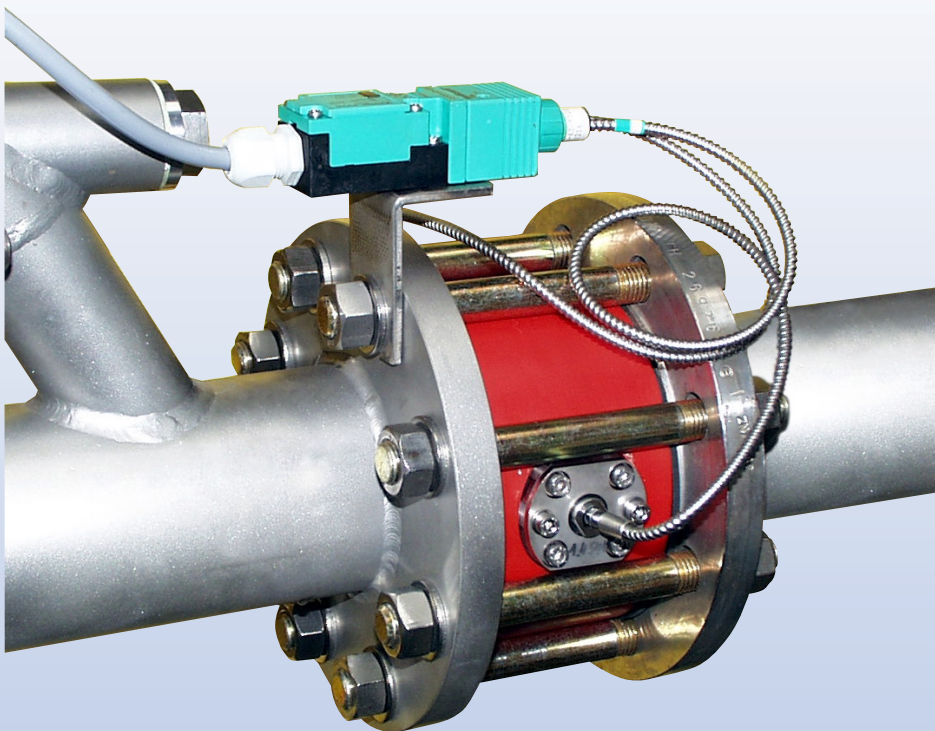


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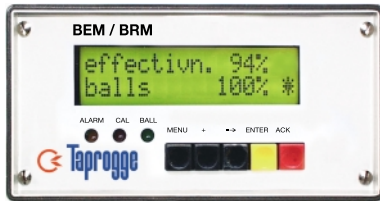
Ball Recirculation Monitor BRM

 Taprogge



Monitoring

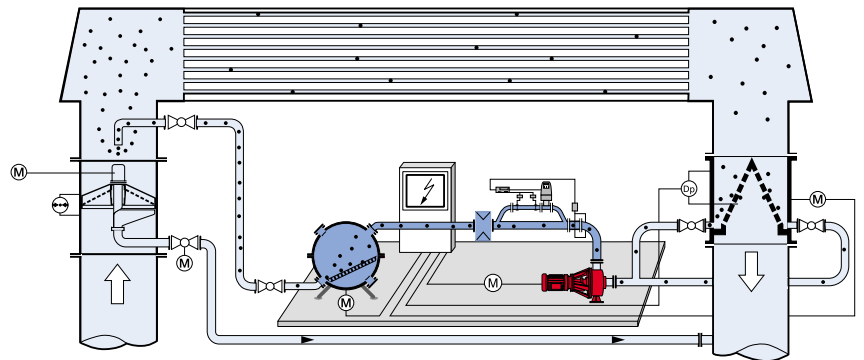
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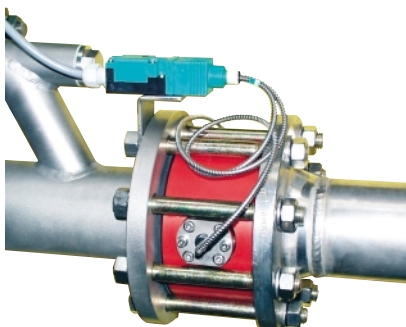
BRM-display

BRM

The BRM (Ball Recirculation Monitor) serves as an optional add-on device to the TAPROGGE System for the automatic monitoring of the quantity of circulating cleaning balls. The circulation of the pre-set ball charge is a precondition for an optimal cleaning result. Automatic monitoring by BRM offers enhanced application comfort to the end user – manual checks are no longer necessary.



Arrangement of the TAPROGGE-modules within the entire system



BRM counting barrier

The Task

The optimal cleaning performance of the TAPROGGE System is conditional on the circulation of a sufficient ball quantity. However, there are some events that may impair the otherwise impeccable circulation of the pre-set ball charge:

- Obstructions of tube sheet or tubes by coarse particles (macro fouling) if no TAPROGGE Debris Filters are installed at the condenser inlet
- Cooling water flow rate deviating from design condition which may result in ball blockages on the screens (flow rate too high) or in the tubes (flow rate too low)
- Use of inappropriate cleaning balls
- Malfunctions of the TAPROGGE System
- Operating errors

The task of BRM is to continuously measure and display the number of circulating balls and to generate an alarm signal once a pre-set limit value is remained under. At the same time the BRM is suitable for the identification of possible operational problems.

Design and Operational Characteristics

The Ball Recirculation Monitor BRM is supplied as an optional part of the recirculating unit of the TAPROGGE System. It consists of a counting barrier and an evaluator. The counting barrier is installed in the recirculating pipe between recirculating pump and ball collector. In this way all cleaning balls pass through it. Every ball passage creates a pulse that is transferred to the reflection light scanners by a fibre-optical light guide. The measured data is sent to the BRM evaluator, that has been prepared for the integration into the TAPROGGE control panel, where it is processed by means of the special TAPROGGE Softcare® program.

Upon every completion of a measuring interval of a few minutes the actual circulating ball quantity is displayed at the evaluator. If the circulating ball quantity falls to a pre-set minimum value, an alarm signal will be given. Configuration and evaluation data can be accessed locally or remotely.

By the use of a pulsed infrared beam in the counting barrier, cleaning balls are identified even in turbulent water. Furthermore, the counting barrier is designed in such a way that small debris particles in the cooling water are not identified as balls.

An auto-calibration of the evaluator is effected during cleaning operation. It is required for first start-up, or if the type or number of cleaning balls are changed.

Special Features and Benefits

- Continuous determination and display of the number of circulating balls as a percentage of the pre-set ball charge
- Automatic alarm signal if the pre-set, minimum ball charge is reached and maintained
- Highly precise measuring technology with distinction between cleaning balls and small debris particles by pulsed IR beam
- TAPROGGE Softcare® package for data evaluation
- Menu-guided calibration and system configuration with adjustable operator language
- Storage of system configuration and up to 1,000 measured data (can be inquired)
- Data access locally via terminal program or remotely by modem and telephone line
- Retrofit possible
- Upgrade of earlier solutions (TAPROGGE BRM-1)
- Can be combined with TAPROGGE BEM (Ball Effectiveness Monitor) by using the same evaluator



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