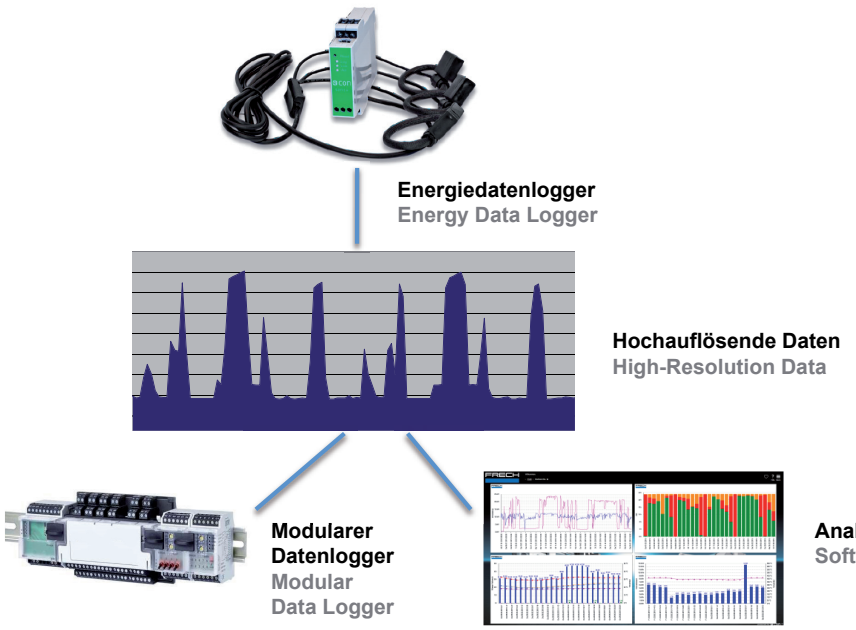
Energy Data Logging – identifying interactions and component-related energy costs

Logging the data of different variables at appropriate time intervals is the key to understanding how different machine states, process parameters and the energy and operating media required for die casting processes interact. Linking such data with just a little additional information about the production process will yield a wide range of useful insights.



From the sensor to the overall system

By conducting a detailed analysis of the energy and operating fluids, demand data of die casting processes - logged at a large number different metering points at suitable time intervals - such data can be rendered useful for different purposes. The wide range of applicability includes their use to document the total energy consumption of monitored devices, to analyse the amount of energy and operating media required to produce individual batch sizes and even to evaluate every single load profile of production cycles and states of individual die casting machine components. For this purpose Frech offer expandable modular monitoring components as well as whole turnkey systems to measure energy and resource consumption. The system components can be installed at the foundry shop floor level as well as in other divisions or departments of companies to set up a comprehensive and consistent data logging system for energy and other operating media that includes the entire enterprise. Existing smart meters as well as a wide range of different sensors and data sources can be integrated into this data logging system.

Understanding energy demand

Causal relationships such as the effect the cycle time or the temperature balance have on the total energy balance of the die casting process remain all too often unknown in the everyday running of foundries, due to the complexity of the different interactions involved and because energy consumption as such is not palpable enough to be registered by the human senses. Almost always, machine operators and managers are not really aware of the causal connections between different production situations, process and machine parameters and the amount of energy needed for production. Which is why, by actually measuring energy consumption and visualising it, foundries can make the first successful steps towards optimising the energy efficiency of their die casting operations Decisions regarding labour organisation can be explained and their impact visualised and communicated at the shop floor level in a way that is easy to understand.

Comprehensive services

In this context Frech offer end-to-end planning and installation services of system components, comprehensive aftersales services as well different data analysis packages. The data logging systems and our comprehensive range of services allow our customers to define and implement effective optimisation programmes already after a short while and to validate their effectiveness in the context of energy management systems according to DIN EN 50001 or audits according to DIN EN 16247-1. Above and beyond this, however, there are numerous other possible uses of the data, such as the monitoring of the quality and robustness of foundry processes, the calculation of energy costs and CO2 emissions per components, the evaluation of the technical condition of production equipment and the analysis of machine downtime and its causes.