BRAN+LUEBBE
An SPX Process Equipment Operation

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Bran+Luebbe metering pumps in 24-hour operation at Erzo in Switzerland

Bran+Luebbe pumps used for metering acid, caustic, heavy metal precipitant and flocculant solutions.I

Erzo is the short name for Entsorgung Region Zofingen, the authority responsible for public waste management in and around Oftringen, with facilities which include a waste water treatment plant and a power station which takes its heat source from garbage incineration. These are located on a shared piece of land, which results in economies of administration and operation. The incinerator with its associated power plant was built in 1970 and is one of the smaller ones of its type in Switzerland: it disposes of around 65,000 tons of garbage annually from the local population of about 180,000. It was renovated in the early 1990s to comply with stricter environmental protection regulations and is now a regional show-piece.

The waste water treatment plant, also recently updated, deals with both domestic and industrial waste water from neighbouring chemical and textile plants. Due to the chemical content of the water, sludge from the water treatment cannot be used as fertiliser and is completely incinerated, using a process which is unique to Erzo. Hot gas from the rubbish incinerator at around 900°C is passed through a rotary oven (Figure 2) in the opposite direction to sludge which has had its water content reduced to about 25% by a mechanical process. The sludge is first dried and then burnt, and the waste gas from the rotary oven is then passed into the combustion chamber of the main incinerator to be reburnt. The rotary oven copes with around 30,000 tons of sludge annually, from the Erzo water treatment plant and also from surrounding plants.

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Rotary oven for drying and incinerating sludge

The advantages of this combination are:

- Lower cost. The operation, steam generation, NOx removal and exhaust gas clean-up are shared by the garbage and sludge incinerators.
- The waste gas from the rotary oven contains nitrogenous decomposition products which help to reduce some of the oxides of nitrogen in the garbage incinerator and therefore reduce the consumption of feed material for the catalytic converter: when the sludge incinerator is in use the consumption of ammonia for the catalytic converter is reduced by about half.
- The forced flow of hot gas from the rotary oven results in very efficient mixing of the combustion gases in the main incinerator and helps to increase the combustion efficiency and reduce corrosion.

A disadvantage of combining the sludge and garbage incineration is that sludge can only be burnt when the main incinerator is in use. This means that down-time has to be reduced to a minimum to avoid having to store the raw sludge, which would otherwise lead to excessive odour generation.

The plant‘s excellent record of well over 8,000 operating hours per year is aided by the use of twelve Bran+Luebbe N-P31 type metering pumps, which are known for their reliability. These pumps are used in four parts of the facility:

- Sodium hydroxide solution addition in the waste gas scrubber and for final effluent neutralisation.
- Hydrochloric acid addition in waste water pretreatment and final effluent neutralisation.
- Heavy metal precipitation in waste water pretreatment and
- Flocculant addition for water water pretreatment..

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Aerial view of the Erzo plant

The Bran+Luebbe diaphragm pumps have been in operation since 1995, to the complete satisfaction of the plant management. According to Thomas Mueller, the general manager of Erzo, the decision to replace the pumps originally installed by the plant construction company was a key factor in raising the plant's availability, due to the frequent valve problems experienced with the previous pumps: a good example of the economics of plant availability being more important than initial purchase price.

The Bran+Luebbe pumps' reliability is ensured by the patented diaphragm control mechanism, which prevents damage to the diaphragm even under critical operating conditions such as a blockage on the supply or delivery side. The Erzo pumps are also fitted with a diaphragm condition monitor which immediately signals any damage to the diaphragm. Even if this should happen, a hermetic seal is maintained so that neither the environment nor the plant operators can be contaminated by a leak.

The N-P31 pump is one of the NOVADOS series, with a variable stroke of 0 - 20 mm. It can be fitted with either a plunger or a diaphragm pump head and has a maximum delivery of 0 - 720 l/h at a pressure of up to 500 bar.

As with all Bran+Luebbe pumps, the P type can be combined with all other pump sizes in the NOVADOS range. This flexibility is further enhanced by different ways of controlling and varying the flow rate, with manual, electric, electro-pneumatic or pneumatic stroke adjusters available. The speed of the pump drive motor can also be varied with a frequency controller.

NOVADOS pumps meet the requirements of Machinery Directive 98/37/EG and ATEX 94/9/EG.Laut Theodor Kaufmann, Leiter Instandhaltung, genügt ein monatlicher Tageseinsatz, um alle 12 Pumpen rund um die Uhr verfügbar zu halten. Damit ist die Verfügbarkeit für die Bran+Luebbe Membrandosierpumpen von fast 99% erreicht.

According to Theodor Kaufmann, the Erzo Maintenance Manager, one service day per month is sufficient to maintain all 12 pumps in 24-hour operation, resulting in a calculated availability for the Bran+Luebbe pumps of nearly 99%.

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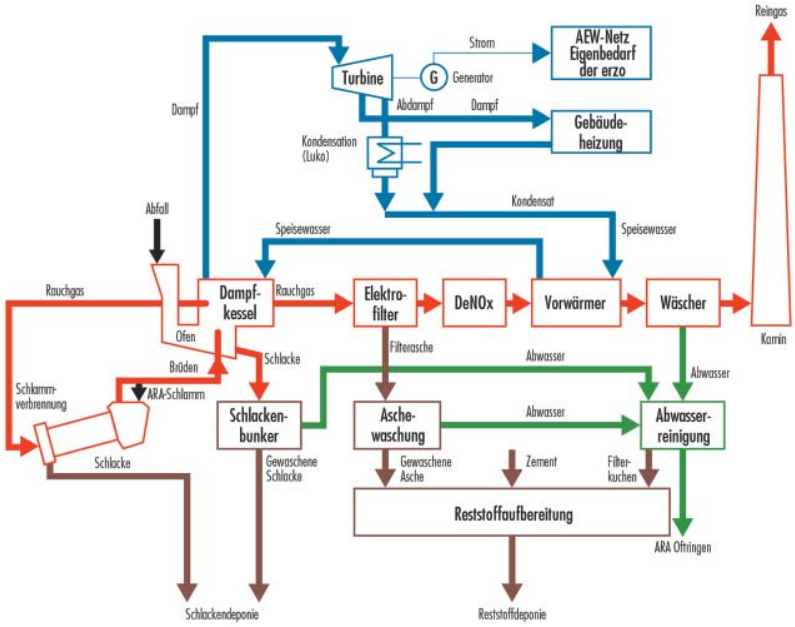

Schematic diagram of the Oftringen plant

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