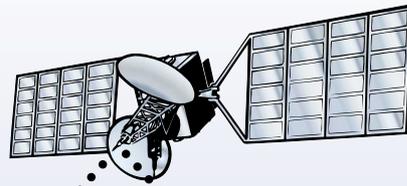


# IN-TA-CT<sup>®</sup>

FilterOptimizer FO

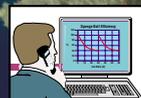
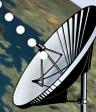
The Taprogge logo consists of a red stylized 'G' symbol followed by the word 'Taprogge' in a blue, sans-serif font.

Monitoring

5

A satellite dish antenna mounted on a pole, pointing towards the sky.

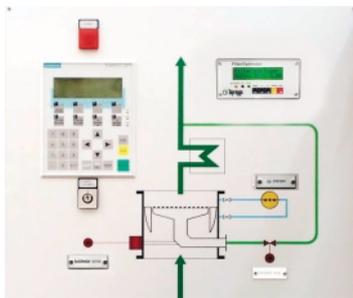
FO



Remote Monitoring Centre



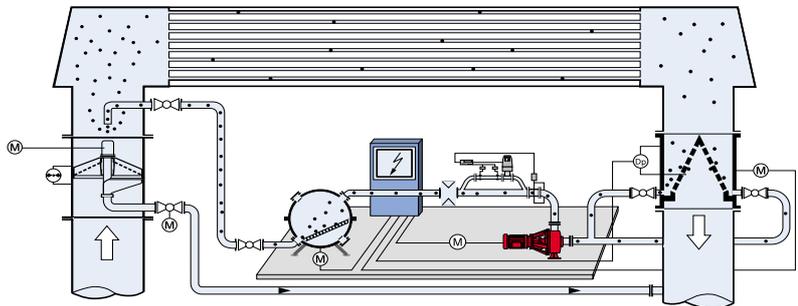
FO-Display



FO-Display in control panel

## The FilterOptimizer

Being an optional add-on device, the FilterOptimizer ideally complements every TAPROGGE Debris Filter. Due to its intelligent software, the patented device is selflearning and automatically optimizes the point of time for filter backwash. The capacity losses through late or premature filter backwash – that are avoided by the FilterOptimizer – are considerable. That is why the payback time of a FilterOptimizer is generally less than one year.



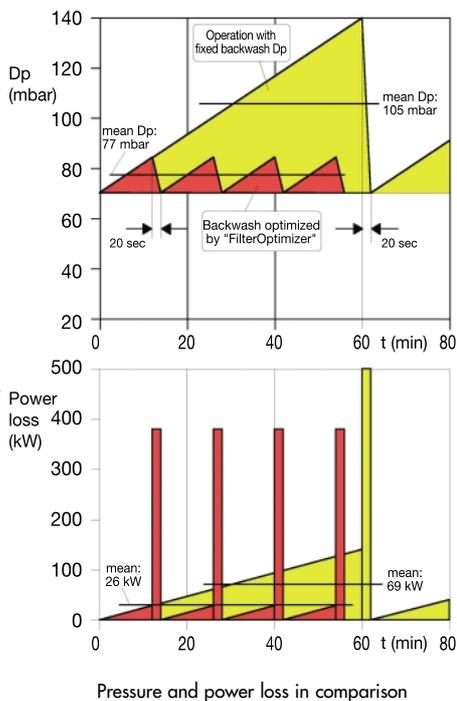
Arrangement of the TAPROGGE-modules within the entire system

## Task and Functional Principle

TAPROGGE Debris Filters remove foreign matter in the cooling water system. The particles are separated from the filter surfaces by backwash. The backwash process is initiated once a pre-set, fixed differential pressure value has been reached. However, it is known that a fixed differential pressure is seldom optimal in economic aspects.

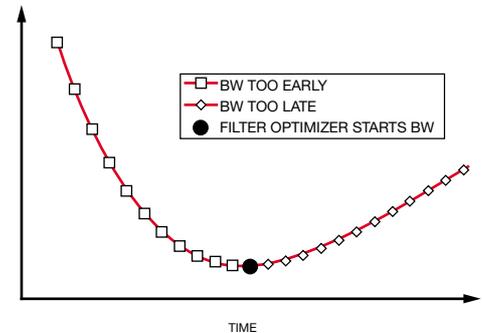
Any operational condition of a filter, be it filter operation or backwash, causes specific performance losses. Yet those performance losses are clearly lower than those that would be caused by macro fouling if no filter was installed. Thus cooling water gets lost to the condenser during backwash which reduces the cooling capacity and consequently causes the turbine efficiency to drop. Frequent backwashing, through a backwash point adjusted very low, makes sense only in the case of strong debris ingress, but not with low debris occurrence, because otherwise cooling water would be withdrawn from the cooling system too often.

On the other hand, with increasing differential pressure of the filter in filtering operation the cooling water mass flow decreases and the power requirement of the cooling water pump changes. The reduced cooling performance of the condenser causes a deterioration of the turbine efficiency. Rare backwashing, i.e. due to a backwash point adjusted very high, is thus advisable only with strong debris ingress because only in this case will the period until reaching the backwash point remain short, that means that the performance losses through filter operation remain low as well.



It is obviously optimal to make the backwash point dependant on the actual debris concentration. However, this is by no means constant in terms of the period of time. On the contrary, the debris situations are very different and may not only fluctuate considerably throughout the day with the tides, but also seasonally by individual events (storms, blooming times of water flora and fauna, etc.).

It is therefore the task of the FilterOptimizer to control the backwash behaviour of the TAPROGGE Filter by permanent, intelligent adaptation of the backwash point to the actual debris concentration thereby minimising the performance losses through late and premature backwashing.



Optimization of the backwash point

## Design and Operational Characteristics

The FilterOptimizer consists of an evaluator that is connected with the differential pressure measuring system of the TAPROGGE filter – preferably as "DP transmitter". By means of the special TAPROGGE Softcare® package the generated measuring data is processed in the evaluator that is incorporated into the TAPROGGE control panel.

All configuration and evaluation data can be accessed locally or remotely. At the first start-up of the FilterOptimizer it is necessary to calibrate the evaluator. For this purpose the data necessary for the optimization is entered, such as: filter backwash time, required backwash flow, pressure loss of condenser and filter, cooling water pump curve, capacity of the condenser to be protected.

## Special Features and Benefits

- Reduction of operational cost by the intelligent optimization of the backwash point of TAPROGGE filters
- Use as limit value indicator (in combination with DP transmitter) for monitoring fixed signal and alarm points ("filter backwash", "filter overcharged"; functional check of DP measuring system)
- Monitoring of the rate of increase of the differential pressure over a period of time
- Monitoring of the cooling water flow rate, either by using the measuring data provided by the operator, or by independent calculation of the change of cooling water flow, based on the measured DP value of the clean filter
- TAPROGGE Softcare® package for data evaluation
- Menu-guided calibration and system configuration
- Storage of up to 1,000 measuring and configuration data (can be inquired)
- Data access locally via terminal program or remotely by modem and telephone line
- Can be used with any TAPROGGE filter
- Retrofit possible



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