FORTUNATELY WE WERE ABLE TO GET A TAILOR-MADE PUMP

THIS ARTICLE IS WRITTEN BY MR. JOERGEN JENSEN FROM HVAC

The Danish town, Horsens is expanding. It has therefore been necessary for the Heating station A.m.b.a to install an extra in order to comply with the comprehensive requirements for heating. After much consideration, the management chose a Trium pump, which efficiency has proved to be surprisingly high.

Before the cultural center, Horsens Forum and the new building area at the Oestergade Stadion were build, Horsens heating station A.m.b.a. had to produce almost 230 cubic metre hot district heating water each hour into the piping net. However, the improvement requires so much extra heating that it became necessary to extent the station. Two minor heat exchangers were upgraded to a higher capacity, and an extra pump was installed.

This extension forced the technicians into new considerations. The city of Horsens is placed on a range of hills with at difference of more than 30 meters from the lowest to the highest point. The station is placed at level 21, and even if that Horsens Forum is located on almost the same level, a barrier had to be concurred before the heat could be supplied. Therefore the main pipe line has been extended with a parallel installation. It all means that the outlet or main pump for the future must have a capacity of 400 cubic metre each hour.

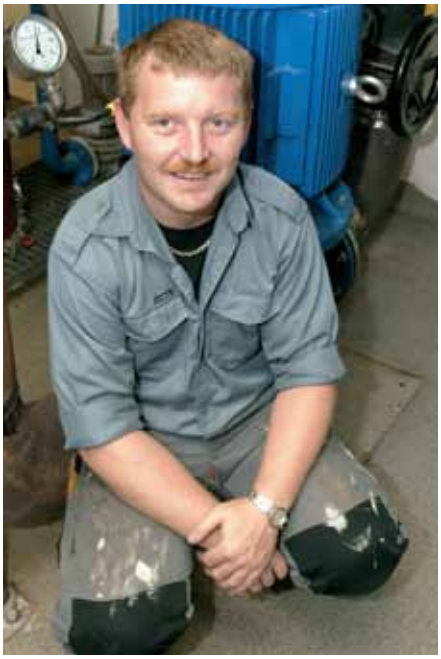
The Trium pump centrifugal type is drawn by a frequency regulated electrical motor, make Hoeyer. The picture is taken during installation of the pump into the outline pipe. The cable installation is outstanding.

When we decided to buy a new pump, I found a file with business cards, in which Trium pump was included. I immediately made contact to Århus and received a quotation for a new centrifugal pump with a capacity of 400 cubic metre. We based our evaluation on three quotations, but ended up with a Trium pump solution, due to the fact that Trium pump, beside their standard program, are also able to manufacture the accurate pump designed for the purpose, chief engineer John Noerregaard informs us.

Fans remove the heating

Before quoting, Trium pump only asked for the pump capacity in cubic metre, pressure conditions as well as the electrical settings. The outlet capacity varies from 35- to 400 cubic metre each hour, all depending on the season of the year as well as the weather conditions.

The capacity range, between 100 to 400 cubic metre, can be handled by Trium pump. By a lower range, we use our "summer pump", which is the previous outlet pump. However, in case of emergency, we are able to use the Trium pump at smaller capacities. In this case, and if the frequency regulated electric motors are getting overheated, the surplus heat will be effectively removed by use of the built in fans.



We are confident with the Trium pump, informs Mr. John Noerregaard from Horsens heating station A.m.b.a.

Before the extension of the capacity at the Heating station in Horsens, the technicians and advisors involved on the project had agreed upon that the target was to obtain the optimal solution from the beginning. With a pump capacity of 400 cubic metre the station is secured for the future says Mr. Noerregaard. This statement is based on the facts with regard to the upgraded pipe system, which is designed for very heavy winds and cold temperatures. However, this situation is seldom in the area.

Coating of the pump increases

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the efficiency

Based on the measured figures, John Noerregaad refers to the efficiency of the Trium pump.

We can operate the pump down to 100 cubic metre and still obtain an efficiency above 80%. We are confident by using Trium pump in combination with the two main pumps of similar manufacture. These pumps have now been in operation for more than 40 years, and it is a great satisfaction for us to know that the new pump can maintain a similar duration.

Mr. Erik Tollefsen is the pump specialist at Trium pump. He has worked with pumps for several years, and is unique in designing pump equipment for specific purposes. In the actual matter at Horsens, he decided for an impeller with an optimal efficiency in combination with the inside surface treatment, and which increased the efficiency from 81 to 84 %. The result of further detailed analysis shows that the efficiency is higher than 84% at a capacity of 300 cubic metre and more than 83% by 170 cubic metre. By max. capacity at 400 cubic metre, the Trium pump works at 2100 rpm., and at 300 cubic metre, the rpm. move to 1600.

The Heating station in Horsens has in the past bought Trium pumps. They have now been in operation for about 40 years. The pumps have up to now been in service without any problems.

FACTS ABOUT THE HEATING SYSTEM IN HORSENS

The original Heating station owned by Horsens Varmeværk A.m.b.a is located in Oestergade and started its production in 1965. At the beginning, the heat was produced from main boilers, but since 1987, 90 % of the heat has been produced from an incinerator plant owned by SVHO. During periods with low outside temperatures between 0 and +5 centigrades, one of the four natural gas boilers are activated.

The capacity at the incinerator plant is 45 MW. of which Horsens heating station buys 40 MW at heavy loaded periods. This is possible due to the fact that the incinerator plant is able to accumulate 250 MW by means of tank facilities. In total the station at Oestergade is outfitted with 40 MW, which only is in use in case of emergency. (break downs, extreme weather conditions, etc.).

The heat from SVHO is distributed into two stations, Oestergade and Høgh Guldbergsgade, where a small boiler of 6 MW and a heat exchanger of 4 MW is located. At the Oestergade plant a 4 APV exchanger is located with a capacity of 2 with 16- and 2 with 7,5 MW. The 2 smallest exchangers have lately been upgraded to 5 MW, due to the fact that the requirement from Horsens Forum and the plant at Oestergade have been connected to the entire installation, informs Mr. John Noerregaard.