaxy; Chemical vapor deposition; Morphology; Aluminium oxides; Roughness; Elasticity; Thermal expansion; Nucleation

ECN-RX--98-046

Voorbraak, W.P.; Freudenreich, W.E.; Deurwaarder, C.P.; Kaa, T. van der; Carchon, R.; Baeten, P.; Bruggeman, M. ; Holkamp, P.

Detection and monitoring systems for the prevention of illicit trafficking of radioactive and nuclear materials at sea ports in EU member states

Petten : ECN, July 1998. – 4 p.

Keywords: Harbors; Radiation detection; Radioactive materials; Nuclear materials management; Cargo; Gamma detection; Neutron detection; Monte carlo method; Radioassay; Scrap metals; Gamma sources; Shielding; Plutonium; X-ray equipment

ECN-RX--98-047

Verkerk, E.C.; ECN. Nuclear Research and Consultancy Group [NRG]

Coupling thermal hydraulics with neutronics for pebble-bed high temperature reactor calculations

Petten : ECN, August 1998. – 9 p.

Keywords: Pebble bed reactors; Transients; Computer calculations; Computer codes; Computerized simulation; Energy conversion; Brayton cycle; Steam turbines; Gas compressors; Bypasses; Control systems; Boundary conditions

ECN-RX--98-048

Veldhuis, J.B.J.; Bruin, F.A. de; Mallant, R.K.A.M.; ECN. Brandstoffen, Conversie en Milieu [BCM]

Air pollution: a problem for the SPFC cathode?

Petten : ECN, August 1998. – 15 p.

Keywords: Organic polymers; Fuel cells; Sulfur dioxide; Ammonia; Air pollution; Cathodes; Current density; Performance; Environmental exposure; Platinum

ECN-RX--98-049

Duijvestijn, M.C.; Koning, A.J.; ECN. Nuclear Research and Consultancy Group [NRG]; Beijers, J.P.M.; Ferrari, A.; Gastal, M.; Klinken, J. van; Ostendorf, R.W.; Rijksuniversiteit Groningen. Kernfysisch Versneller Instituut [KVI]

Proton-induced fission at 190 MeV of natW, 197Au, natPb and 232Th

Petten : ECN, August 1998. – 26 p.

Keywords: Fission; Protons; Mev range 100-1000; Tungsten; Gold 197; Lead; Lead 208; Thorium 232; Activation analysis; Gamma spectra; Fission products; Cross sections; Mass distribution; Experimental data; Theoretical data; Comparative evaluations; Monte carlo method

ECN-RX--98-050

Korobitsyn, M.A.; ECN. Brandstoffen, Conversie en Milieu [BCM]; Kers, P.W.; Hirs, G.G.

Analysis of a gas turbine cycle with partial oxidation [ASME Paper 98-GT-33]

Petten : ECN, September 1998. – 7 p.

Keywords: Gas turbines; Partial oxidation processes; Stoichiometry; Nitrogen oxides; Simulation; Comparative evaluations; Exergy; Boilers; Flue gas; Performance; Combined cycles

ECN-RX--98-051

Korobitsyn, M.A.; ECN. Brandstoffen, Conversie en Milieu [BCM]; ECN. Brandstoffen, Conversie en Milieu [BCM]

Enhancing direct-fired power plants performance by the use of gas turbine technology

Petten : ECN, September 1998. – 10 p.

Keywords: Fossil-fuel power plants; Gas turbines; Steam turbines; Efficiency; Combined-cycle power plants; Performance; Waste heat utilization; Exhaust gases; Incinerators; Partial oxidation processes; Solid wastes; Heat transfer

ECN-RX--98-052

Vermeulen, A.T.; Eisma, R.; Hensen, A.; Slanina, J.; ECN. Brandstoffen, Conversie en Milieu [BCM]

Transport model calculations of NW-European methane emissions

Petten : ECN, August 1998. – 12 p.

Keywords: Methane; Environmental transport; Western europe; Air pollution monitoring; Emission; Pollution sources; Lagrangian function; Data compilation; Temperature inversions

ECN-RX--98-053

Baltus, C.W.A.; Kuijper, F.J.; Oostrum, H.E.; Middelman, B.C. ; Rössler, E. ; Nordmann, T.

A photovoltaic data acquisition program for supervision monitoring of a large number of AC-modules

Petten : ECN, July 1998. – 4 p.

Keywords: Photovoltaic power supplies; Data acquisition systems; Data acquisition; Inverters; Monitoring

ECN-RX--98-054

Rak, Z.S.; Correia, L.A.; Petrovsky, V.J.

Elektrisch geleidende keramiek

Petten : ECN, October 1998. – 22 p.

Keywords: Electric conductivity; Electric conductors; Aluminium oxides; Titanium nitrides; Silicon nitrides; Tantalum nitrides; Hot pressing; Microstructure; Mechanical properties; Thermal stresses

ECN-RX--98-055

Correia, L.A.; Laas, L.J.

Corrosion of stainless steel coatings applied by different thermal spray techniques

Petten : ECN, October 1998. – 17 p.

Keywords: Corrosion; Stainless steel-316; Sprayed coatings; Microstructure; Porosity; Permeability; Corrosion protection; Sodium chlorides; Sulfuric acid

ECN-RX--98-056

Rademakers, L.W.M.M.; Schie, R.G. van; Schuitema, R.; Vriesema, B.; Gardner, F.

Physical model testing for characterising the AWS

Petten : ECN, 1998. – 8 p.

Keywords: Wave energy converters; Functional models; Performance testing; Equations of motion; Scale models; Test facilities; Energy efficiency

ECN-RX--98-057

Schepers, J.G.; ECN. Duurzame Energie, Zon & Wind

An engineering model for yawed conditions, developed on the basis of wind tunnel measurements

Petten : ECN, October 1998. – 11 p.

Keywords: Wind tunnels; Wind turbines; Turbulence; Wind; Rotors; Validation; Mathematical models; Wind loads; Field tests; Test facilities; Forecasting; Velocity; Rotation

ECN-RX--98-058

Selow, E.R. van; Wijk, J.J. van; Jehee, J.N.T.

Identification and visualization of energy-consumption patterns

Petten : ECN, October 1998. – 10 p.

Keywords: Energy consumption; Data analysis; Electricity; Regression analysis; Time-series analysis; Computer calculations; Ecn; Power demand

ECN-RX--98-059

Ree, R. van; Korbee, R.; Smidt, R.P. de; Jansen, D.; ECN. Brandstoffen, Conversie en Milieu [BCM]; Baumann, H.R.; Ullrich, N. ; Haupt, G.; Zimmermann, G.

Green power production by co-gasification of biomass and coal in coal-fired oxygen-blown entrained-flow based IGCC processes

Petten : ECN, November 1998. – 23 p.

Keywords: Biomass; Cocombustion; Coal gasification plants; Entrainment; Combined-cycle power plants; Willows; Ashes; Slags; Pyrolysis; Systems analysis; Efficiency; Carbon dioxide; Emission; Investment; Payback period; Cost benefit analysis; Feasibility studies; Comparative evaluations; Computerized simulation

ECN-RX--98-060

Koukou, M.K.; Papayannakos, N.; Markatos, N.C. ; Bracht, M.; Alderliesten, P.T.; ECN. Brandstoffen, Conversie en Milieu [BCM]

Simulation tools for the design of industrial-scale membrane reactors

Petten : ECN, November 1998. – 12 p.

Keywords: Membranes; Simulation; Mathematical models; Computer-aided design; Chemical reactors; Performance; Ceramics; Shift processes; Water gas processes; Water gas; Dynamics; Fluid flow; Carbon monoxide; Carbon dioxide; Hydrogen; Conversion; Carbon

ECN-RX--98-061

Koukou, M.K.; Papayannakos, N.; Markatos, N.C. ; Bracht, M.; Veen, H.M. van; Roskam, A.; ECN. Brandstoffen, Conversie en Milieu [BCM]

Performance of ceramic membranes at elevated pressure and temperature: effect of non-ideal flow conditions in a pilot scale membrane separator

Petten : ECN, November 1998. – 22 p.

Keywords: Membranes; Ceramics; Fluid flow; Pressure dependence; Temperature dependence; Simulation; Hydrogen; Separation processes; Mathematical models; Silicon oxides; Methane; Nitrogen; Permeability; Partial pressure

ECN-RX--98-063

Pruschek, R. ; Jansen, D.; Ree, R. van; Korbee, R.; Smidt, R.P. de; ECN. Brandstoffen, Conversie en Milieu [BCM]; Williams, B.C.

Advanced cycle technologies: improvement of IGCCs starting from the State-of-the-Art (Puertollano)

Petten : ECN, November 1998. – 38 p.

Keywords: Environmental impacts; Cost estimation; Energy efficiency; Biomass; Bench-scale experiments; Mass balance; Energy balance; Power generation; Emission; Nitrogen oxides; Heat recovery; Fuel gas; Carbon dioxide; Combined-cycle power plants; Coal gasification; Technology assessment; Systems analysis

ECN-RX--98-064

Verkerk, E.C.; ECN. Nuclear Research and Consultancy Group [NRG]

Transient analysis for the high temperature pebble-bed reactor coupled to the energy conversion system

Petten : ECN, October 1998. – 12 p.

Keywords: Pebble bed reactors; Transients; Computer calculations; Computer codes; Computerized simulation; Energy conversion; Brayton cycle; Steam turbines; Gas compressors; Bypasses; Control systems

ECN-RX--98-065

Ree, R. van; ECN. Brandstoffen, Conversie en Milieu [BCM]

To a sustainable energy supply system in the Netherlands: energetic, economic, and environmental boundaries

Petten : ECN, December 1998. – 16 p.

Keywords: Biomass; Cogeneration; Netherlands; Energy efficiency; Economic impact; Environmental impacts; Power generation; Energy supplies; Energy policy; Organic wastes

ECN-RX--98-066

Corten, G.P.; ECN. Duurzame Energie, Zon & Wind

The April 95 procedure to measure the pressure coefficient C_p on a wind turbine in the field: with the December 1998 proposal for a C_p -derivation

Petten : ECN, December 1998. – 25 p.

Keywords: Field tests; Wind turbine arrays; Wind turbines; Pressure coefficient; Aerodynamics; Hydrostatics; Pressure measurement; Data processing; Turbulent flow; Equations

ECN-RX--98-067

Koning, A.J.

Review of LA150 library for ENDF/B-VI: Subgroup 13/22 of the Working Party on Evaluation Coordination

Petten : ECN, 1998. – p.

Keywords: Nuclear data collections; Evaluation; Data analysis; Cross sections; Mev range; Neutron flux; Numerical data

ECN-RX--98-068

Sloot, H.A. van der; ECN. Brandstoffen, Conversie en Milieu [BCM]

Harmonization of leaching/extraction tests and leaching of organic contaminants

Petten : ECN, December 1998. – 11 p.

Keywords: Leaching; Extraction; Performance testing; Surface contamination; Sampling; Soils; Waste disposal; Building materials; Compost; Sewage sludge; Sediments; Wastes; Data processing; Polycyclic aromatic hydrocarbons; Organic compounds

ECN-RX--99-008

Oostvoorn, F. van

European gas market developments: opportunities and threats

Petten : ECN, September 1998. – 28 p.

Keywords: Market; Natural gas; Europe; Competition; Energy demand; Supply and demand; Imports; Russian federation

4. STATISTICAL INFORMATION

ECN started in 1990 with the new publication series.

The table below includes only publications by ECN authors.

Not all general articles published in magazines, conference proceedings and other type of publications has been characterised as ECN reports. These articles are not included in this document.

Nuclear research publications are not included starting year 2000. For these publications contact the Nuclear Research and consultancy Group (NRG). This company is a joint venture in which ECN and KEMA have combined their nuclear expertise.

Serie	1990	1991	1992	1993	1994	1995	1996	1997	1998
Miscellaneous serie	15	9	8	12	20	5	1	0	0
CX publications Confidential contract reports	71	97	103	128	166	83	58	113	148
C publications Contract reports	62	82	86	80	71	106	96	77	88
I publications Internal reports	47	71	50	46	43	41	48	35	40
P publications Reports for broad audience	0	0	1	0	1	1	1	0	0
R publications Research reports	8	10	11	16	24	31	14	8	24
RX publications Contributions to magazines/conf.	90	115	77	108	117	55	64	66	67
B publications Leaflets	25	22	21	16	3	15	27	0	0
Total	323	413	362	408	446	337	309	187	219

Index keywords

Abundance, 10, 14, 18
Acoustic measurements, 23, 26
Acrylonitrile, 18
Additives, 27
Adiabatic processes, 22
Adsorbents, 11
Aerodynamics, 28
Aerosols, 10, 14
Aging, 27
Agriculture, 5–8
Air, 24
Air pollution, 10, 14, 17
Air pollution abatement, 3, 4, 6–8, 12, 14, 17
Air pollution control, 14, 21
Air pollution monitoring, 10, 11, 14, 15, 18
Air pollution monitors, 15
Air quality, 14, 17
Air samplers, 12
Airfoils, 25
Algae, 4, 12
Allocations, 4
Aluminium oxides, 20, 26
Ammonia, 10, 11, 15
Anaerobic conditions, 14
Anodes, 18
Antireflection coatings, 24
Appliances, 3, 7
Aquatic ecosystems, 15
Aquifers, 7
Arsenic, 17
Ashes, 11–18
Asphalts, 18
Atmospheric chemistry, 10
Austenitic steels, 20
Automation, 16
Availability, 3, 9, 29

Belgium, 4, 29
Bench-scale experiments, 10–12, 15, 16, 22, 27
Bending, 27–29
Binders, 21
Bioconversion, 3
Biological availability, 15
Biomass, 3–5, 8, 10–13, 16, 17
Biomass conversion plants, 16
Bioreactors, 4, 12
Boilers, 10, 19, 21
Bricks, 16

Brittleness, 20
Building materials, 3, 11, 13, 14, 16, 18
Buildings, 5–8, 26
Bulgaria, 4

Cables, 14
Cadmium, 10
Calcium hydroxides, 18
Calibration, 27–29
Calorific value, 14, 16
Canada, 27
Capacity, 21, 23, 25, 26
Carbides, 19
Carbon, 17
Carbon 14, 12
Carbon dioxide, 5–11, 13–15, 17, 21
Carbon dioxide fixation, 8
Carbon fibers, 20
Carbon monoxide, 15, 17
Carbon nitrides, 20
Carbonyls, 12
Carrier density, 23
Carrier lifetime, 24
Casting, 26, 27
Catalysis, 21
Catalysts, 21
Cathodes, 10, 18
Cements, 11, 17, 18
Ceramics, 16, 17, 19–22, 26
Certification, 23, 26
Cesium, 15
Charge carriers, 23, 24, 26
Charge density, 23
Chemical analysis, 12, 16
Chemical composition, 16, 20
Chemical heat pumps, 19
Chemical oxygen demand, 14
Chemical preparation, 19
Chemical reactors, 11, 17, 21
Chemical vapor deposition, 21, 24, 26
China, 17, 30
Chromium, 15, 18
Chromium ions, 21
Chromium oxides, 15
Chrysene, 18
Circulating systems, 4, 12, 16
Classification, 14
Cleaning, 3, 17
Climatic change, 6, 8, 9

- Coal, 3
- Coal gasification, 10–12
- Coal gasification plants, 13
- Coal preparation, 3
- Cocombustion, 5, 11, 13
- Coffee plants, 14
- Cogeneration, 4, 5, 7, 12, 17, 25
- Coke, 22
- Combined cycles, 10
- Combined-cycle power plants, 10–13
- Combustion, 14, 15
- Commissioning, 16
- Communications, 9
- Comparative evaluations, 3, 5–7, 10, 13–16, 18, 20, 25, 27–29
- Competition, 3, 5, 9
- Compliance, 17
- Composite materials, 18, 22
- Compost, 14
- Compressed gases, 13
- Computer calculations, 20, 23, 26–29
- Computer codes, 15, 26
- Computer program documentation, 23, 27
- Computer-aided design, 17, 26
- Computerized control systems, 21
- Computerized simulation, 11, 13, 23, 26, 27
- Concentration ratio, 15
- Concretes, 11, 16–18
- Configuration, 13
- Construction, 11, 16
- Construction industry, 7
- Contract management, 4
- Control systems, 20
- Conversion, 12, 17
- Copper, 10
- Corrosion, 19
- Corrosion protection, 19
- Cost, 3, 5, 7, 9, 21, 24, 26
- Cost benefit analysis, 7, 9, 13, 19, 21, 24
- Cost estimation, 3, 7–11, 25
- Costa rica, 14
- Cracking, 22
- Crystal defects, 27
- Crystal growth, 26
- Crystal growth methods, 26
- Crystallography, 28
- Current density, 10
- Czech republic, 4
- Data acquisition, 13, 15, 19, 28
- Data acquisition systems, 19
- Data analysis, 4–7, 12, 20, 21, 27–29
- Data compilation, 13, 18, 22
- Data covariances, 10, 18, 27–29
- Data processing, 14, 15, 28
- Daylighting, 27
- Dc to dc converters, 30
- Decision making, 7, 14
- Defects, 19, 21, 23
- Dehydrogenation, 22
- Demand, 6
- Demonstration plants, 12
- Demonstration programs, 5, 13, 29
- Denmark, 6, 7
- Density, 20
- Deposition, 15
- Design, 11–13, 16, 19, 23, 25, 26
- Desulfurization, 11
- Developing countries, 25, 28
- Diffusion, 10, 13, 16, 18, 24
- Direct current, 30
- Dissolution, 18
- Dolomite, 16
- Dredge spoil, 10
- Dusts, 14
- Dyes, 24, 27, 29
- Dynamic loads, 23, 25–29
- Dynamics, 17
- E codes, 4
- Eastern europe, 4
- Ecn, 20
- Economic analysis, 24
- Economic development, 3–7
- Economic impact, 4–6, 8, 17
- Economic policy, 4
- Education, 25
- Educational facilities, 25
- Educational tools, 25
- Efficiency, 13, 19, 25
- Elasticity, 26
- Electric appliances, 30
- Electric batteries, 18
- Electric conductivity, 12, 20, 23–27, 29
- Electric conductors, 20
- Electric contacts, 12
- Electric generators, 21
- Electric heating, 20
- Electric measuring instruments, 26
- Electric power, 7
- Electric power industry, 4
- Electric utilities, 4, 7
- Electricity, 3, 7, 20, 24, 30
- Electrochemical cells, 18

Electrochemistry, 18
 Electron beam welding, 19
 Electronic equipment, 14
 Elements, 14, 16–18
 Emission, 3, 5–15, 17, 18
 Energy analysis, 5, 6
 Energy balance, 7, 10, 11, 15
 Energy conservation, 4–9, 24–26, 30
 Energy consumption, 3–7, 9, 20, 24
 Energy demand, 5–7, 9, 24, 25, 29
 Energy efficiency, 3–7, 10, 11, 14, 17, 21, 23, 24, 26, 27, 30
 Energy efficiency standards, 5
 Energy expenses, 4, 5
 Energy losses, 29
 Energy models, 4, 6, 7, 9
 Energy policy, 4–7, 9, 17
 Energy recovery, 6
 Energy sources, 7
 Energy supplies, 4, 17
 Energy yield, 27
 Enthalpy, 22
 Entrainment, 11, 13, 16
 Environmental effects, 25, 29
 Environmental exposure, 10
 Environmental impacts, 3, 6, 8–11, 14, 17, 24
 Environmental policy, 4–8, 17
 Environmental transport, 18
 Equations, 28
 Equations of motion, 21
 Estonia, 5
 Etching, 28
 Ethanol, 27
 Europe, 5, 10, 25, 27
 European Union, 6
 European union, 3, 4, 8
 Evaluation, 7, 13, 14, 25
 Exergy, 10, 19
 Exhaust gases, 13
 Experimental data, 12, 17
 Exports, 5
 Extraction, 14, 17, 18
 Fabrication, 27
 Failures, 25
 Farms, 11
 Fatigue, 27, 28
 Feasibility studies, 4, 11, 13, 14, 22, 29, 30
 Federal Republic of Germany, 6
 Federal republic of germany, 4, 7, 12
 Ferritic steels, 19
 Field tests, 10, 15, 18, 23, 27–29
 Fill factors, 23, 27
 Financial incentives, 5, 8, 24
 Financing, 24
 Finite element method, 12
 Fisheries, 6
 Fishing industry, 6
 Flexibility, 24
 Flexural strength, 20
 Flow visualization, 28
 Flue gas, 10, 15
 Fluid flow, 16, 17
 Fluidized bed boilers, 4, 12, 16
 Fluidized beds, 4, 11, 12, 16
 Fluorescent lamps, 24
 Fly ash, 18
 Foils, 24
 Food industry, 14
 Forecasting, 3, 5–7, 9, 23
 Forestry, 3
 Fossil fuels, 6, 9
 Fossil-fuel power plants, 3, 5, 13
 France, 4, 15
 Fuel cells, 10
 Fuel gas, 10, 11, 16
 Fuel substitution, 3, 6
 Fuel-air ratio, 21
 Functional models, 21, 26
 Furnaces, 24
 Fuzzy logic, 20, 21
 Gas burners, 16
 Gas tungsten-arc welding, 19
 Gas turbines, 10, 13
 Gasification, 4, 12–14, 16
 Gaussian processes, 18, 23
 Gels, 18
 Geochemistry, 10, 14, 17
 Geometry, 23
 Geothermal energy, 7
 Gettering, 27
 Glass, 24
 Graded band gaps, 23
 Grain boundaries, 19, 27
 Grain size, 26
 Granular materials, 14, 17
 Greenhouse gases, 3, 6, 8, 14
 Greenhouses, 7, 30
 Gross national product, 8
 Halogen compounds, 11
 Hardness, 19, 20

Heat affected zone, 20
 Heat distribution systems, 25
 Heat pumps, 7, 8
 Heat recovery, 10, 11
 Heat storage, 7
 Heat transfer, 13, 22
 Heating rate, 16
 Hermite polynomials, 27, 28
 Historical aspects, 3, 7
 Horizontal axis turbines, 23, 27–29
 Horticulture, 7
 Hot gas cleanup, 11
 Hot pressing, 19, 20
 Households, 3, 5–8, 24
 Houses, 6–9, 23, 25, 30
 Hungary, 4
 Hydraulic conductivity, 18
 Hydrocarbons, 12, 15
 Hydrochloric acid, 15
 Hydrogen, 12, 13, 16, 17
 Hydrogen production, 12, 13, 21
 Hydrogen storage, 12, 13
 Hydrogen-based economy, 12, 13
 Hydrology, 15
 Hydrostatics, 28

I codes, 23
 Illuminance, 27
 Implementation, 6, 8, 25
 Imports, 5
 Impurities, 26, 27
 Incinerators, 13, 16
 Inclusions, 19
 Income, 3, 7
 Industrial wastes, 16
 Industry, 4–8, 12
 Injection, 15
 Installation, 15, 21
 Institutional factors, 4, 24
 Interconnected power systems, 29
 Interest rate, 9
 Interlaboratory comparisons, 12
 Internal combustion engines, 25
 International agreements, 8
 Inverters, 19, 25, 27, 30
 Investment, 3–5, 9, 11, 13, 14
 Ionic conductivity, 18, 24
 Iron alloys, 15
 Iron hydroxides, 17
 Iron ions, 21
 Iron oxides, 11, 15, 17
 Isothermal processes, 22

Italy, 12
 Japan, 27
 Joint ventures, 8

Kazakhstan, 29

Lagrangian function, 18
 Lakes, 14
 Land use, 3
 Lanthanum compounds, 12
 Latvia, 4
 Layers, 20, 26, 29
 Lca, 19
 Leachates, 11, 14, 15
 Leaching, 10, 11, 13–18
 Lead, 10, 15
 Leaks, 18
 Learning, 5
 Legal aspects, 29
 Legislation, 20
 Leisure time activities, 3, 7
 Licensing regulations, 20
 Life cycle analysis, 19
 Light bulbs, 24, 28
 Light scattering, 10
 Lighting systems, 24, 28
 Lignite, 3
 Limestone, 18
 Limiting values, 23
 Line widths, 25
 Liquid column chromatography, 27
 Liquid fuels, 3
 Liquid phase epitaxy, 26
 Lithium compounds, 18
 Lithuania, 4
 Load analysis, 28
 Load management, 4
 Local government, 6, 17
 Luminosity, 28

M codes, 3, 5–7, 9
 Magnesium carbonates, 18
 Magnetite, 18
 Maintenance, 29
 Management, 25
 Manganese, 15
 Manganese oxides, 12, 15
 Manuals, 4, 23, 27
 Manufacturing, 3, 23–25
 Manures, 15
 Market, 3–7, 9, 24
 Marketing, 24

Martensitic steels, 19, 20
 Mass balance, 10, 11, 15
 Material substitution, 6
 Materials, 3, 6
 Materials recovery, 20
 Materials testing, 25, 26
 Mathematical models, 4, 5, 10, 15–17, 23, 26
 Measuring methods, 15
 Mechanical properties, 20
 Mechanical vibrations, 27
 Meetings, 26
 Membranes, 16, 17, 19, 22
 Metal industry, 21
 Metallography, 25
 Metals, 11, 14, 16–18
 Meteorology, 18
 Methane, 8, 14, 16, 18
 Methanol, 21
 Microclimates, 30
 Microstructure, 19, 20
 Mineral resources, 9
 Minerals, 16
 Mitigation, 6
 Moisture, 16
 Molding, 21
 Molybdenum oxides, 11
 Monitoring, 19, 27, 29
 Monocrystals, 27
 Morphology, 26
 Mortars, 11
 Mos solar cells, 26
 Multi-element analysis, 15, 16, 18
 Municipal wastes, 14, 16, 20

 Natural gas, 3, 5, 7
 Netherlands, 3–7, 9–12, 14, 15, 17, 18, 21, 23, 25, 27
 Neural networks, 20, 21
 Nickel, 10, 13
 Nitrates, 10
 Nitric acid, 15
 Nitrogen, 16, 24
 Nitrogen oxides, 3, 10, 11, 15, 17, 21
 Nitrous acid, 15
 Nitrous oxide, 8, 18
 Nonlinear problems, 21
 Nonradioactive waste disposal, 18
 Nonradioactive waste management, 18
 Nuclear power, 3
 Nuclear power plants, 3
 Nucleation, 26
 Numerical data, 3

 Occupational safety, 26
 Office buildings, 9
 Operation, 16, 29
 Optimization, 4, 5
 Organic compounds, 14, 18
 Organic matter, 10, 18
 Organic polymers, 10, 24
 Organic solar cells, 24, 27, 29
 Organic solvents, 18
 Organic wastes, 17
 Oxygen, 15
 Ozone, 15, 17

 P codes, 27, 28
 P-n junctions, 26
 Packed beds, 11
 Parametric analysis, 27, 28
 Partial oxidation processes, 10, 13
 Partial pressure, 16
 Particle size, 16, 17
 Particulates, 14, 16
 Passivation, 23, 24, 27
 Payback period, 13
 Peak load, 4
 Performance, 10, 13, 17, 21, 24, 25, 28, 29
 Performance testing, 14–18, 21, 23, 25–27
 Permeability, 16, 18, 19
 Permits, 7
 Peru, 24
 Petrochemicals, 3
 Petroleum, 3
 Petroleum refineries, 7
 Ph value, 10, 13–18
 Phase change materials, 22
 Phase transformations, 12
 Phosphates, 17
 Phosphorus, 24
 Photochemical reactions, 21
 Photochemistry, 21
 Photovoltaic power supplies, 19, 21, 23, 25, 27, 29, 30
 Pilot plants, 14
 Pipelines, 13
 Planning, 4, 24
 Plasma arc spraying, 26
 Plates, 19
 Platinum, 10
 Plumes, 15, 18
 Poland, 4
 Political aspects, 8
 Pollutants, 10
 Pollution regulations, 4

Pollution sources, 12, 18
 Polychlorinated biphenyls, 18
 Polycrystals, 23, 24, 26–28
 Polycyclic aromatic hydrocarbons, 14, 18
 Polyethylene glycols, 18
 Polymers, 18
 Polyvinyls, 18
 Porosity, 19, 20, 26
 Porous materials, 12
 Portugal, 12, 15
 Powders, 19, 21
 Power, 3
 Power demand, 20
 Power density, 24
 Power generation, 3–5, 8–11, 17
 Power plants, 7
 Pressure coefficient, 28
 Pressure dependence, 16
 Pressure measurement, 28
 Pressurization, 16
 Prices, 3, 4, 6, 7, 9, 22
 Pricing regulations, 4
 Process control, 20, 21
 Production, 3, 4, 12
 Productivity, 3
 Program management, 24, 29, 30
 Progress report, 10, 25
 Propylene, 22
 Public health, 14
 Public opinion, 9
 Public utilities, 4, 7
 Pulverized fuels, 3
 Pyrolysis, 13, 14, 16, 20

 Quality control, 16
 Quantum efficiency, 24, 28

 Radiochemistry, 15
 Radioecological concentration, 15
 Radionuclide migration, 15
 Railways, 21
 Recombination, 23, 24, 26
 Recommendations, 4, 9, 12, 27
 Recrystallization, 26
 Recycling, 6, 11, 14, 20
 Redox reactions, 14
 Regional analysis, 6, 10
 Regression analysis, 20, 27, 28
 Regulations, 27
 Reinforced plastics, 22
 Reliability, 27, 28
 Remedial action, 17

 Removal, 11
 Renewable energy sources, 3, 6–9, 30
 Research programs, 5, 14
 Residential buildings, 25
 Residential sector, 4, 6
 Reviews, 5, 9, 14, 18, 21
 Risk assessment, 5, 6, 14
 Road transport, 17
 Romania, 4
 Rotation, 23
 Rotors, 23, 26–28
 Roughness, 26
 Russian federation, 4, 5

 S codes, 15, 23
 Safety, 27, 28
 Sales, 3, 24
 Sample preparation, 12
 Sampling, 12, 14, 16
 Sand, 16–18
 Sandstones, 13
 Sanitary landfills, 18
 Scale models, 21
 Scavenging, 15
 Scientific personnel, 25
 Scrap, 14, 20
 Screen printing, 24, 25, 28, 29
 Sealing materials, 18, 27
 Seasonal thermal energy storage, 7
 Seawater, 15
 Sectoral analysis, 4–8
 Sediment-water interfaces, 15
 Sediments, 14
 Segregation, 19, 20
 Semiconductor diodes, 26, 29
 Sensitivity, 27
 Sensitivity analysis, 5, 7–9, 16
 Separation processes, 16
 Service life, 6, 11, 19, 22
 Service sector, 4–8
 Sewage sludge, 14
 Shape, 21
 Shear, 27, 29
 Shift processes, 17
 Shredders, 20
 Signals, 21
 Silicon, 23, 24, 26, 27
 Silicon nitrides, 20, 24
 Silicon oxides, 16
 Silicon solar cells, 23–28
 Simulation, 10, 12, 16, 17, 29
 Simulators, 16

Sintering, 21
 Site characterization, 25, 29
 Site selection, 21
 Slags, 13, 15–18
 Slovenia, 4
 Sludges, 16, 18
 Slurries, 10
 Small businesses, 6, 24
 Smelters, 21
 Socio-economic factors, 3, 6–8, 24
 Sodium chlorides, 19
 Soils, 14, 15, 17, 18
 Sol-gel process, 21
 Solar cell arrays, 23
 Solar energy, 7, 8
 Solar radiation, 10, 25, 27, 29
 Solid electrolyte fuel cells, 12
 Solid electrolytes, 12, 18
 Solid fuels, 3
 Solid wastes, 11, 13, 14, 16
 Solidification, 16
 Solids, 14
 Sols, 19
 Solubility, 11, 14, 16–18
 Solutes, 10
 Space heating, 25, 30
 Spain, 6, 7, 15
 Spatial distribution, 10
 Spectral density, 24
 Spectral reflectance, 28
 Spectral response, 24
 Sprayed coatings, 19
 Stability, 18, 24, 27
 Stainless steel-316, 19
 Standardization, 14, 16–18, 25, 26
 Standards, 14, 25–27
 Start-up, 16
 Static loads, 23, 26, 28, 29
 Steam, 16
 Steam generation, 20
 Steam turbines, 13
 Stoichiometry, 10
 Strain gages, 27
 Strains, 29
 Stresses, 23
 Strontium, 15
 Strontium oxides, 12
 Structure factors, 21
 Substrates, 24–26
 Sulfates, 10
 Sulfur dioxide, 3, 10, 15
 Sulfur fluorides, 8
 Sulfuric acid, 19
 Supply and demand, 4–7
 Surface area, 19
 Surface coating, 19
 Surface contamination, 14
 Surface finishing, 21
 Sweden, 6, 7
 Swine, 11
 Systems analysis, 5, 6, 10–13, 21, 27, 29
 Tanks, 13
 Tantalum nitrides, 20
 Tantalum oxides, 19
 Tar, 16
 Taxes, 5, 7, 8
 Technology assessment, 3, 5–7, 9–11
 Technology transfer, 25
 Temperature dependence, 16, 29
 Temperature inversions, 18
 Temperature measurement, 15
 Temperature range 0400-1000 k, 14
 Temperature range 1000-4000 k, 24
 Test facilities, 11–13, 16, 21, 23
 Texture, 28
 Thermal conduction, 22
 Thermal expansion, 26
 Thermal stresses, 20
 Thermochemical heat storage, 22
 Thermochemical processes, 22
 Thermodynamic properties, 20
 Thermodynamics, 22
 Thermonuclear reactors, 3, 9
 Thickness, 29
 Thin films, 21, 26, 29
 Three-dimensional calculations, 23, 28
 Time-series analysis, 7, 20
 Titanium nitrides, 20
 Titanium oxides, 19, 21, 24, 27, 29
 Torsion, 29
 Trace amounts, 14
 Trade, 3, 4, 7, 8
 Transport, 9, 12
 Transportation sector, 4–8, 22
 Tungsten oxides, 19
 Turbulence, 23, 29
 Turbulent flow, 28, 29
 Two-dimensional calculations, 23
 U codes, 29
 United Kingdom, 6
 United kingdom, 7

Uptake, 14, 15
Urban areas, 17, 25
Uruguay, 5
Usa, 27

Validation, 10, 15, 18, 23, 28
Vehicles, 22
Velocity, 23, 25, 28, 29
Verification, 16, 23
Visible radiation, 21
Volatile matter, 12

W codes, 29
Waste disposal, 14
Waste heat utilization, 5, 13
Waste management, 14
Waste processing, 3, 14, 16, 20
Waste water, 14
Wastes, 6, 14, 18
Water, 18, 27
Water gas, 17
Water gas processes, 17
Water heaters, 20
Water heating, 25
Water pollution abatement, 14
Water saturation, 16
Water supply, 29
Water treatment plants, 14
Wave energy converters, 21
Wear, 16
Welded joints, 19
Western europe, 3, 4, 9, 12, 18
Willows, 12, 13, 16
Wind, 23, 25, 28, 29
Wind loads, 23
Wind power, 8, 21, 25, 29
Wind tunnels, 23, 29
Wind turbine arrays, 28
Wind turbines, 7, 23, 25, 26, 28, 29
Wood burning appliances, 15
Wood fuels, 5, 12
Wood wastes, 4, 12, 16
Working conditions, 9

Young modulus, 20

Zinc, 10, 18
Zirconium oxides, 12, 19

Index authors

- Aalbers, R.F.T., 7
Aberle, A., 24
Akker, J.H.A. van den, 24
Alderliesten, P.T., 17, 22
Annema, J.A., 8
Arkel, W.G. van, 5, 9
Auer, R., 24
- Bach, P.W., 22
Baigarin, K., 29
Baken, T., 24
Bakker, E., 15
Baltus, C.W.A., 19, 23, 25, 27, 29
Baumann, H.R., 11, 13
Beeke, H.G. ter, 24
Beeldman, M., 5, 7, 8, 25
Bloemen, H., 14
Bodegom, M., 16
Bodenstaff, H., 15
Boer, A.T. de, 29
Boer, M.J. de, 28
Bonekamp, B.C., 19
Booij, H., 8
Boonekamp, P.G.M., 5, 7, 8
Borg, K. van der, 12
Borg, N.J.C.M. van der, 27–29
Bos, A., 16
Bos, A.J.M., 3, 6
BOS, S., 6
Bosch, A. van den, 5, 6, 9
Bosveld, W., 9
Bouwmeester, H.J.M., 12
Braam, H., 27, 28
Braam, J., 22
Bracht, M., 12, 13, 16, 17
Bree, L. van, 14
Brink, H.M. ten, 10, 14
Brink, R.M.M. van den, 8
Bruin, F.A. de, 10
Bruton, T.M., 25
Bruyn, P., 15
Burgers, A.R., 12, 23, 28
Burk, H. van, 14
- Christensen, C.J., 28
Christie, G.M., 26
Cnubben, P.A.J.P., 14, 15, 18
Comans, R.N.J., 10, 13, 15, 17
Correia, L.A., 19, 20
Corten, G.P., 28
- Czapiewski, K. von, 12
- Dam, J.J.D. van, 23, 28, 29
Dekker, J., 25
Dekker, J.W.M., 25
Dias, F.B., 18
Dienst Landbouwkundig Onderzoek.
Landbouw-Economisch Instituut
[LEI-DLO], 7
Dijk, V.A.P. van, 29
Dinkelbach, L., 8, 15
Dinkelman, G.H., 6
Doorn, J. van, 16
Dorland, R. van, 10
Dogle, P.G., 5
Dril, A.W.N. van, 5, 7, 8
Duchateau, A.L.L., 27
- ECN. Brandstoffen, Conversie en Milieu
[BCM], 4, 8, 10–18
ECN. Duurzame Energie, Zon & Wind,
23–30
ECN. Duurzame Energie, Zon en Wind, 28
Eenkhoorn, S., 12, 16
Eikelboom, D.W.K., 26
Eikelboom, J.A., 23
Eisma, R., 18
Elwenspoek, M.C., 28
Energetics, 12, 13
Erisman, J.W., 11, 15
European Commission. Joint Research
Centre [JRC], 12
- Fath, P., 23
Feimann, P.F.L., 8
Frisson, L., 24
Fung, F., 26
- Gardeniers, J.G.E., 28
Gardner, F., 21
Geelhoed, P.A., 10, 17
Gerlagh, T., 3, 6
Geusebroek, M., 10, 18
Gielen, D.J., 3, 6, 8
Giljamse, W., 25
Gilli, P.V., 6
Goeij, W.C. de, 25
Goris, M.J.A.A., 24
Gregoire Padró, C.E., 12, 13
Groot, A. de, 12, 13

Groot, G.J. de, 13, 16
 Groot, M.I., 7

Haije, W.G., 22
 Hamelink, J., 27
 Hans, E.W., 4
 Harmelen, A.K. van, 4
 Harmelink, M.G.M., 8
 Haupt, G., 11, 13
 Heere, P.G.T., 12
 Heide, A.S.H. van der, 23
 Heijdra, J.J., 27
 Hemmes, W.H., 15
 Henderickx, H.J.W., 27
 Hensen, A., 14, 18
 Heuveln, F.H. van, 12
 Hilten, O. van, 3, 5, 7
 Hinsch, A., 27, 29
 Hirs, G.G., 10
 Hoede, D., 13, 15–17
 Hoornstra, J., 25
 Huijsmans, J.F.M., 15
 Hulle, F.J.L. van, 23, 26, 29
 Hylton, J.D., 28

Ijpelaan, R., 21

Jacobs, J.M., 16
 Jansen, D., 10, 11, 13
 Jansen, J.C., 30
 Jeeninga, H., 3, 5, 7, 8
 Jehee, J.N.T., 20
 Jongejan, P.A.C., 11

Kaan, H.F., 9
 Kant, A.D., 9
 Keitz, A. von, 26
 Kers, P.W., 10
 Kiel, J.H.A., 11, 12, 16
 Kil, A.J., 29
 Kinderman, R., 29
 Kohle, O., 24
 Kok, I.C., 6, 7
 Kolb, G., 6
 Koning, A. de, 15
 Koppmann, R., 12
 Korbee, R., 10–13
 Korobitsyn, M.A., 10, 13
 Kossen, E.J., 24
 Kosson, D.S., 14
 Koster, C.G. de, 27
 Kotzias, D., 12
 Koukou, M.K., 16, 17

Koutstaal, P.R., 6–8
 Kram, T., 5, 8
 Kress, A., 23
 Krijgsheld, K., 14
 Kroon, J.M., 27
 Kroon, P., 5, 7, 8
 Kuijper, F.J., 19
 Kurz, R., 6

Laas, L.J., 19, 26
 Lako, P., 3, 5, 6, 8, 9
 Lange, T.J. de, 5, 7, 8
 Larsen, B., 12
 Lauinger, T., 24
 Lelieveld, J., 10
 Lemming, J., 6
 Lenkeit, B., 24
 Ligthart, F.A.T.M., 6, 30

Maes, I.C.H., 27
 Mallant, R.K.A.M., 10
 Markatos, N.C., 16, 17
 Menkveld, M., 5–8, 25
 Meyer, A.F., 24
 Meyer, T.B., 24
 Middelman, B.C., 19
 Moor, H.H.C. de, 24, 25
 Morthorst, P.E., 6

Nagelhout, D., 8
 Nauta, J.P., 20
 Neeft, J.P.A., 14
 Nieuwenhout, F.D.J., 28
 Nordmann, T., 19

Olivier, J.G.J., 8
 Oosterheert, R.J., 4
 Oostrum, H.E., 19
 Oostvoorn, F. van, 4, 5
 Oppenraaij, J.B.H.A. van, 16
 Otjes, R.P., 11, 15
 Ouden, A.C.B. den, 20, 21
 Oudhuis, A.B.J., 14–16, 20
 Overbeek, J.P., 22

Paauw, K.F.B. de, 6
 Papayannakos, N., 16, 17
 Pellis, J., 30
 Perrels, A.H., 3, 7
 Petrovsky, V.J., 20
 Pex, P.P.A.C., 19
 Pierik, J., 25
 Pierik, J.T.G., 25

- Pio, C., 12
 Plas, R.J. van der, 28
 Plomp, L., 18
 Pruschek, R., 10

 Römer, J.C., 6
 Rössler, E., 19
 Rademakers, L.W.M.M., 21
 Rak, Z.S., 20, 21
 Ree, R. van, 8, 10, 11, 13, 17
 Reijnders, H.P.E.M., 16, 20
 Reinders, A.H.M.E., 29
 Rijnberg, E., 27, 29
 Rijs, R.P.P., 25
 Rijt, P.J.N.M. van de, 27, 28, 30
 Roberts, S., 25
 Ronold, K.O., 28
 Rooijen, S.N.M. van, 5, 8
 Roosmalen, J.A.M. van, 24, 26, 27, 29
 Roskam, A., 16
 Ruijg, G.J., 5, 6, 25

 Schönecker, A., 23
 Schaeffer, G.J., 5, 6
 Scheepers, M.J.J., 25
 Schenk, E.P., 11, 16
 Schepers, J.G., 23, 29
 Schie, R.G. van, 21
 Schiermeier, S.E.A., 26
 Schol, E., 6, 9
 Scholtens, B.J.R., 27
 Schucan, T.H., 12, 13
 Schuitema, R., 21
 Schuring, E.W., 19, 20
 Seebregts, A.J., 3, 5, 6, 9
 Selow, E.R. van, 19–21
 Siderius, P.J.S., 7
 Sinke, W.C., 23, 24, 26, 27
 Skolnik, E., 12, 13
 Slanina, J., 12, 17, 18
 Sloot, H.A. van der, 11, 13–18
 Smidt, R.P. de, 10, 11, 13
 Sommeling, P.M., 24
 Soppe, W.J., 23, 24
 Soullie, P.P., 23
 Späth, M., 24, 29
 Spakman, J., 8
 Spoelstra, S., 19
 Stoffer, A., 5
 Swart, D.P.J., 10
 Szlufcik, J., 24

 Tüdos, A., 12

 The World Bank, 28
 Tool, C.J.J., 26, 28
 Twente University . MESA Research
 Institute, 28

 Ullrich, N., 11, 13
 Uyterlinde, M.A., 4–6

 Veen, H.M. van, 16, 22
 Veldhuis, J.B.J., 10, 18
 Verholen, A.G.B.J., 28
 Vermeulen, A.T., 15, 18
 Villeneuve, B., 6
 Vries, J.G. de, 27
 Vriesema, B., 21
 Vuuren, V.C. van, 9

 Warmer, C.J., 22
 Weeber, A.W., 23, 24, 28
 Wees, M.T. van, 4
 Wienke, J.A., 27
 Wiggelinkhuizen, E.J., 23, 25, 27, 28
 Wijk, J.J. van, 19–21
 Wilde, P.J.C.J. de, 26
 Williams, B.C., 10

 Ybema, J.R., 6–9

 Zechner, C., 23
 Zimmermann, G., 11, 13
 Zolingen, R.J.C. van, 29
 Zomeren, A. van, 10
 Zutphen, A.J.M.M. van, 26
 Zutt, J.G.M., 15
 Zwaagstra, O., 12