# Performance Monitoring with ThermoWare™
## To improve your operational efficiency

DYMAC

Critical goals of any facility are reducing (energy) costs and improving efficiency. Thermoware assists in achieving these goals -- by reducing the large amount of data available in modern control systems to manageable Key Performance Indicators (KPI). Performance Monitoring of a system is assessing the current state and estimate the future state of this system by means of measurement and calculation. The results can be used to take corrective actions or to plan availability and maintenance.

- prevention of damage
- availability
- reliability
- life time
- change to condition dependent maintenance

## ThermoWare

The ThermoWare package consists of several programme modules. Each programme module has its own task within the package.

The data structure of the ThermoWare package is embedded in the so-called "AnalysisBase". This is a set of database tables and files in which the measuring points and values, the calculation models and the presentations are stored. In order to manipulate and use the "AnalysisBase", five program modules are used:

- **ThermoLyse**
- **ThermoScan**
- **ThermoReport**
- **ThermoView**
- **Mimic Editor**

### ThermoLyse
ThermoLyse gives the user the possibility to model a thermodynamic problem. Measuring points and calculation points can be entered and modified as well as fluid streams and compositions. With the points, streams and compositions, a calculation model can be built and run. After running a calculation, the results can be presented in

several levels of detail. In ThermoLyse also a possibility is implemented to visualise a process by means of mimics.

### ThermoScan
ThermoScan takes control of the data acquisition. All measuring Points are extracted from the "AnalysisBase" and can be linked to a data acquisition system by means of ThermoScan. If specified instruments are used, the calibration data of those instruments will be extracted from the "CalibrationBase". It is also possible to run the on-line model as it is defined in ThermoLyse. All measured and calculated values will be stored in a database.

### ThermoReport
ThermoReport is the reporting tool of ThermoWare. Depending on the need of the user, several types of reports can be generated by the user. The reports can be printed, but also directly be imported in a spreadsheet application for further operations. ThermoReport is also responsible for the execution of database operation -- such as merging of tables, emptying tables, etc.

### ThermoView
This is the presentation application. On- and off-line trend graphics can be plotted. Also xy-plots with reference curves and operation points can be configured. Those can be used to visualise on-line compressor or pump

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performance. Both trend and xy-plots can be specified with banding parameters, enabling the user to display only data for specified operational conditions. Another possibility is the use of mimics. Each presentation can be printed or exported to a Microsoft Office application.

### MimicEditor

The MimicEditor can be used to make process schematics, with optionally the process data plotted in it. The process schematics, called mimics, can view for off-line calculations in ThermoLyse and for on-line calculations during the execution of measurements in ThermoView.

### CalibrationBase

Besides these modules, a "CalibrationBase" is available which contains all calibration data of the instruments, which are connected to the data acquisition system. For
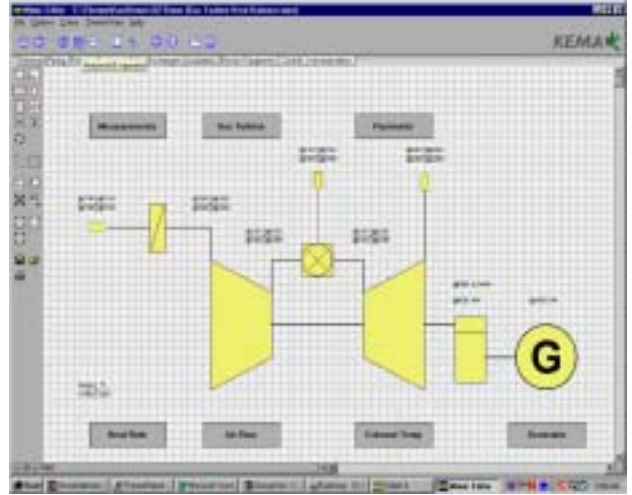


*Mimic Editor*

the manipulation of the "CalibrationBase" a separate programme module "CalibrationManager" is applied.

# DYMAC

With more than 35 years experience in production and service of instruments for monitoring, analysis and diagnosis of mechanical behaviour of critical machinery, DYMAC's commitment is to provide the optimum combination of product, people and skills to ensure that machinery health monitoring is an added value component of the customer's business.

DYMAC is part of the Reliability Systems unit of the worldwide AB SKF Group. Combining nearly 100 years of bearing and industry knowledge, SKF Reliability Systems offers technology product and service solutions designed to increase plant efficiency and profitability.

ThermoWare™ is powered by KEMA.

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