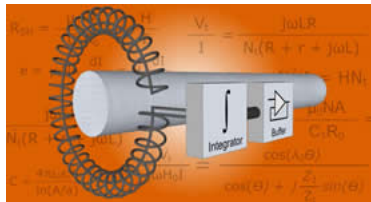


Rogowski coil for the current / measurements



credit:[PEM, 2018]

- Ampere's Law: $\nabla \times \mathbf{B} = \mu_0 \mathbf{j}$
(neglecting $\dot{\mathbf{D}}$)
- current through (const) surface S :
$$\int \mathbf{j} \cdot d\mathbf{S} = I$$
- (const) poloidal field along surface border l : $\int \nabla \times \mathbf{B} \cdot d\mathbf{S} = \oint B_p dl = I B_p$
- voltage induced:
$$U_I = -N \dot{B}_p S_c = -\frac{N S_c}{l} \dot{I}$$
- The wire of the coil is back-wound to omit stray magnetic fields from other possible sources.



PEM (2018). What is a rogowski coil?

<http://www.pemuk.com/how-it-works.aspx>. [Online; accessed 4-January-2019].