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EDITORIAL

MANAGEMENT NEWS

Bruno Bachhofer on the enlargement of the Management

The Hydro-Elektrik group of companies has operated well and successfully in the last years. About 100 employees now work for the group of companies.

Securing these jobs as well as a solid financial basis for the basis for our continued success irrespective of the respective basic economic data.

However, steady growth also entails increasing responsibility. In particular in view of the continuous development of the group of companies I have believed for some time that our management needs to be strengthened.

I therefore proposed to the last shareholders' meeting to appoint the current authorised representative, Andrea Strobel, as a further as a further manager with single statutory authority of Hydro-Elektrik GmbH as from 1st January, 2006. The shareholders' meeting followed this proposal unanimously. Hydro-Elektrik GmbH now has two managers again as in the first 25 years. I wish our new „managing partner" much pleasure and success in her new responsible task.

Bruno Bachhofer, Managing Director

TECH TALK

CITY OF BADEN-BADEN

Source water treatment with modern ozone compact unit technology

The Stadtwerke Baden-Baden has opted for flocculation filtration with powerful control and regulation technology for the new source water treatment plant in Grobbach.
Modern and productive ozone compact units that are optimally attuned to the strongly fluctuating raw water qualities are used.

The water supply of the city of Baden-Baden is ensured by using source water from the Black Forest and groundwater from the Rhine meadows. As a rule water requirements are fulfilled up to 50 percent by source water. Hurricane „Lothar" during Christmas 1999 influenced the source water quality massively. Almost all the trees were uprooted in the centre of the hurricane. Half of the source catchment area was affected.

The large-scale disruption of the topsoil caused an enormous deterioration in the water quality of the affected sources in particular during rain and thawing. Further usage of these sources would not have been possible without further treatment. The main problems were a strong increase in the turbidity (up to 5 FNU) and the water colour (special linear absorption coefficient 254 up to approx. 14 m^{-1}) as well as a marked deterioration with regard to the microbiological factors.

Ozoning and flocculation filtration

The „Technologiezentrum Wasser Karlsruhe (TZW)" (water technology centre) suggested using the combination of ozoning and flocculation filtration methods. Hydro-Elektrik GmbH won the order for implementing the four filter units operating in parallel and a 50 m^3 stainless-steel buffer reservoir for storing the back-flush water.

The new plant was positioned between raw water storage reservoirs and existing de-acidifaction system so that the plant can be operated with the pressure available from the source feeder line.

The first extension section with a HYDROZON® compact filter system, the intermediate reservoir and the required instrumentation technology was installed in 2003.

Pilot operation

In the winter of 2003/2004 the TZW carried out investigative tests during operation in order to determine suitable process conditions.

A surprising result was that the colouring and thus the organic strain behaved differently than the turbidity at one source. In the end this resulted in separate control circuits for ozoning and flocculation material dispensing. In particular suitable dispensing functions were specified for the addition of ozone and flocculation material so that fully automatic operation of the plant is possible.

The precipitation in the source catchment area was extremely low in the middle of January 2004. The installed instrumentation technology allowed both important raw water and pure water values to be recorded continuously. Despite this extreme strain with bad and strongly fluctuating raw water condition the plant supplies a constant pure water quality with a value that lies considerably below 0.1 FNU at all times.

End configuration

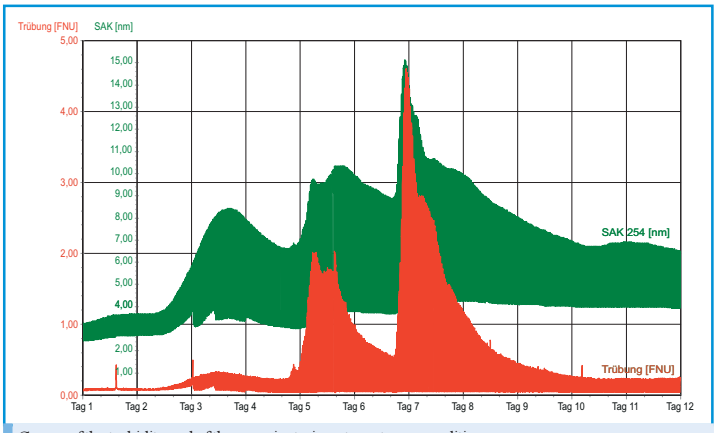
Three further compact filter units were added to the plant in the summer of 2004.

The maximum possible treatment output amounts to approx. 200 m^3/h. Four electronically controlled ozone generators with an integrated mixing system are installed. The individual units are connected or disconnected via a central control unit depending on the available water supply. The complete system is furthermore telemonitored. The investment costs for the complete process engineering system amounted to approximately EURO 780,000.

Summary

Experience from the operation of the source water treatment plant over a period of about two years is by now available. The results show that an effective elimination of cloudy materials can be achieved by means of an automated flocculation filtration even at difficult and strongly fluctuating raw water conditions. The hygienic standards required for supplying drinking water are always fulfilled with filtrate values of about < 0.05 FNU and with particle levels of < 50/ml (1-100 µm).

Detailt report: „DVGW Jahresrevue" (annual review) 2005/2006



Course of the turbidity and of the organic strain unter extreme conditions

PERSONAL

BOILER FEEDWATER TREATMENT

Thermal degassing of boiler water

Superheated steam is irreplaceable in many industrial production processes. The steam is generated from water in steam-boiler systems. In order to ensure a constant useful steam flow the equivalent amount of water has to be fed into the steam generator. This so-called boiler feedwater has to be treated correspondingly.

Degassing - Why and to what purpose?

The service life of pipes, boiler systems, pumps and fittings in thermal hot-water and steam-boiler systems is determined to a great extent by the quality of the boiler water.

Water contains different amounts of oxygen (O2) and carbon dioxide (CO2) depending on the pressure and temperature. The oxidative effect of oxygen together with the corrosive effect of the carbon dioxide (carbonic acid) would cause corrosion in the boiler materials thus endangering the operating safety of a boiler system considerably depending on the pressure and temperature levels.

Specific degassing methods are therefore used to remove the two gases, oxygen and carbon dioxide, from the water or to reduce it to below the respectively required residual concentration.

Thermal degassing

The process of thermal degassing is excellently suitable for removing dissolved gases from the water.

To this purpose the water is heated up to the temperature of ebullition. In this state the solubility of gases in liquids lies near zero.

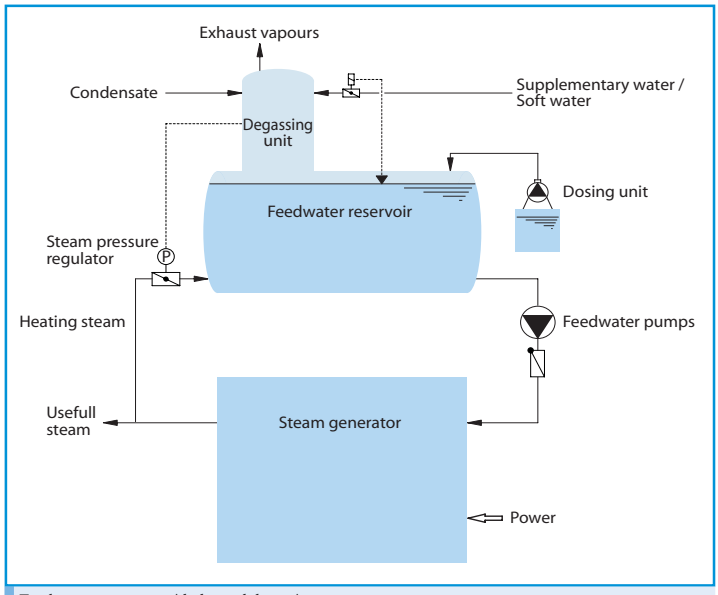
A thermal degassing system consists of several main components:

- Degassing unit
- Feedwater reservoir
- Control unit
- Safety unit

The actual degassing unit is a cylindrical vessel with built-in baffles. The supplementary water is filled into the top of the degassing unit and sprayed finely. In the counter current heating steam flows from bottom to top through the degassing unit, whereby the supplementary water is heated up over the boiling point and the gasses dissolved in the water are removed. The removed gasses are discharged with the exhaust vapours.

The thermally treated water is stored in the so-called feedwater reservoir. The introduction of vapour ensures both subsequent degassing as well as continuous reheating in order to compensate heat losses. The treated degassed hot water is fed into the steam generator as required by means of pumps. The volume of the feedwater reservoir is dimensioned so that any requirement peaks are compensated.

The entire system operates completely automatically and is equipped with all the required controlled and safety devices.



Feedwater treatment with thermal degassing

Further information:
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BRIEF PORTRAIT

Andrea Strobel - new managing director

Andrea Strobel

As a new Managing Director of Hydro-Elektrik GmbH 40-year-old Andrea Strobel will support the current sole Managing Director Bruno Bachhofer as from 1st January, 2006.

Andrea Strobel is a „thoroughbred Hydro child". She already obtained her degree in business administration (BA) in the field of industry at Hydro-Elektrik GmbH. After completing her education, she was so infected by the Hydro virus that she remained in the company contrary to her original plans. She first worked as the right hand of her father and company co-founder, Anton Locher, in the administration.

After the death of Anton Locher she additionally took over the responsibility for finances and personnel. In the context of her succession Andrea Strobel inherited 10% of the company shares. She is thus a managing partner. Ms Strobel is married and has two children.

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