Testing electrical equipment with the ACS 6000 grid simulator before connecting it to the grid, saves costs and time.

Before connecting electrical equipment to the grid it needs to be tested to ensure it can withstand grid disturbances and complies with all standards.

ABB's ACS 6000 grid simulator can perform tests according to most grid standards and simulate abnormal grid conditions. The above tests can be carried out off-line in a cost- and time-efficient manner.

Before grid-connection of solar power and photovoltaic systems, fuel cells, wind and tidal turbines, motor/generator sets, energy storage systems and inverters, tests are needed to ensure they can withstand normal disturbances.

Traditionally, test equipment needs to be transported to site along with skilled personnel. Locations can often be remote, making on-site testing expensive and time consuming.

Costs and time can be saved by simulating, in a controlled laboratory environment, the various grid conditions and disturbances and their interactions with the electrical equipment.

Such simulations can be performed by ABB's ACS 6000 grid simulator, thereby reducing certification testing time and costs, while ensuring the equipment under test meets relevant standards.

Power and productivity
for a better world™

ABB

ACS 6000 grid simulator

ABB's grid simulator is based on the widely installed ACS 6000 product family. The ACS 6000 grid simulator uses well-proven hardware and real-time control software to subject one or multiple devices under test (DUTs) to typical grid disturbances while evaluating the system response on the grid.

The ACS 6000 can be used for grid simulation and variable speed control should the user require the dual functionality.

Benefits

Testing environment is completely isolated from the electrical grid, avoiding any disturbances

No filter unit required to reach a low THD(v) level, thereby avoiding any potential resonance problems

Easily integrated into the customer's overriding control system

Grid simulation and variable speed control of test equipment can be done with one ACS 6000

Proven technology
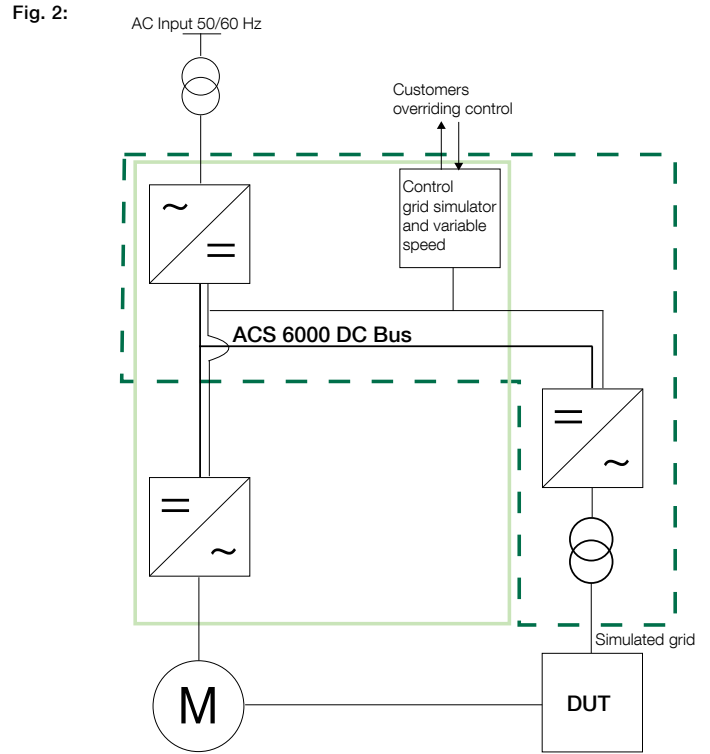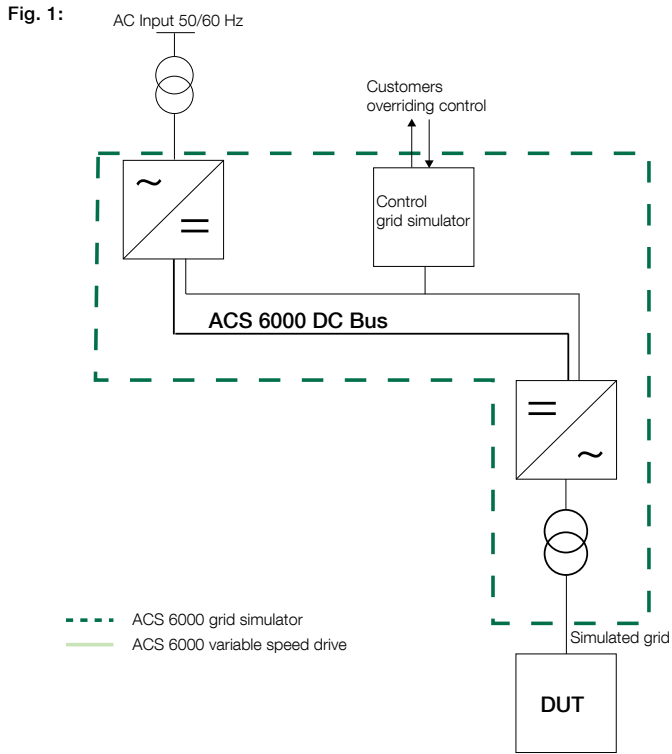
Fig. 1:

Fig. 2:

The picture above shows different ACS 6000 configurations.
Fig. 1: ACS 6000 grid simulator; Fig. 2: ACS 6000 with variable speed control and grid simulation functionalities.
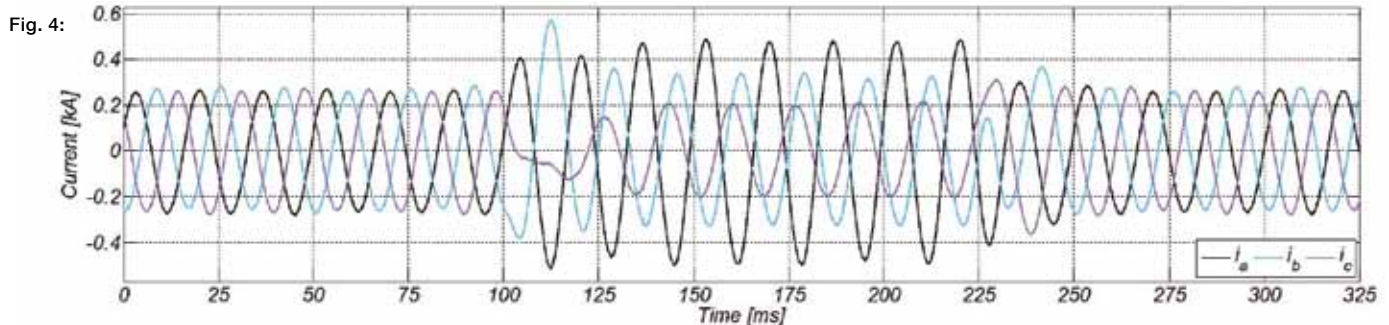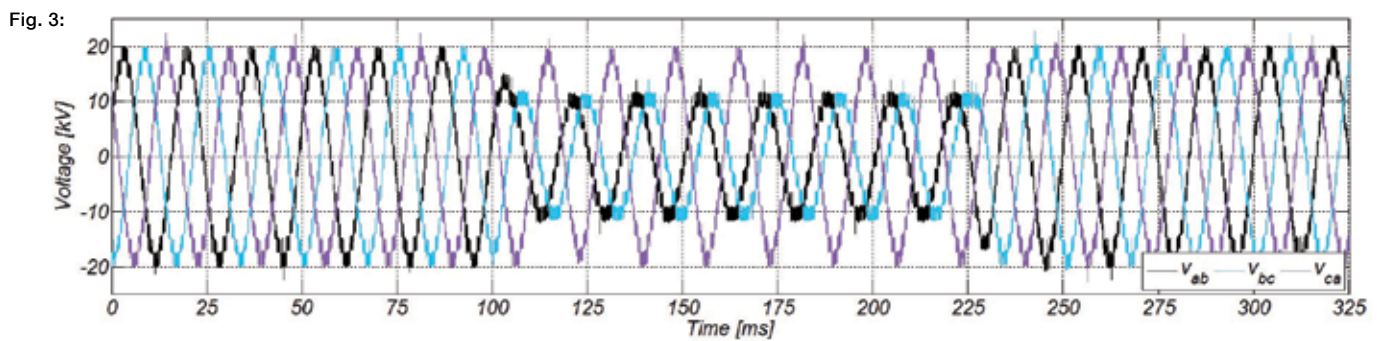
Fig. 3:

Fig. 4:

The picture above shows a low voltage ride through example.
Fig. 3: Asymmetrical 2-phases voltage drop; Fig. 4: Asymmetrical 2-phases current disturbance

Technical specifications

Item	Specifications
General	
Nominal rating	3 — 12 MVA continuous power rating (higher on request) — absorbing or generating mode
	Short circuit capacity: up to 36 MVA
Audible noise	< 75 dbA
Environmental	IP32 standard, IP54 optional
	Standard 0 to + 40°C (lower/higher on request)
Supply	
Supply voltage	Customer's specifications
Supply voltage tolerance	± 10 %
Phases	3
Nominal supply frequency	50/60 Hz
Line frequency tolerance	± 2 Hz
Voltage and current distortion	Compliant with
	IEC 61000-2-4
	IEEE 519
Simulated grid	
Grid voltage	Customer's specifications
Grid voltage variation	Symmetrical or asymmetrical 0 — 120 % (higher on request)
LVRT and HVRT (low and high voltage ride through)	Symmetrical or asymmetrical 0 — 100 %
Phases	3 phases and neutral (4-wire)
Frequency variation	45 to 65 Hz (other frequencies on request)
Grid impedance	Customer's specifications
Maximum short circuit power	36 MVA (higher on request)
Grid voltage accuracy	± 0.1 % (steady state balanced three phase conditions)
Grid voltage rate of change	0 % to 100 %; 5 msec
Frequency accuracy	± 0.1 % (encoderless)
Frequency rate of change	± 2 Hz/sec
Voltage distortion	as low as 1 %
DUT (Devices under test)	1. Wind turbines according, but not limited to IEC 61400-21, FERC 661 and PRC-024-1
	2. BESS (Battery Energy Storage Systems)
	3. PV inverters (Photovoltaic)
	4. Generators
	5. Inverters
	6. Others
Control and monitoring	
Communication, controllability and user interface	ABB offers an open communication strategy enabling connection to a PLC (Programmable Logic Controller) or a DCS (Distributed Control System). Fieldbus connectivity with a wide variety of protocols is available.

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www.abb.com/drives

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