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## ***ENERGY SAVING***

### ***BY – PASS Station***

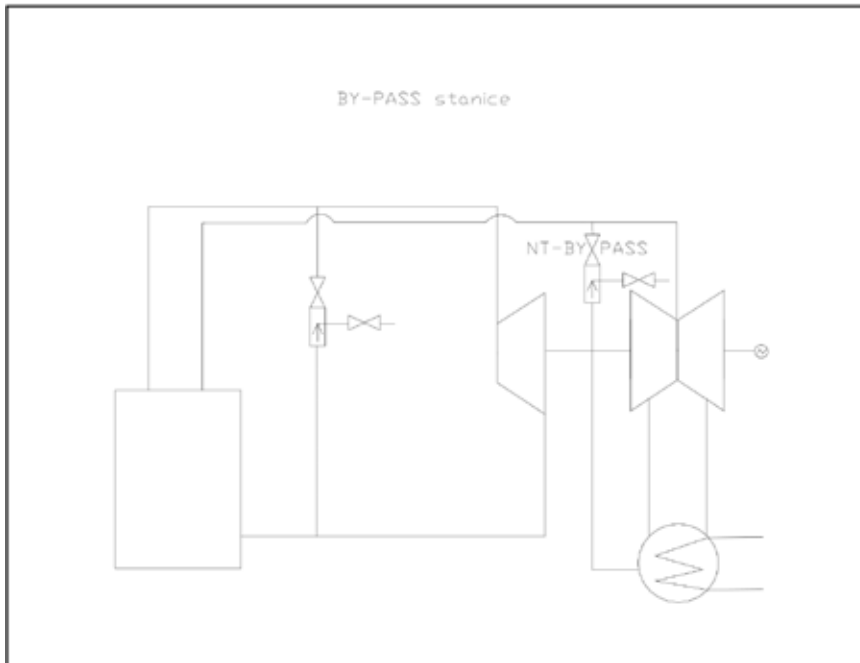


## **By Pass Station and Enormous Benefit**

The most of power stations with the output over 55 MWe use a By Pass station for slowing down and setting into operation, which enables an automatic control of the individual units of the power station in a scope of starting up to slow down and a flexible reaction to unstandard conditions. The usage of By Pass stations increases the reliability of the whole power station and in its conclusion also reduces the danger of destroying the whole distribution network when running in emergency. The by pass station has a positive influence on operating and/or environment and also affects an economical running of the whole power station.



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## **The company economist 's (accountant) look:**

In the frame economical analysis of a possible using of by pass stations we use a unit with an output of 60 MWe, temperature 535°C, pressure 96 bar with a boiler output of 360 t steam per hour, price for heat 3 USD/GJ, price for electric power 22,50 USD/MWh, price of demi-water 2 USD/m<sup>3</sup>, the average number of resetting into operation per year is 40.

1. The usage of demi-water will reduce of about 260 t for one resetting into operation, which enables to reduce the capacity of the demi-water preparation plant of about nearly 50%. The direct annual cost saving for 10 400 tons of demi- water is 208 000 USD

per year. The indirect saving coming out of the water preparation plant is not easy to express numerically.

2. Saving of heat – appr. 800 GJ for one resetting into operation – it is due to the shortening of the time during setting into operation at about two hours. The direct annual saving makes 32 000 GJ which means 96 000 USD/year.
3. Higher production of electric power – thanks to By Pass stations it is possible to utilize the power units in accordance with the requirements of the distribution network at a maximum number of running hours. When using the by pass stations the operation time can be increased of about 300 working hours, that means 30 000 MWh a year that brings a financial effect of 675 000 USD and profit to the own power plant of 180 000 USD.

### **The processing engineer is saying:**

The summary of advantages while running the units with a by pass station:

- reduction of demi-water usage of about 20 800 USD annually
- reduction of energy losses 64 000 USD annually
- increasing of working hours 300 h yearly
- increasing of profit for the power plant from higher production of electric power at an amount of 200 000 USD
- keeping of the water level in the condensator
- reduction of maintenance costs
- important timeshorting for resetting into operation
- sparing of safety valves
- reduction of noise level at the power unit
- possibility for a full processing automatization

### **We already have a By Pass station :**

While deciding on choosing By Pass stations you should realize that worn out old systems of by pass stations are losing unreturnable 2 to 3 tons of fresh steam per hour, which means appr. 700 kWh and makes an amount of 110 000 USD per year.

The latest By Pass stations are using special valves with a combined closing and controlling function added by a flexible steam cooling system. These complete systems are able to control the output from 0 to 100 % and split secondly bypass and cool the maximum output and after it precisely close the valve.



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