

Fault-limiting Interrupter with immediate recovery for cost-effective connection of Distributed Generation

A novel power-electronics based Fault Current Limiting Interrupter (FCLi) enables mass deployment of distributed generation, combined heat and power (CHP) co-generators and microgrids, and the sale of excess generation capacity to the grid.

The electricity market is going through a global revolution in an effort to connect thousands of Independent Power Producers and industrial/commercial cogeneration sources. The growing need to connect new generation sources, and to increase network connectivity, result in increased fault current levels - often beyond the network equipment ratings. Exceeding fault currents result in supply disruptions, equipment damage and severe power outages - impacting network availability and power quality. Therefore, network operators are not able to manage an increasing amount of connections of distributed generation, and increased network connectivity, without reliable means for fault current management. GridON's FCLi offers a cost-effective solution for eliminating fault current contribution from such new generation sources.

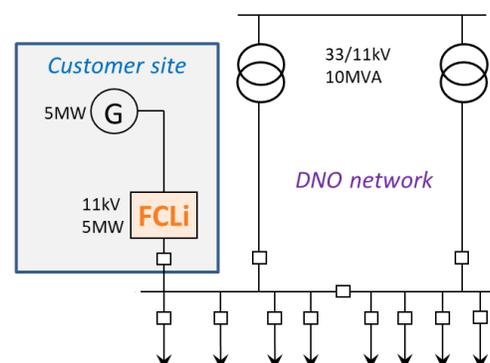


GridON introduced a novel power-electronics based FCLi product family for low-to-medium voltage networks. These series-connected, 3-phase solid-state devices instantaneously interrupt the AC current upon detection of short circuit conditions. The ultra-fast FCLi limits and interrupts excessive fault currents from the generation source to the grid - before the first current peak. It also limits short circuit currents from the grid to the generator. Following the isolation of the faulted network section by the network's switchgear, the FCLi is immediately switched back on to resume normal operation.

By controlling excessive fault currents, the FCLi enables the deployment of distributed generation such as biogas, solar, and wind, and connectivity of distribution grid sections - improving the availability and power quality of distribution networks. GridON's products improve grid resiliency and reliability, and significantly lower capital expenditures and operating costs, while eliminating switchgear upgrades and early retirement of fit-for use equipment.

FCLi installation in the UK

Following is an example of an FCLi installation which enables the connection of a 5MW CHP generation plant at 11kV.



FCLi Specifications

Term	Value
Rated voltage	11kV
Rated frequency	50Hz
Rated lightning impulse withstand voltage	95kV
Rated power frequency withstand voltage	28kV, 1min
Rated normal current	328A RMS
Rated prospective short circuit current (with the FCLi not in circuit)	25kA RMS
Rated prospective peak short circuit current (with the FCLi not in circuit)	62.5kA peak
Current interruption settings	Configurable
Typical current interruption time	Less than 0.5 milliseconds
Recovery to normal conduction after fault current interruption operation	Immediate, by remote command (e.g. SCADA). No need for site presence. No need for part replacement.
Cooling method	Air cooled
IAC classification	AFLR 25kA, 1sec
Dimensions (WxDxH)	2.90x1.50x2.35 meters (without ducts)
Installation type	Indoor
Auxiliary Supply	3-phase 400V AC, 16A

Tested successfully at KEMA Labs



KEMA TEST REPORT

5122-20

Object: Fault current limiting interrupter
 Type: FCLi-012000-00330 Serial No. FCLi-012000-00330-000001
 11 kV – 328 A – 25 kA – 50 Hz
 Client: GridON Ltd. 5 Tfuotzot Israel St., Givatayim 5358322, Israel
 Manufacturer: GridON Ltd. 5 Tfuotzot Israel St., Givatayim 5358322, Israel
 Tested by: KEMA Labs Prague Zkušebníctví, a.s., Podnikatelská 547, Prague 9, The Czech Republic
 Date of tests: 27, 29 and 30 June 2020
 Test specification: The tests have been carried out in accordance with client's instructions.



This report applies only to the object tested. The responsibility for conformity of any object having the same type references as that tested rests with the Manufacturer.
 as declared by the manufacturer

This report consists of 87 pages in total.

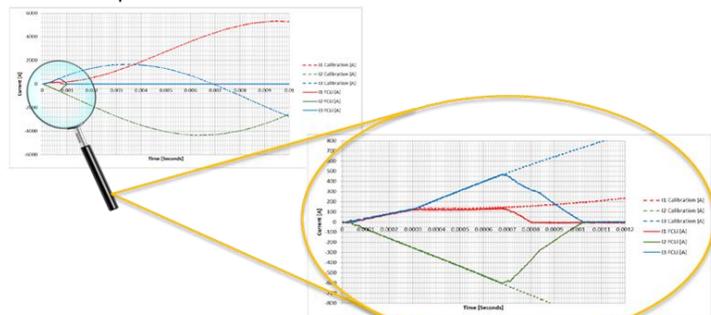
Zkušebníctví, a.s.

R. Jech

Robert Jech
 Operational Manager
 Prague, 7 August 2020



- Interruption of 2.12kA RMS 3-phase fault
- Interruption occurs in less than 0.4 milliseconds



About GridON Ltd

GridON is a leading provider of Fault Current Limiting solutions - for increased connectivity of electricity networks, and for cost-effective deployment of distributed generation and renewable energy sources, allowing sale of excess generation capacity.

Fault currents in electricity grids keep rising with new generation sources added to meshed networks, often exceeding existing switchgear ratings. GridON offers to utility network operators, independent power producers, and industrial and commercial customers, a cost-effective solution which eliminates fault current contribution from such new generation sources. The products enable deployment of massive distribution generation, and the connection of utility grid sections - improving the availability and power quality of distribution networks.

GridON is offering a scalable product line, from low to very high voltage and power ratings.

GridON's solid-state Fault Current Limiting Interrupters (FCLi) enable connection of Independent Power Producers (such as natural gas, biogas, solar, and wind) and private cogeneration to low-to-medium voltage networks. Designed with compact footprint and low price tag, the FCLi is a cost-effective solution.

GridON's Fault Current Limiter Diverter (FCLd) is designed for medium-to-high voltage networks. This power-electronics based product enables connection of grid and substation sections, as well as connection of distributed generation to high voltage networks.

GridON's legacy saturated-core Fault Current Limiters (FCL) product line is offered for high to very-high voltage networks. This scalable solution is well suited for distribution and transmission networks.

GridON's products improve grid resilience and reliability and significantly lower capital expenditures and operating costs, while eliminating network upgrades and early retirement of fit-for use equipment.

For further information, please visit www.GridON.com or email sales@GridON.com or call +972.3.711.1183