



## Subject:

Development of a harmonics measurement system / Power Quality measurement system to perform model validation at points of common coupling of wind parks - up to 50 kHz harmonics

## The main challenge:

The customer has a program to provide grid model validations from DC up to 50 kHz. This is primarily required at wind power connection points in order to clarify the interaction between the grid and power-electronics-based wind turbine power generators.

To do so, the customer needs accurate current measurement.



## Proposed solution:

Senseleq is working together with the customer on a concept to measure wide range currents from DC up to 50 kHz in high voltage grid connection substations. Ring core current transducers (CT) are being installed around (slipped over) the HV and Neutral bushings on top of the transformer tank. When this DC pollution can be measured accurately, the customer can provide the network model validation required for fine tuning of the wind turbines' electronic systems.



The proposed solution includes a hybrid CT unit positioned where the existing metering and protection cores are currently installed in the existing ring core CT around the transformer bushing. This means Senseleq will deliver its new sensor alongside the existing inductive ring cores built into a cast resin unit the same size as the one it will replace.

The analog output current of the new sensor will be used to measure the DC current. The output current signal will include the entire spectrum of components: AC 50 Hz; DC, harmonics up to 50 kHz, etc. Each will be measured to high accuracy levels; the customer will handle the filtering and A/D conversion internally.