MEAC2000 System Advantages

Data Acquisition Unit (DAU)

- Plug and play

    … because the cards don't need to be coded.

- Data back-up if the central computer fails

    … for up to one week using a data buffer. (for 16 analog inputs)

- High availability of the complete system

    … because the cards can be exchanged even when the system is powered.

- Decentralized DAU reduces long data lines and costs and increases the safety of data transfer

    … because the data transfer from the measuring instruments is done in the field.

Gas analysers in the emission monitoring system

- Minimizes the interface problems by early matching of all of the system components

    … Maihak supplies complete emission measuring systems from the gas sampling probe up to the emission data evaluation system.

MEAC2000 Emission PC

- Easy operation, individual, custom displays of graphics and masks

    … using the computer mouse, designs with window technique and pull-down menus.

- Differentiated data protection for various users

    … through qualified, access authorization via password.

- Highest level of operational and data security and the inclusion in the computer network

    32 bit program for Windows NT operating system.

- Easy custom programming

    … because changes to the parameters are initially done without effecting the existing configuration: Online tests with plausibility test and syntax check.

- Interconnection to the process control system

    … for individual data integration.

MEAC2000 Brief Info

Emission data evaluation system according to the 13th, 17th and 27th BImSchV, TA-Luft and the cement industry.

Configuration

Custom programming can be done in the MEAC2000 configuration:

Information relevant to the Regulatory Agencies

- Plant definition
- Measuring value calculation
- Limit values defined (all of the limit value calculation possibilites are already stored in the software)
- Special plant conditions (e.g. start-up …)
- Remote data transfer parameters

Changes to the configuration are documented in log files as required by law.

User settings which are not relevant to the Regulatory Agencies, for example:

- (pre-) alarm
- display and inclusion of process parameters

Each new system configuration can be fully tested using the simulation menu before it is implemented by the operator. During testing, the old configuration continues to run and all of the variables are evaluated and classified based on the old method.

Emission data

The following data is collected and computed:

- Minute value (raw)
- Minute value (corrected) normalised with a reference or correction value
- Scanned value(s) (raw) 10, 30 or 60 minute averages
- Scanned value(s) (corrected) normalised with reference or correction values
- Trend for the (corrected) scanned values – calculated values made with the presumption that the furnace will continue to operate as it currently does.
- Limit value for scanned values
- Daily averages –Averaged on the basis of the valid scanned values
- Trend of the daily average – Calculated value with the presumption that the furnace will continue to operate as it currently does
- Limit value for the daily average
- Daily loads (if configured)
- Monthly loads (if configured)
- Annual loads (if configured)
- Daily classification
- Monthly classification
- Yearly classification
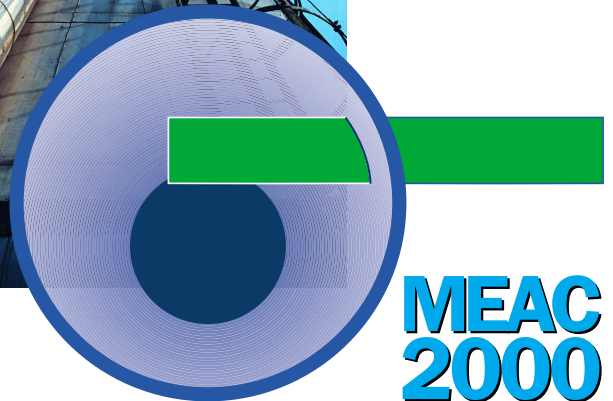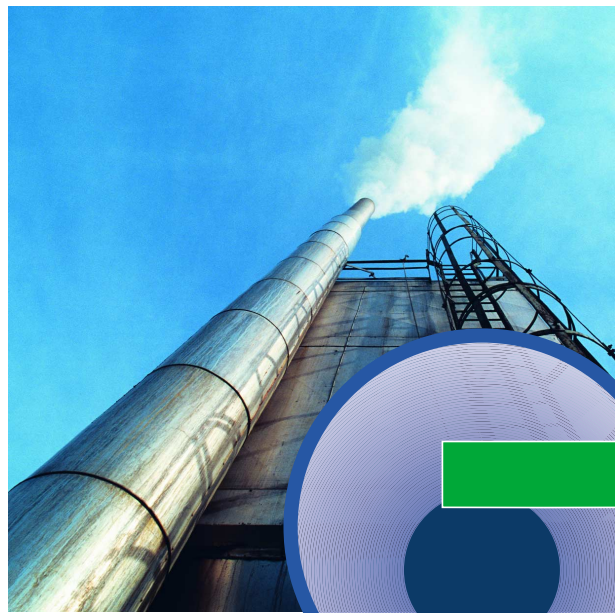- Status changes

Technical data

DAU: 15 free slots can be equipped with
32-channel Status Input card (max. 8/DAU)
16-channel Analog Input card (max. 5/DAU)
8-channel Analog Ouput card (max. 4/DAU)
12-channel Status Output card (max. 8/DAU)

Emission PC: Windows NT 4.0 operating system, DCF 77 radio clock
Max. 14 DAUs can be connected

DATA ACQUISITION

SOLUTION

BEST

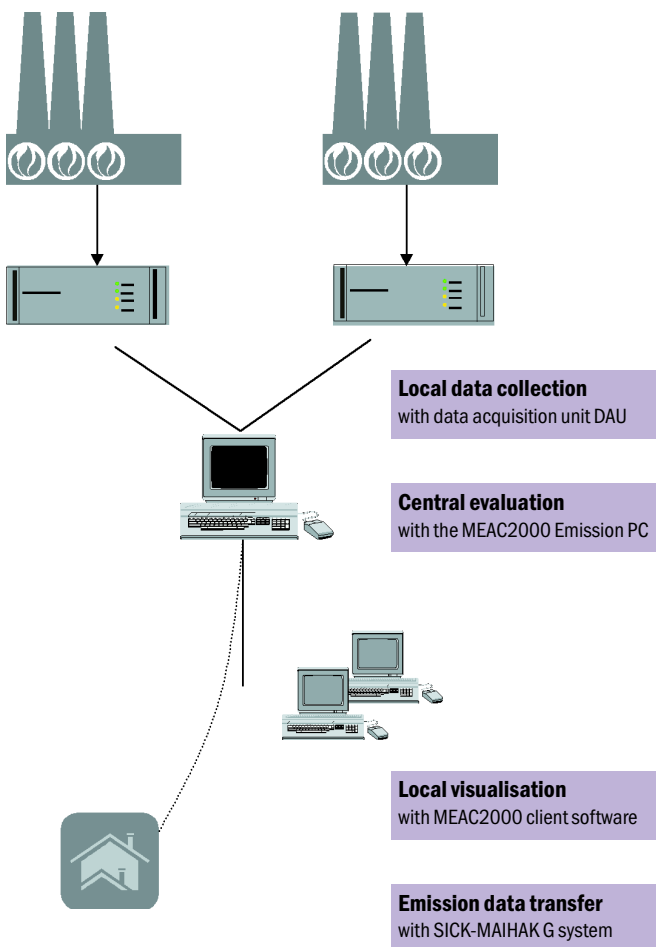**MEAC 2000**

Emission Data Acquisition System

Sophisticated system for data acquisition and evaluation according to the 13th, 17th und 27th BImSchV and TA-Luft.

ALSO MEETS THE REQUIREMENTS FOR CEMENT PLANTS

MEAC2000

Is our solution for **acquisition, evaluation, long term data storage and integrated visualisation of emission data and remote data transfer** and the result of many years of experience in continuous emissions monitoring.

The software – under Windows NT – was developed with the concept of making necessary customer-specific configurations in an easy and logical manner. All of the evaluation results are readily available in freely configurable displays.

The DAU integrates the analog inputs signals into minute values and these are sent to the emission PC together with the digital input signals (status signals) as required for further data processing. In addition to these transfers every minute, any status changes are spontaneously transferred as well.

In the event of a breakdown, the connection to Emission PC (EPC) or if the EPC breaks down, the collected data is put into a non-volatile 1MB back-up for intermediate storage. After the connection has been restored this data is queried by the EPC.

The DAU detects on its own the kind and number of plugged-in cards. The control of the configuration is performed by the EPC.

Local data collection
with data acquisition unit DAU

Central evaluation
with the MEAC2000 Emission PC

Local visualisation
with MEAC2000 client software

Emission data transfer
with SICK-MAIHAK G system

MEAC2000 – EPC: Emission PC

The MEAC2000 – EPC is a standard PC (optionally in a 19" rack industrial version) with two SCSI hard drives.

All of the calculated values are stored in files on a hard disk. For data safety, these files are copied overnight onto the second hard disk.

All of the actual values are sent to a serial Epson compatable printer and to any other Windows-supported printer.

Historical data can be sent to any Windows-supported printer in freely selectable table or graphic form.

MEAC2000 – APC: Work station PC

Using the MEAC – APC software, all of the data which resides in the MEAC2000-EPC can be accessed in an identical program environment.

MEAC2000 – Software

The MEAC2000 – software under Windows NT monitors the total communication with connected field units and the control systems (in total max. 16). All inputs are recalculated in **physical values** every minute in consideration of the digital inputs. In the event that one of the measuring values is invalid, these recalculations are made with **substitute values.**

Scanned values with selectable integration times from 3 to 120 minutes are calculated using the minute values and can be corrected with already existing internal functions such as water vapour, temperature and pressure as well as other formulas.

MEAC2000 – DAU: Data Acquisition Unit

The main function of the DAU is to collect the input data from the field. Analog inputs are queried every 100 ms, digital inputs two times per second.

The **O₂ reference** value calculation is implemented as a standard function either with constants or also with variable O_2 reference values.

Mass flow and **loads** can be calculated using either all scanned values or only the valid ones. The **daily scanned value** can only be calculated using the valid scanned values.
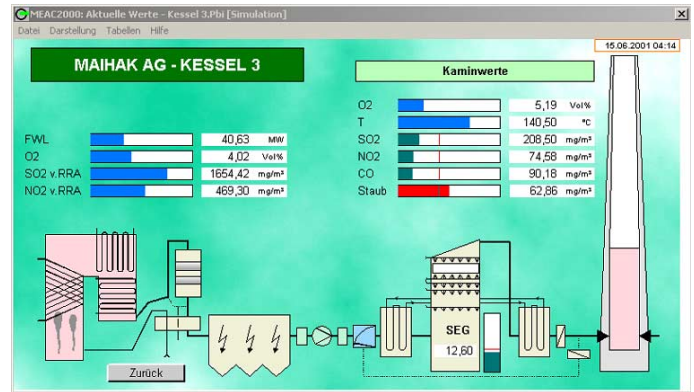
Limit values can be reported as constants or in mixed fuel firing systems can be reported as variables. Complex requirements e.g., for regional limits can be made using freely programmable formulas.

Counters for timed entry of special system conditions can also be freely-defined.
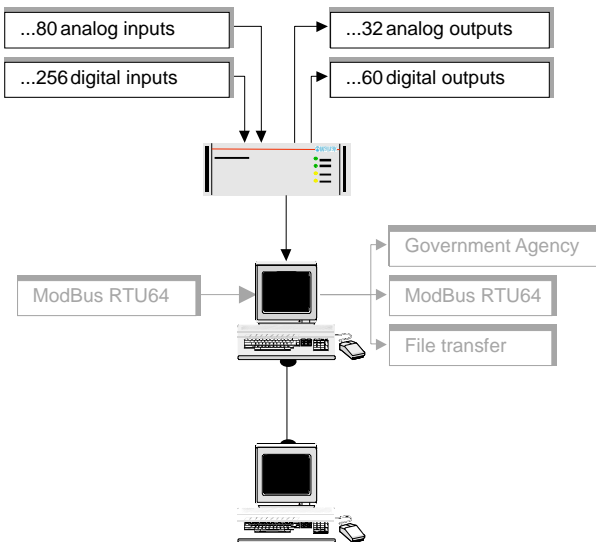
The **classification** of the scanned and daily values is available according to **TA-Luft, 13th , 17th and 27th BImSchV** and the regulations for the cement industry.

After every minute calculation the analog and relay outputs are updated.

- **Shell** — MEAC2000 surface for access to applications using password protection.

- **System** — Data acquisition, calculation and evaluation.

- **Configuration** — Program for producing and changing customer-specific configurations. These can be immediately tested in a simulation environment.

- **Actual values** — Program for display and print-out of actual values in freely-configurable displays.

- **Historical values** — Program for display and print-out of historical values in free-ly-configurable displays.

IO-Concept

MEAC2000: Standard Software

The MEAC2000-Software is a complete package for configuration, acquisition, evaluation and documentation of emission data. Access and changes to data are only possible after the user has provided identification through login and password.

MEAC2000: Software Options

- **ModBus** — Program for communication with ModBus-Server according to the ModBus RTU64 protocol (MEAC2000 as slave).

- **Process diagrams** — Program for producing graphics with actual values on background pictures to display in the module "actual values".

- **Work station** — Software for access to a MEAC2000-EPC in the network.

- **Modem package** — Program for transfer of emission data according to LAI guidelines of Autumn 1996.

- **Remote service** — Provides quick online customer service support via modem.