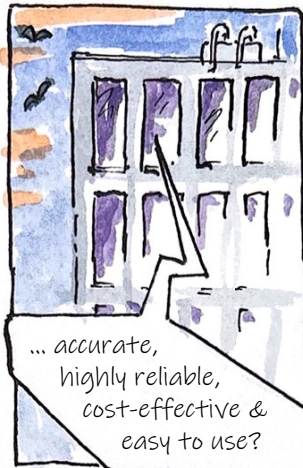




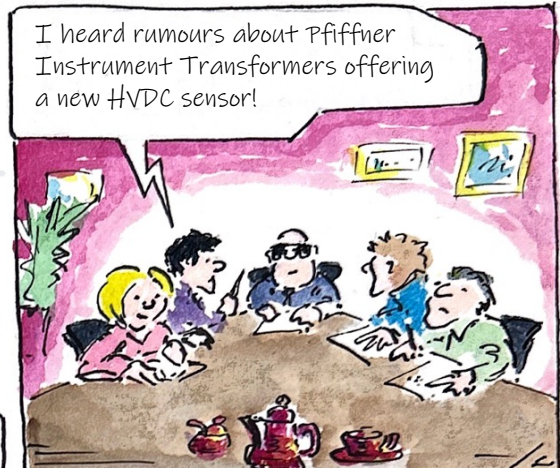
# ZERO FLUX HVDC Current Sensor acc. to Fluxgate Principle



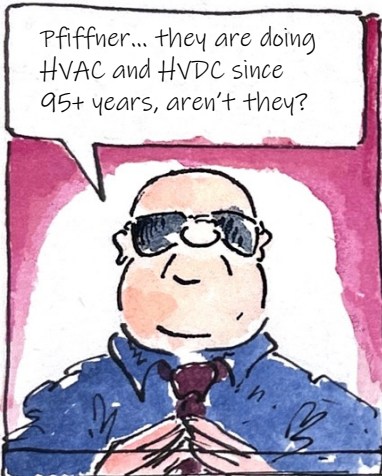
How could we measure HVDC currents?



... accurate, highly reliable, cost-effective & easy to use?



I heard rumours about Pfiffner Instrument Transformers offering a new HVDC sensor!



Pfiffner... they are doing HVAC and HVDC since 95+ years, aren't they?

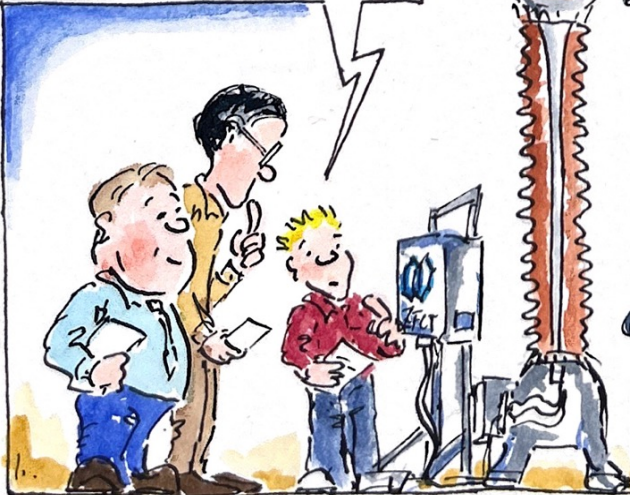


So, let's give it a try!!!

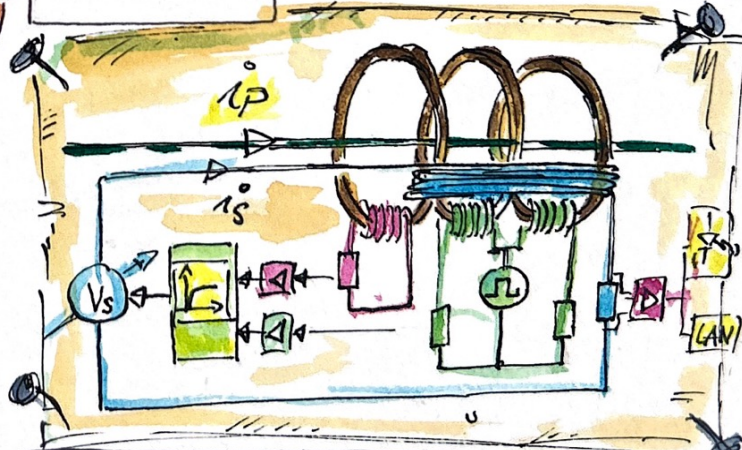


Hirschthal, Switzerland

Looks very similar to Pfiffner's AC CTs. So, how do they measure DC by transformers?



It takes 3 coils, 4 windings and electronics to apply the "Fluxgate Principle" <sup>(1)</sup> enabling the conventional CT for DC measurement.



The information about the primary current is obtained from an enforced periodic saturation of coils.

That sounds complicate... How about accuracy in the presence of different materials and temperatures?

Highest accuracy is achieved by ZERO FLUX control

$\Psi = 0$  when  $I_s = \frac{I_p}{N_s}$

$I_s = \frac{U_b \cdot N_s}{R_b}$

The operating point  $\Psi = 0$  is independent of materials and temperatures!

Does the accuracy comply with IEC 61869?

Accuracy up to Class 0.1 including signal processing and AD conversion

Step response  $< 10\mu s$

$Bw = 100 \text{ KHz}$

$I_s \rightarrow \frac{U_b}{R_b} \rightarrow \Delta \rightarrow \text{ADC} \rightarrow \text{FIR}$

Up to 6 p.u. with  $< 1\%$  accuracy?

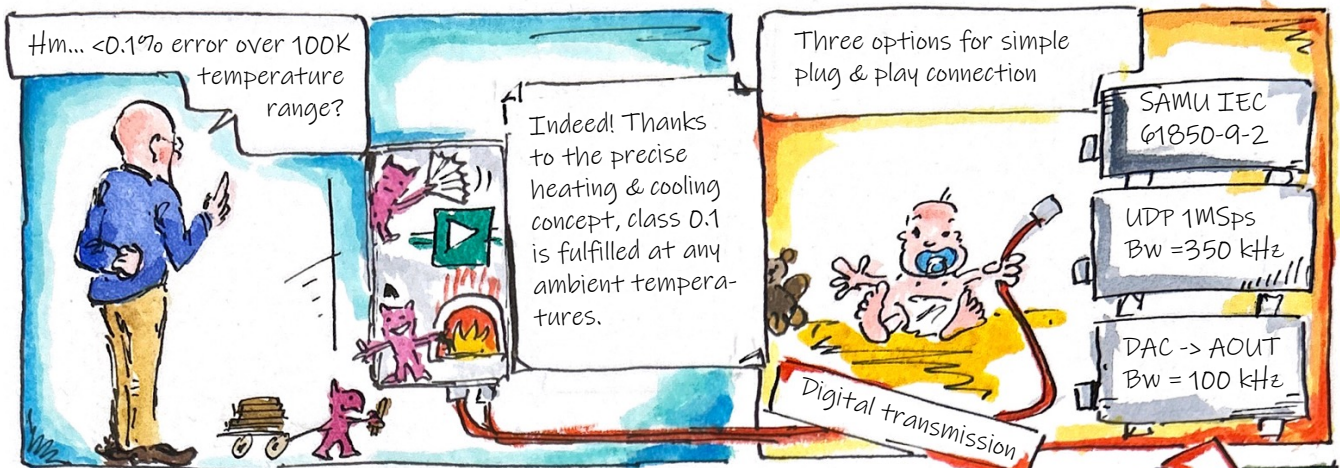
Coils of various size and current rating up to 20 kA

And, is it really reliable?

95+ years experience in HV isolation technology

Industrial grade electronics  
Convection cooling  
15y lifetime  
IP66

Ambient temperature range  $T_A = -50^\circ\text{C} \dots +50^\circ\text{C}$



# Global presence

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Current and voltage – our passion

**HV** HIGH VOLTAGE

**MV** MEDIUM VOLTAGE

**LV** LOW VOLTAGE