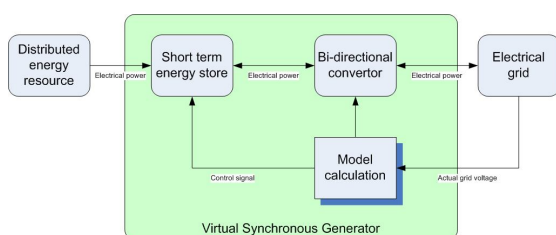


VSYNC

The VSG (Virtual Synchronous Generator) concept

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Principle of a Virtual Synchronous Generator



Operation principle of VSG's

- Many VSG's together behave like one large rotating mass
- Short lasting power exchanges between grid and energy stores counteracting changes in
 - Frequency
 - Voltage

Expected results

- Reduction of variations in frequency and voltage
- Improved fault clearance due to slower response of power system

Strategic objectives addressed

1. Prevent electricity grids instability and blackouts due to large frequency variations caused by decentralized generation.
2. Retains social safety in fault situations of an electricity grid with any given share of decentralized generation.
3. Lay down a basis for intentionally islanding of low voltage areas with decentralized generation.

S&T objectives of the project

1. Give distributed energy resources the character of a Virtual Synchronous Generator, by adaptation of the electronic converters for the grid-coupling and add a small size electrical storage .
2. Test the Virtual Synchronous Generators for participation in the frequency control of the grid.
3. Test the Virtual Synchronous Generators for prevention of switching off in fault situations (fault ride through)

Project partners

1 ECN	NL	Coordinator
<i>Energy research Centre of the Netherlands</i>		
2 TUE	NL	Contractor
<i>Technical University of Eindhoven</i>		
3 TUD	NL	Contractor
<i>Delft University of Technology</i>		
4 KUL	BE	Contractor
<i>Catholic University of Leuven</i>		
5 UPB	RO	Contractor
<i>Universitatea Politehnica Bucuresti</i>		
6 LABEIN	ES	Contractor
<i>Fundación LABEIN</i>		
7 3E	BE	Contractor
<i>3E NV</i>		
8 UfE	DE	Contractor
<i>UfE Umweltfreundliche Energieanlagen</i>		
<i>Handelsgesellschaft mbH</i>		
9 Electrica	RO	Contractor
<i>Electrica SA</i>		
10 Continuon	NL	Contractor
<i>Continuon NV</i>		

Overall Objective

- If successful, the project delivers prototypes of Virtual Synchronous Generators that are in the pre-market phase and can provide a cost effective solution to grid stability problems in areas where distributed generation is becoming significant