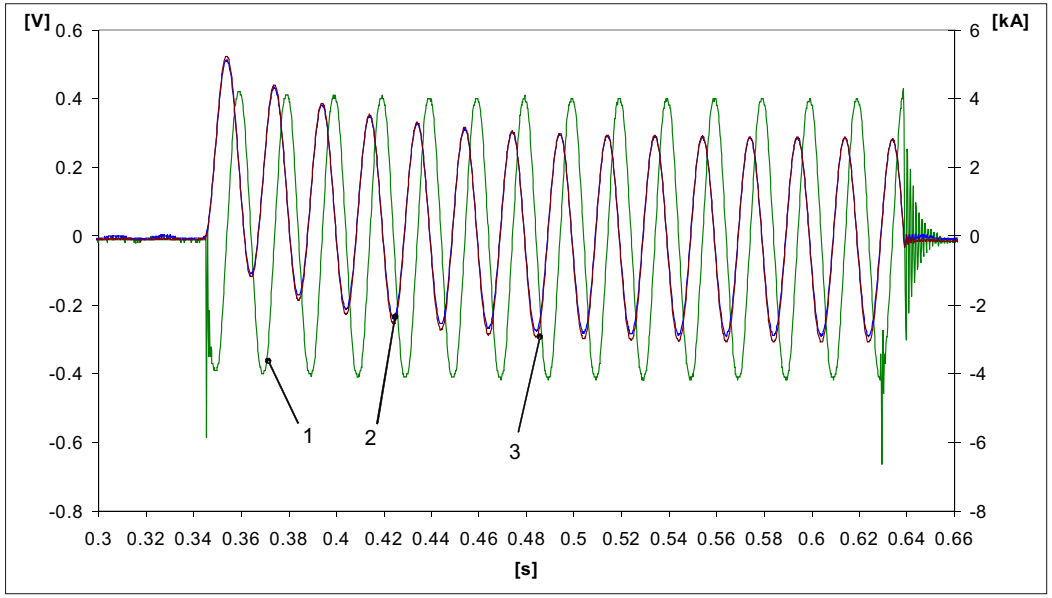

Comparison: Rogowski transducer shunt

1 - RC output voltage; 2 - current measured with shunt; 3 - RC output voltage integral.

Flexible Rogowski transducers

Manufacturer:

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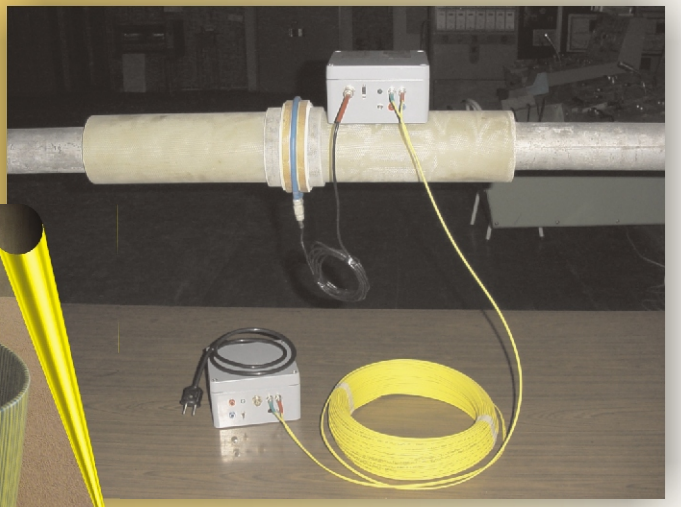
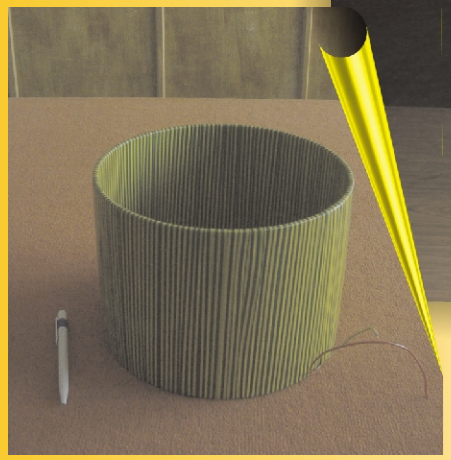
Rogowski Transducers for current measurement in permanent and transient duty



High potential FO transmission from RC



Rigid Rogowski transducer

Based on Prof.Rogowski's invention (1912), the current transducer currently named Rogowski Coil (RC) represents a winding uniformly distributed around the conductor passed by a time varying current; its output signal is proportional with the time derivative of the current (di/dt).

In comparison with the classical shunt, RC has the advantage of not having any ground connected point avoiding in this way the common mode disturbances superposed over the signal to be measured. In exchange, it can measure only time varying currents.

In comparison with the current transformer, RC has the advantage of having an intrinsic linearity (no iron core) and therefore its amplitude dynamic range is of at least 3-4 decades and the frequency band is ranged within about 0,2Hz and a few tens of Mhz.

At the present technical level, RC represents the most efficient measuring method for currents used in electrical engineering and power electronics both in permanent and transient duty.
ICMET owes the RC achievement technology inclusively the specific electronics and also accredited test and calibration laboratories.

Constructive types

- Flexibile RCs
- Rigid Rcs

Technical characteristics

- Rated currents: up to 320kA$_{rms}$, 2s
- Output signal: 0,003mV/A up to 0,3 mV/A depending on the rated current value.

Operation duties

- **Rogowski duty** (high impedance closed winding). Output signal proportional with di/dt. It is used an active integrator that, on request, is part of the furniture.
- **Current transformer duty** (winding with an inductivity L closed on an low value resistance R RL passive integrator). Output signal proportional with the signal to be measured. It can be used for frequencies

$$f > R/6L$$

Measurement uncertainty

- Typical value: 0,5%
- Influence of a variable position with respect to the conductor passed by current: 1%

Some applications of RC

- Measurement of low, medium and high frequency AC currents in short and long term duty (lower limit frequency 0,2Hz, higher limit frequency about 20MHz);
- Fast varying current measurement;
- 8/20μs current impulse measurement to test MOV arresters;
- Current impulse train measurement at spot welding;
- Rectifier ripple measurement;
- Grounding resistance measurement.

RC calibration

ICMET has a High Power Laboratory with 50 Hz AC current sources for currents up to 320kA$_{rms}$, 2s and a Shunt and Rogowski Coil Calibration Laboratory accredited by **DKD** (German Calibration Service) using the new standard IEC 62475:2008. This laboratory offers calibration services also for measuring system manufactured by other companies.

Order model

RC design and manufacturing is made on request.
The beneficiary shall offer at least the following information:

- Constructive type;
- RC dimensions necessary for the particular application;
- Operation duty (short time, long time);
- Rated current (peak value, effective value);
- Shape of the current to be measured (sine, impulse etc);
- Output signal in mV/A;
- Other information considered necessary.