

## **IT'S EASY TO BE SMART WITH AN INTELLIGENT ADAPTER**

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The network distribution system is facing a rapid complexification pushed by the multiplication of connection of distributed production systems fueled by ever stronger national and international environmental objectives, causing additional and variable load on the once slow-paced LV grid.

### **Donchery, 2019-08-30 – Facilitating sensor installation in power networks**

These multiple connection points, be it delocalized generators such as photovoltaic clusters or punctual high-power rating consumers such as EV charging stations, have a local and adverse effect on grid stability, which renders a static load-managed grid design at best very costly, at worst very unreliable. Local authorities are not oblivious to the challenge that this new configuration will mean to the end consumer, as the requirements on quality of service and power feed-in control, as set out in the revised connection code of practice VDE-AR-N 4105.

To meet these new requirements, the distribution system operators (DSO) will need to implement an accurate mesh of measurement of grid parameters as close as possible to the feeding points, enabling a real-time knowledge of network load and status.

Thankfully the recent years have seen a steady development of medium voltage low power sensors, which can be easily integrated onto the network to supplement the traditional measurement transformers fixed in the substations. But is it really that easy?

### **A headache in perspective**

Well the answer is mitigated and can cause a lot of grey hairs to networks planners. Indeed, the auxiliary plug-in voltage and current sensors offer a versatile solution to make almost any existing or new network smarter. But on the other hand, the grey areas in normalization have generated a wealth of solutions that are not always interoperable and can be troublesome to select.

Each link of the chain is well defined with regards to its own respective function - passive sensors have to comply to the instrument transformer standards IEC 61869, and power accessories have to comply to the HD 629 standard – but no standardization has been set forth to ensure that sensors and power accessories fit together. And so, planning of installation or retrofitting of equipment is very burdensome as each time every single parameter has to be fully checked in terms of:

- Type of switchgear:

AIS and GIS switchgears require different type of accessories, smart connector or termination, and thus different model of sensors

- Sensor interface:

Each accessory manufacturer can design its own interface for the piggyback connection, and thus different model of sensors

- Space requirements:

Each switchgear has its own design of connecting bay, thus not any type of sensor/connector assembly will fit

- Retrofitability:

Adding sensors to existing installation will require different installation conditions which have to be verified beforehand

All these pitfalls combined are the sure promise for a lasting headache and “open-heart surgery” on each substation as can be guessed.

### A welcome relief

So, is there no other solution than Aspirin? Nexans believes there is a way of meeting the need of enabling sensor installation closest to the feeding while keeping a simple interoperable approach irrelevant of switchgear, spacing and simplifying retrofitting.

This is achieved by moving the low power transformer measuring point outside of the switchgear and onto the transformer bushing by using a Smart Adapter pre-fitted with the required sensors (fig. 1).



Fig. 1: Smart Adapter KAA4/8 by Nexans EUROMOLD®

In this configuration, most of the complexity is gone (fig. 2).

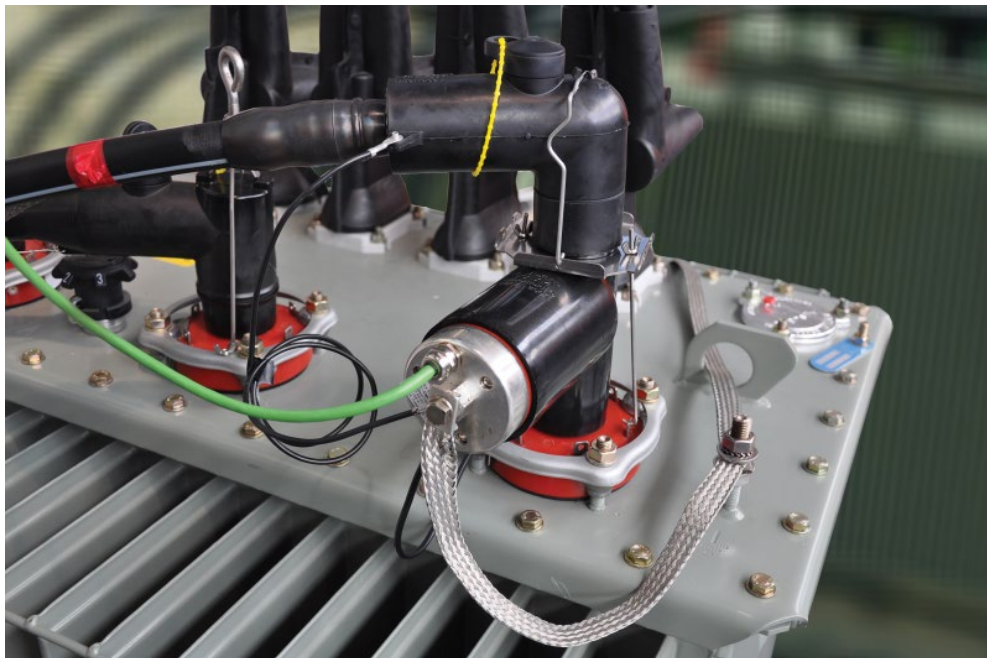


Fig. 2: Connector arrangement on transformer bushing with cable outlet

- One for all:

On top of the transformer spacing is less of a worry, and the bushing interface is well defined.

The type of accessory or switchgear is no longer relevant.

There are no reworks needed for retrofitting, the adapted simple comes plug & play in between the existing accessory and bushing.

- All for one:

Any brand of sensor can be pre-fitted inside the adapter in factory.

The easy access to the interface allows for easy cabling and flexibility on site during installation.

### **Future proof**

Who knows what the future holds? Although today the urgent needs call for network automation and power flow control, having an easy accessible and maintainable sensor array in the grid will enable for the digital revolution of the distribution nodes to come, with big data preventive maintenance applications, intelligent load management and other advanced network healing functions. We at Nexans are thrilled to help you reach your full potential.

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### **About Nexans**

Nexans is a global player in energy transition. Our purpose: electrify the future. For over a century, Nexans has played a crucial role in the electrification of the planet. With around 25,000 people in 38 countries, the Group is leading the charge to the new world of electrification: safer, sustainable, renewable, decarbonized and accessible to everyone. In 2020, Nexans generated 5.7 billion euros in standard sales.

The Group designs solutions and services along the entire value chain in three main business areas: Building & Territories (including utilities and e-mobility), High Voltage & Projects (covering offshore wind farms, subsea interconnections, land high voltage), and Industry & Solutions (including renewables, transportation, oil and gas, automation, and others).

Corporate Social Responsibility is a guiding principle of Nexans' business activities and internal practices. As a signatory of the Global Compact since 2008, Nexans is committed to contribute to a responsible global economy and strives to promote the ten principles defined by the UN to all its stakeholders. The Group pledged to contribute to carbon neutrality by 2030 and was the first cable provider to create a Foundation supporting sustainable initiatives bringing access to energy to disadvantaged communities worldwide. Nexans' commitment to developing ethical, sustainable and high-quality cables also drives its active involvement within leading industry associations, including Europacable, the NEMA, ICF and CIGRE.

Nexans is listed on Euronext Paris, compartment A.

For more information, please visit [www.nexans.com](http://www.nexans.com)

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