

SES System Efficiency Service reveals poor efficiencies



Automotive suppliers

An energy efficiency analysis performed for an automotive supplier is intended to make the system conditions of a cooling lubricant supply system transparent and provide solutions for increasing profitability.

Energy savings of over 28 % possible

Five volute casing pumps of the same design including one variable speed pump are operating in parallel to circulate cooling lubricant. Pump efficiency ranges between 58 to 65 %. The comprehensive system analysis reveals that all machines are throttled on the discharge side causing pressure losses of up to 1 bar. Despite fluctuating system loads, the speed of the variable speed pump remains constant for two thirds of the operating time. In the remaining third, the speed is reduced to such an extent that it is causing inadmissible zero-flow operation. Pressure drops are also recorded on all pumps at regular intervals, i.e. every 30 minutes. And at the same time, the vibrations on pumps 1 and 2 increase significantly. This indicates that foam is being sucked in.

Recommendation:

As the customer wishes to reduce the flow rate by approx. 10 %, KSB recommends replacing the existing pumps with five Etanorm 125-100-200 pumps equipped with 55 kW IE3 motors including PumpDrive variable speed systems. While only four pump sets are now running in continuous operation at a lower pressure, pump No. 5 is installed as a redundant pump set. This optimisation measure can result in energy savings of up to 28.5 %. The suggested solution was convincing: The customer implemented the recommendations for optimisation with KSB.

More information

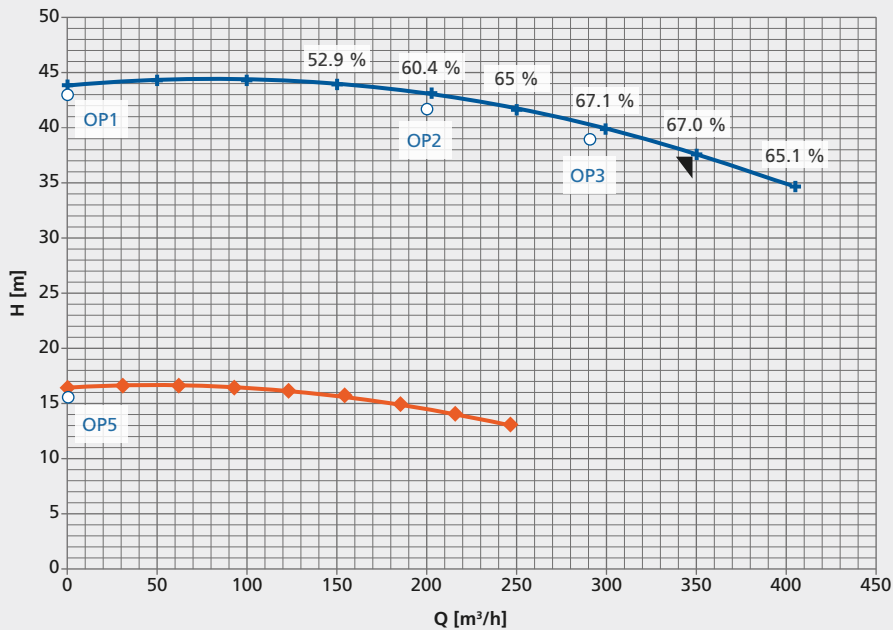
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Operating data of variable speed pump



In the old system, the variable speed pump was running at zero flow for one third of the operating time.

- P1, n = 895 rpm
- P1, n = 1460 rpm
- ▾ Design point
- Operating point (OP)

Costs saved thanks to SES

Energy costs per year before optimisation	€ 146,494
Energy costs per year using new pumps including variable speed systems	€ 104,701
Savings p.a.	€ 41,793
Costs for pumps including variable speed systems	€ 65,624
Payback period	1.6 years
Energy savings	417,932 kWh
CO ₂ savings	237 t



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