PumpFit
Finds the number of running pumps with lowest total electricity consumption
Operators are responsible to operate the pumps efficiently always within the upper and lower flow limits and with sufficient NPSH.

Sometimes the control system does not even provide the actual flow value or total operating hours in order to support the operator.

Usually the control system displays the pump’s upper and lower flow limits and the NPSH, all just valid for full pump speed, as plain values.
PumpFit
Range of application

- Pumps have (almost) identical characteristic curves
  - PumpFit optimization uses same characteristic curve for all pumps
  - Optional calculation of flow Q for each pump uses individual characteristic curve for each pump
- Pumps run with same speed
  - Simulation have shown that this needs minimum electrical power consumption
PumpFit
Solution options

- PumpFit uses installed flow measurements and calculates not measured total and/or individual pump flow rates
- Flow is calculated from actual motor speed and characteristic curve
PumpFit
Optimization procedure

- Pumps run at actual operating point with
  - HB = difference in pressure over pump
  - QB = flow for one pump

- The one and only degree of freedom for the optimization: number of running pumps a

- Will the electrical power consumption of the pump-set be lower, when there will be running one pump more or less?
  - Pump more: QB2 = QB * a/(a+1)
  - Pump less: QB1 = QB * a/(a-1)

- Calculation of the power consumption in 3 cases:
  - HB, QB1
  - HB, QB
  - HB, QB2

- The case with lowest power consumption is best
PumpFit Mimic

- Pump’s characteristic curve
- Actual operating point plus trail of the past hours shows past behavior
- Actual overall efficiency and power consumption
PumpFit
Savings

- Project example of two pumps running with and without PumpFit
- Every dot represents 10 minutes, in total 20 days are plotted
- The grey and blue dots represent the pump group operating without PumpFit and the black dots operating with PumpFit
- The blue dots show points of less efficiency caused by a poor choice of pumps
- PumpFit takes the optimal number of pumps instead running at a higher efficiency
PumpFit Features

- Always find the optimum number of running pumps for lowest electrical power consumption
- Fully automatic pump protection
  PumpFit automatically runs all pumps within the upper and lower limits and NPSH
- Calculations work without process characteristic curve, since it may vary (e.g. control valves in a district heating pipeline network)
PumpFit Benefits

- PumpFit always finds the optimum number of running pumps and reduces electrical power consumption.
- PumpFit automatically runs all pumps within the upper and lower limits and NPSH. This releases operators from monitoring, decisions and manual operation. At the same time this improves pump protection significantly.
- PumpFit calculates the flow of the individual pumps and of the pump group. In case these flow measurements are missing, PumpFit provides additional useful information to the operators.
- PumpFit automatically aligns all pumps operation hours.
- PumpFit provides additional formatted visual information for the operator to simplify monitoring.
Power and productivity for a better world™