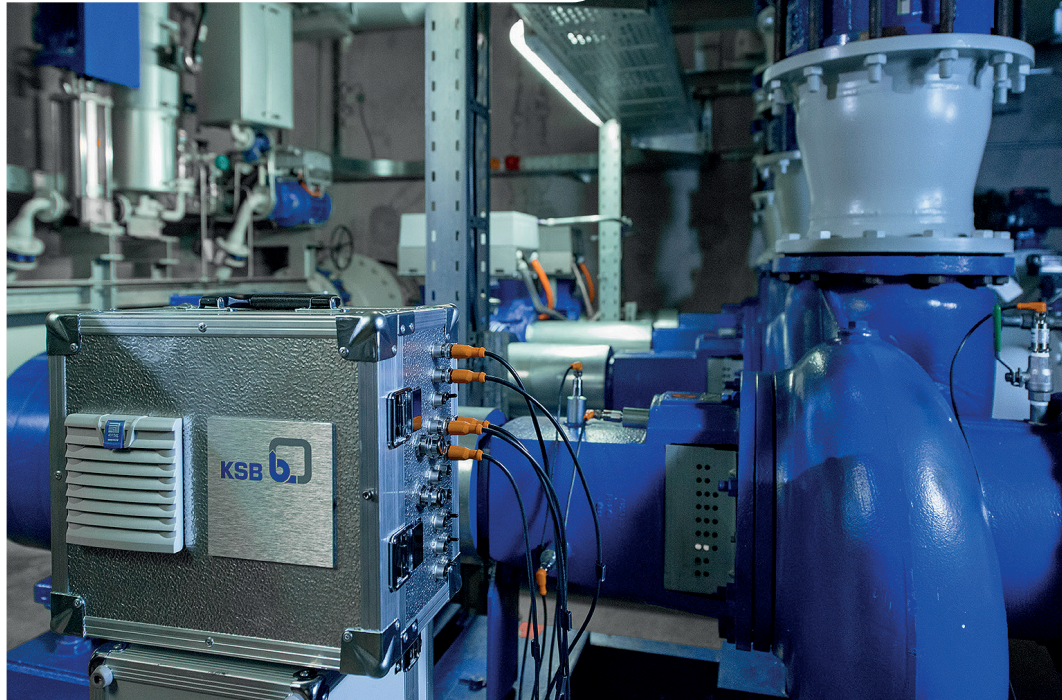
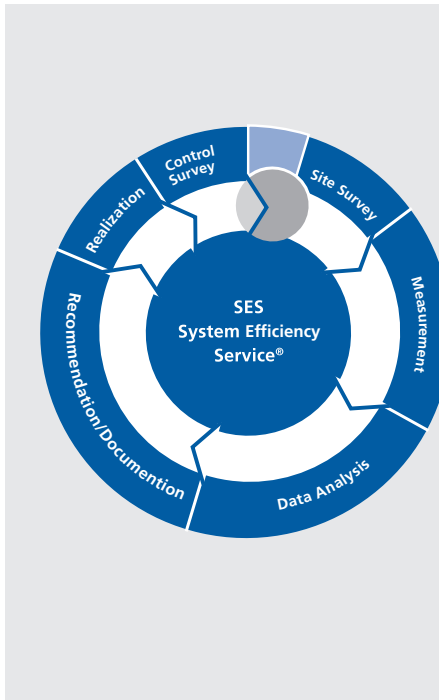


## System Operation Made Transparent – SES System Efficiency Services®



### Increase in profitability of pump systems through comprehensive systems analysis

Our SES System Efficiency Service will show you ways to increase the energy efficiency of your pump systems and prolong their service lives. Whatever the application - energy, industry, water or waste water - by recording extensive measurement data it is possible to evaluate the operation of a system and identify potential savings (energy efficiency analysis) as well as any causes of damage (damage analysis). Regardless of the installation type (dry/wet) and manufacturer, we assess the operating range of pumps from ratings of 30 kW. We also perform measurements in potentially explosive atmospheres on request.

#### Our services:

- Recording of process variables and vibration levels through on-site measurements:
  - Pressure
  - Rotational frequency
  - Fluid and bearing temperature
  - Analog signals 0/4-20 mA
  - Vibration
- Determining the effective power
- Performing frequency analyses to identify causes of damage
- Report and presentation of findings including action plan and profitability analysis

#### Your benefits

- Transparency of operating data and pump set efficiency
- Expert consulting by experienced product engineers
- Increasing the economic efficiency and availability of systems by identifying the potential for optimization and causes of damage
- Ensuring the sustainable operation of pumps and valves
- Manufacturer know-how from impeller trimming, retrofitting and speed control to the new selection of pumps

#### Contact

KSB, Inc. Service  
Rocky Anderson  
E-Mail: [ksbservice@ksbusa.com](mailto:ksbservice@ksbusa.com)

# SES System Efficiency Service® in practice

## Energy efficiency analysis in steel works

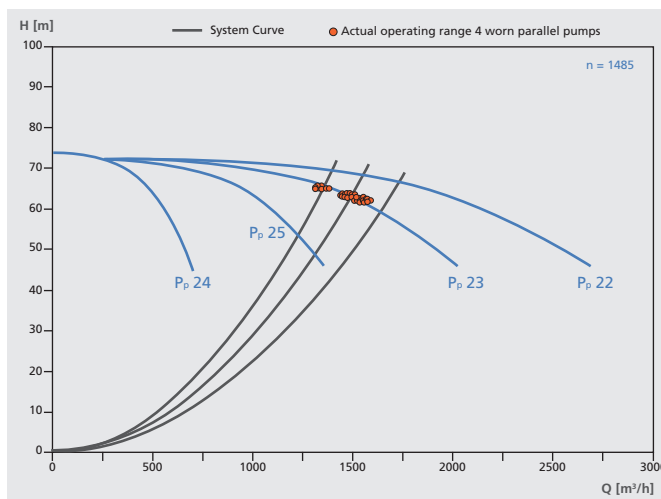
Focusing on increasing the efficiency level, the analysis of the cooling water circuit identified energy savings of over 23 percent. The volute casing pumps circulate cooling water in a closed circuit.

### Result

- Due to wear and tear, four instead of three pumps were required to cover the system's demand.

### Optimization measures

- Selection of new pump size according to demand with optimum efficiency in combination with IE3 energy efficiency class motors
- Reduction of dynamic losses by using hydraulically optimized valves



### Costs saved thanks to SES

Energy costs per year before optimization	\$115,199
Energy costs per year using a variable speed system	\$88,536
Savings per year	\$26,663
Costs for pumps, motors, valves	\$96,462
Payback period	3.6 years
Energy savings	27,845 kWh

## Damage analysis in a power plant

The objective of the system analysis was to identify the cause of the repeated failure of two boiler feed pumps - in conjunction with damaged thrust bearings, balancing device and mechanical seal. The ring-section pumps handle feed water for the generation of process steam.

### Result

- The process data showed a drop in inlet pressure in combination with a short-term peak, which correlated with increased vibration velocities.
- The cause was a temperature/pressure drop in the feed water tank which was due to an excessive supply of cold condensate. As the condensate contained in the pipe to the pump was still hotter than the condensate fed into the tank at this point in time, vapor bubbles were developing and imploding at the pump's inlet (steam hammer).



### Optimization measures

- A more even supply of cold condensate to avoid excessive temperature fluctuations in the feed water tank.

### Costs saved thanks to SES

Repair costs (per year):	\$27,845
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### Request More Info

Would you like to speak to a KSB representative for an SES Assessment?

> Set up a Call

