Application report

Industrial Sensors





Type UB1 – Version for railway vehicles



- absolute impermeability of the device due to the robust housing
- reliable switching behaviour
- avoidance of backflows
- low pressure loss
- broad area of application

Flow monitors in traction transformers for railway vehicles

The requirements placed on us

Due to the long service life, state-of-the-art vehicle transformers for railway vehicles impose ever more rigorous requirements on reliability, profitability and the safety of these products. This high demand on the quality of the drive units also applies for the manufacturers of delivered assemblies.

Monitoring oil flow is a safety-relevant process that is a special focus area for all manufacturers of traction transformers, since under some circumstances, a fault message can bring the train to a standstill. Flow monitors are used for this monitoring task. Depending on the design (underfloor or roof design) these monitors are directly exposed to environmental influences, such as rain, snow or spray water, which particularly impose a high requirement on the device housing relative to dust protection or protection against water ingress. In the underfloor design, in addition the paddle switches must also be protected against rock impact.

Consequently, the requirements imposed on flow monitors in this application are diverse: In addition to robust construction, 100%

functional reliability in the most varied temperature ranges, to which railway vehicles are exposed worldwide, as well as a cost-effective design, are other prerequisites.

Our solution

Implementation of this important function occurs through a device series UB1 flow monitor that has been developed especially for these railway applications. The monitor works in accordance with the baffle plate principle, i.e. the force of the flow that acts on the baffle plate (paddle) moves it counter to the spring force.

Hermetically separated by the bellows, the paddle's deflection is transmitted to an adjustable microswitch that is configured for 1 million switching cycles. The housing, available in plastic or die-cast aluminium, meets the requirements stipulated in EN 60529 for protection class IP 65/IP 67.



The advantages

- Thanks to **hermetic separation** of the flow chamber from the functional part, medium cannot get into the interior of the device.
- A microswitch that is coupled with the paddle rod and configured for 1 million switching operations ensures **reliable switching behaviour.**
- To protect against backflows that can occur due to paddle breaks, a special segment paddle was developed.





Type UB1 – Version with flange

Type UB1 – Version with TÜV certification

- Among other things, baffle plate switches are characterized by their **minimal pressure** loss.
- In the standard version, all components are configured for a media temperature range from -20°C ... +140°C.
- A die-cast aluminium housing with injected seal protects against environmental influences, such as rain, snow, or spray water and against rock impact.
- Different housing materials and process connections, such as female thread or flanges, are available.
- As an option TÜV certification in accordance with the «Strömung 100» (Flow 100) directive is available.

Focus on the customer – purchase decision

Paddle switches of the proven UB1 device series are the first choice when the task at hand is monitoring larger pipe diameters with minimal pressure losses. Through careful selection of materials, the monitors can be used in a broad temperature range. Thanks to a metal housing the user can dispense with additional protective measures, such as a cage to protect against rock impact or an enclosure due to adverse environmental influences. Moreover, the baffle plate design offers the crucial advantage that it is costeffective compared to other monitoring principles.



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