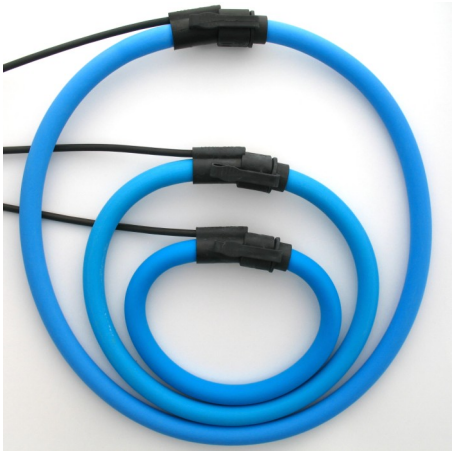
PERFORMANCE UPDATE

Flexible Rogowski Coils: Principles of Operation

June 2009

INTRODUCTION

A Rogowski coil, named after Walter Rogowski, is an electrical device for measuring alternating current (AC) or high speed current pulses. It consists of a helical coil of wire with the lead from one end returning through the center of the coil to the other end, so that both terminals are at the same end of the coil. The whole assembly is then wrapped around the straight conductor whose current is to be measured. Since the voltage that is induced in the coil is proportional to the rate of change of current in the straight conductor, the output of the Rogowski coil is usually connected to an electrical (or electronic) integrator circuit in order to provide an output signal that is proportional to current. The relationship between voltage and rate of change of current is explained in the following equation where V is voltage and M is a constant.

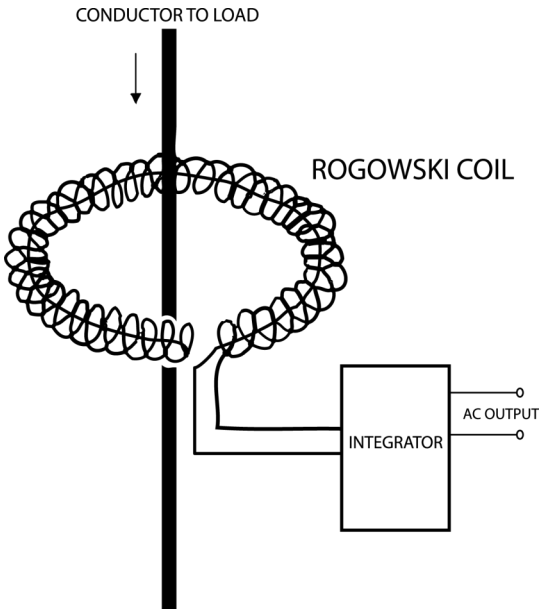


DENT's RōCoil™ Line of Flexible Current Transformers

$$V = M\frac{di}{dt}$$

ADVANTAGES

- Can be made open-ended and flexible, allowing it to be wrapped around a live conductor without disturbing it.
- Since a Rogowski coil has an air core rather than an iron core, it has a low inductance and can respond to fast-changing currents.
- Highly linear even when subjected to large currents, such as those used in electric power transmission, welding, or pulsed power applications.
- Largely immune to electromagnetic interference.



Rogowski coils need to be externally powered, either by battery or via wall transformer. DENT RōCoils™ can be powered by the PowerScout instrument itself. In the case of RōCoil mV™ CTs, they can be powered by an adapter connected to a Line-Powered ELITE*pro* (PX-ADPT) or wall transformer. Visit the DENT website or contact us for further information.

Information courtesy of Wikipedia: http://en.wikipedia.org/wiki/Rogowski_coil

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