

# Rogowski Coils for Accurate AC Current Measuring



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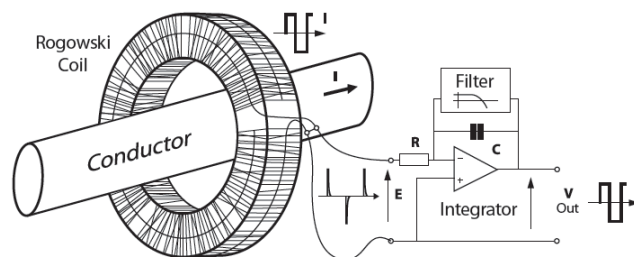
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## Ideal for High Current Metering Applications

Rogowski coils are wire wound “air” core toroids which are used to measure AC current. The AC current that is measured creates a magnetic field which induces a voltage in the coil that is proportional to the change in current. This innovative technology has been used in high current metering applications with a very high accuracy.

A conductor which carries the current to be measured passes through the center of the Rogowski coil, which senses the change in current. An integrator transforms the signal to be measured, while a filter is used to eliminate any noise in the signal. Advances in digital IC measurement technology provide greater integrator reliability. The move to smart metering has accelerated the use of Rogowski coils.

Rogowski coil operation



**Standex-Meder Electronics is uniquely qualified to manufacture coils to meet specific application demands, such as:**

- Determining (a) number of turns and (b) wire size for optimum results
- Addition of shield layer to help reduce EMI (electromagnetic interference)
- Integration of internal components such as shunts within the assembly
- Custom packaging which includes connections, custom molding and more
- Filter and integrator design for specific Rogowski coil

**Standex-Meder Rogowski coils and modules offer many benefits, including:**

- Single-phase or three-phase designs
- Low cost
- Very good linearity over measurement range
- Very good high current measurement capability
- Low power consumption
- No DC/high current saturation problems
- Very low output variation with temperature
- No DC offset problem



Highly accurate yet lower cost Standex-Meder Rogowski coils and modules are well suited for many smart metering applications. They are used within hybrid circuit breakers measuring high currents.

Our engineers routinely work with customers to develop custom solutions to their challenging projects. Some value – added examples include shielding to isolate current from downstream components, or single or double sided PCB with ground planes to reduce noise.

Custom packaging including molding, encapsulation, connections and more help to streamline final assembly, integration into other components, and in-field installation.

Rogowski Coil vs Current Transformer		
Current Sensing Technology	Current Transformer	Rogowski Coil
Cost	Medium	Low
Linearity over measurement range	Fair	Very Good
High current measuring capability	Good	Very Good
Power consumption	Low	Low
DC/high current saturation problem	Yes	No
Output variation with temperature	Low	Very Low
DC offset problem	No	No
Saturation and hysteresis problem	Yes	No

Rogowski coil assemblies can be simple coil packages as shown or complex custom modules with multiple coils, shunting, integral connectors, etc.



Three-phase sensor module includes double sided PCB with ground plane to reduce noise, a shield layer to isolate Rogowski coils, and custom packaging.



Standex-Meder engineers often assist customers in the selection of wire and the number of turns to achieve their specific results.

