MEVInet
Automation System

You can also find brochures on other products in the download section of our internet site at www.ims-gmbh.de.

AN 016-12-03/12.11

Contents

Introduction
MEVInet

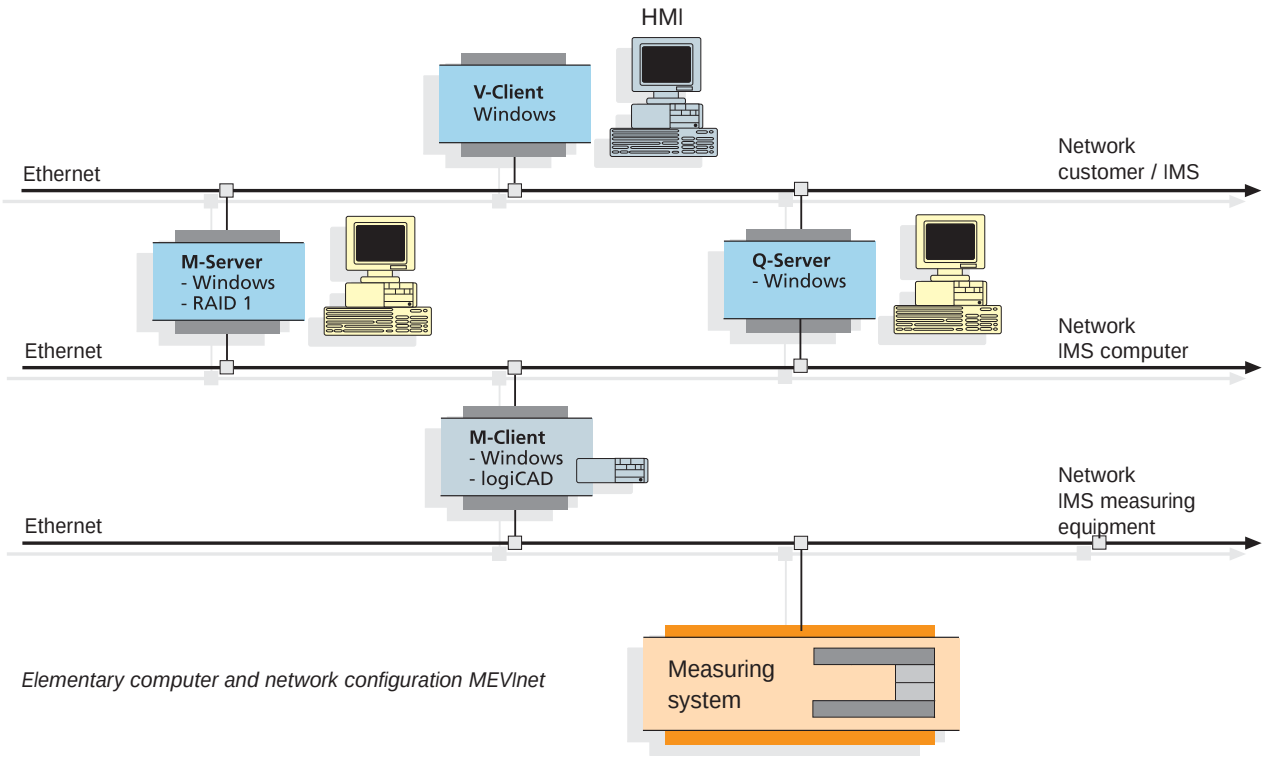
MEVInet is a standardised measurement and visualisation network system designed for use in the fields of measurement and control, data display and quality management in automation systems in rolling mills.

The complete hardware consists of industrial PCs. MEVInet consists of the subsystems MEVInet-M, MEVInet-V and MEVInet-Q depending on the particular tasks the system is to perform.

The main criteria taken into account during the development of the MEVInet system were:

- Greatest possible hardware and software transparency (modular design, multi-processor system)
- Use of desktop, server and real time operating systems from Microsoft
- Graphic configuration of measurement and control functions (IEC 61131-3)
- Diagnostics via online test and oscilloscope function
- Standardised communication between the main systems and subsystems (Ethernet, TCP/IP, UDP, Fieldbus-S)
- Process-compliant reaction times in the individual tasks
- Remote maintenance

Definition of subsystems
MEVInet-Q = Quality management system
MEVInet-M-Server = Communication centre
MEVInet-M-Client = Real time computer
MEVInet-V-Client = HMI (Human Machine Interface)



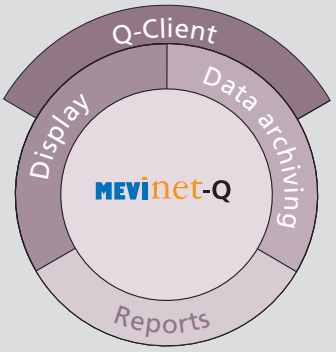
Elementary computer and network configuration MEVInet

Quality Management System
MEVInet-Q

MEVInet-Q is the quality management system in the MEVInet product family. It was specially developed for analysis and archiving of production data from rolling mills and allows the data stock to be presented at individual workplaces or company-wide.

The central component of the MEVInet-Q system is one or more decentralised database servers. The servers are set up at different production plants and receive their data from IMS systems and/or third party systems. Data requests from individual workstations are passed on to the basic systems through the data switching service DCL (Data Connection Layer). A decentralised information structure can be built by using multiple DCLs. Data from various production plants can then be displayed and edited.

The IMS DataViewer – the application for presentation of the data – grants the production and quality experts access to the archived data at any time. It can present single measured values and data series (length, cross and error profiles) on freely configurable pages that are managed centrally on a server or locally at a user's own workplace. If necessary, all the pages can be published on a company intranet, where they are shown in a web browser.



Features

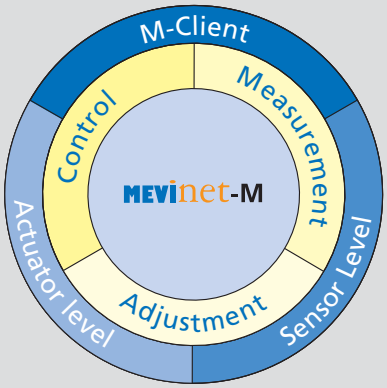
- Quality management with data archiving, data analysis and logging
- Maintenance and service support
- Production tracking, monitoring, preview and documentation
- Recording of third party measuring signals
- Complaint assessment
- Data display in web browsers

» MEVInet-Q is the quality management system. «

MEVInet-Q

Measurement, Adjustment, Control

MEVInet-M



The measuring systems used in rolling mills are high-tech solutions of real time metrology. Individual measuring systems for the acquisition of measured values, processing and quality control are usually used as a complete solution. The real time tasks of these extremely high quantities of data are solved by MEVInet-M.

MEVInet-M consists of the following individual systems:

- M-Server
- M-Client

The individual systems can be connected to each other modularly depending on the tasks required.

The M-Server is the communication centre between the real time computers (M-Client), HMI (MEVInet-V) and quality management system (MEVInet-Q).

System control, monitoring of network connections, management of parameters/variables and the processing of display data are standard functions, which merely require configuration and no programming. The M-Server downloads the operating system and application to the M-Clients.

The M-Server has hard disk and CD/DVD drives. The hard disks are configured as RAID1 system (redundant data storage on two hard disks). Should one of the hard disks malfunction, the system continues to run. After replacement of the defective hard disk, a copy of the hard disk still in the system is automatically created on the new disk, thereby restoring redundancy.

MEVInet-M

» The M-Server is the communication centre. «

M-Server

- Industrial PC
- Operating system Windows
- RAID1
- CD/DVD drive
- Diagnostics via online test and oscilloscope function
- Remote maintenance

The M-Client computers are the actual real time systems for the measuring and control equipment. The number of M-Clients is scaleable. All computer units are connected to each other over a network. The M-Client computers receive the measurement and control data from the sensor/actuator level via the network (UDP) or Fieldbus-S.

» The M-Client computers are the actual real time systems. «

MEVinet-M

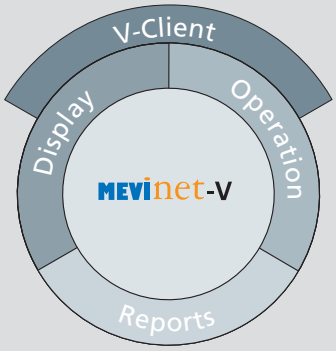
M-Client

- Industrial PC
- Real time Ethernet (UDP/IP)
- Real time operating system Windows CE
- Fieldbus
- Code generation by graphic programming tools per ICE 61131-3 (logiCAD)
- Online test
- Oscilloscope function
- Bumpless reloading

The application is programmed graphically in accordance with the standard EN 61131-3 with the project management system *logiCAD* according to a programmable logic control. Standard functional components and vendor components in ANSI C-Code are used for this function. The PLC is configured on the M-Server or on a separat-computer system (e.g. laptop). The run-time environment is also configured under the *logiCAD* project management environment, e.g. number and cycle times of the tasks. *logiCAD* allows both simulation on a project management computer in the programming phase and online testing on the MEVInet-Client target system.

A further feature is an oscilloscope function for recording of data under real time conditions and online reloading of the programs.

Visualization
MEVInet-V



MEVInet-V provides the HMI and displays production data, operating parameters and system faults.

The information that is to be displayed is assembled by selecting and configuring display modules with the IMSvisu Editor. User screens can therefore be created easily without requiring programming skills.

The V-Client runs under the operating system Windows as of version NT. The number of V-Clients can vary and depends on the particular tasks involved. All the V-Clients are connected to the M-Server by a network. The configuration data for the screens are downloaded from the M-Server.

The visualisation program can be changed over to another language while running. In concrete terms this means easier software handling because different language versions do not have to be used. Users can write texts in their local language with the language module. The texts generated are stored in a database. In addition to the possibility of changing from one language to another, it is also possible to change from SI units to Anglo-Saxon units of measurement and vice-versa. Conversion to the respective unit is performed automatically.
The online help integrated in the systems allows the user to call up circuit diagrams, monitor screen descriptions and help files for troubleshooting purposes.

» MEVInet-V provides the Human Machine Interface. «

MEVInet-V

V-Client

- Standard PCs
- Operating system Windows
- Graphic editor for screen configuration
- Production and operating data
- Diagnostics data
- Parameter setting of the system
- Rights management
- Language change-over
- Online help

System Configuration

Data Management MEVInet

The MEVInet software consists of components that can be installed freely in a computer network. The components communicate via TCP/IP or UDP.

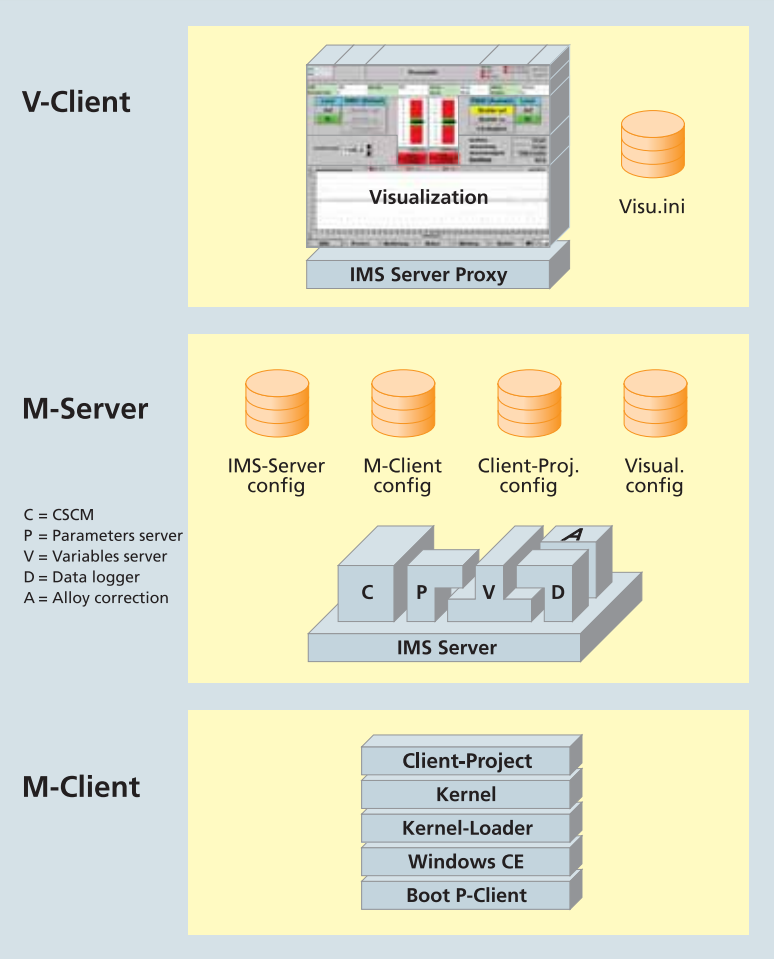
Various functions run on the M-Server. The central component of the complete MEVInet system is the IMS-Server. It acts as a link between M-Client, V-Client and Q-Server. The variables are made available on demand from the clients. The IMS-Server is configured in XML. This configuration defines which modules belong to the server and how they are parameterised. The standard modules of the server are *CSCM*, *Variables server* and *Parameters server*. Depending on the application, other modules, for example *Data logger* and *Alloy correction*, can be added.

The module *CSCM* manages the M-Clients, i.e.

- loads the operating system and application during the boot routine,
- switches connections to the M-Client (for the Variables Server, online test and oscilloscope function).

The *Variables server* manages the variables and makes them available on demand. The function of the *Parameters server* is to manage the parameters, e.g. initialisation and permanent storage (retained data).

If a Q-Server is used, a *Data logger* must be installed. The *Data logger* is responsible for collecting and transferring the required data to the Q-Server for archiving. The module *Alloy correction* is needed for alloy corrections.

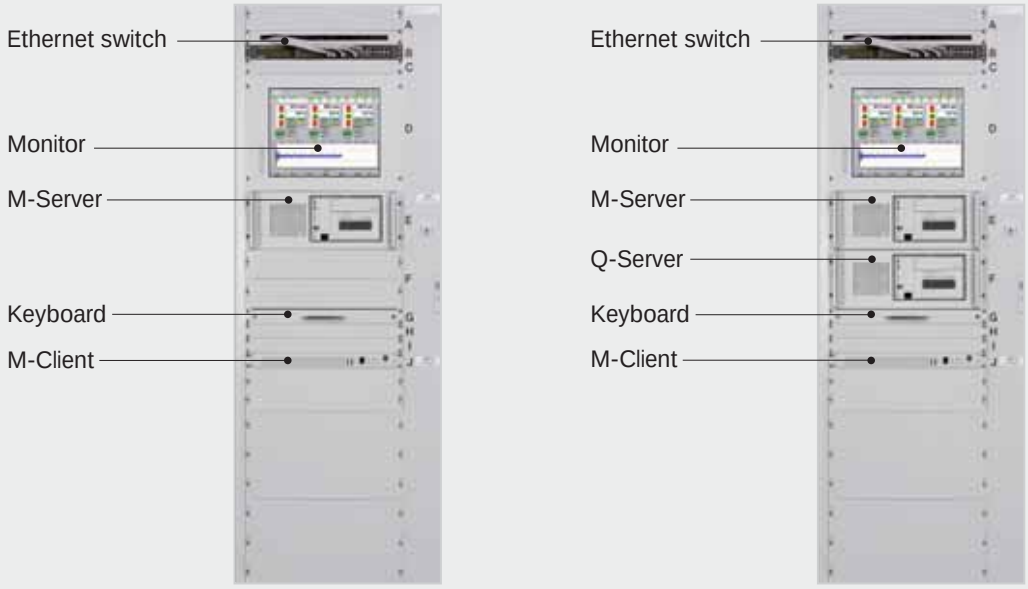


Data management

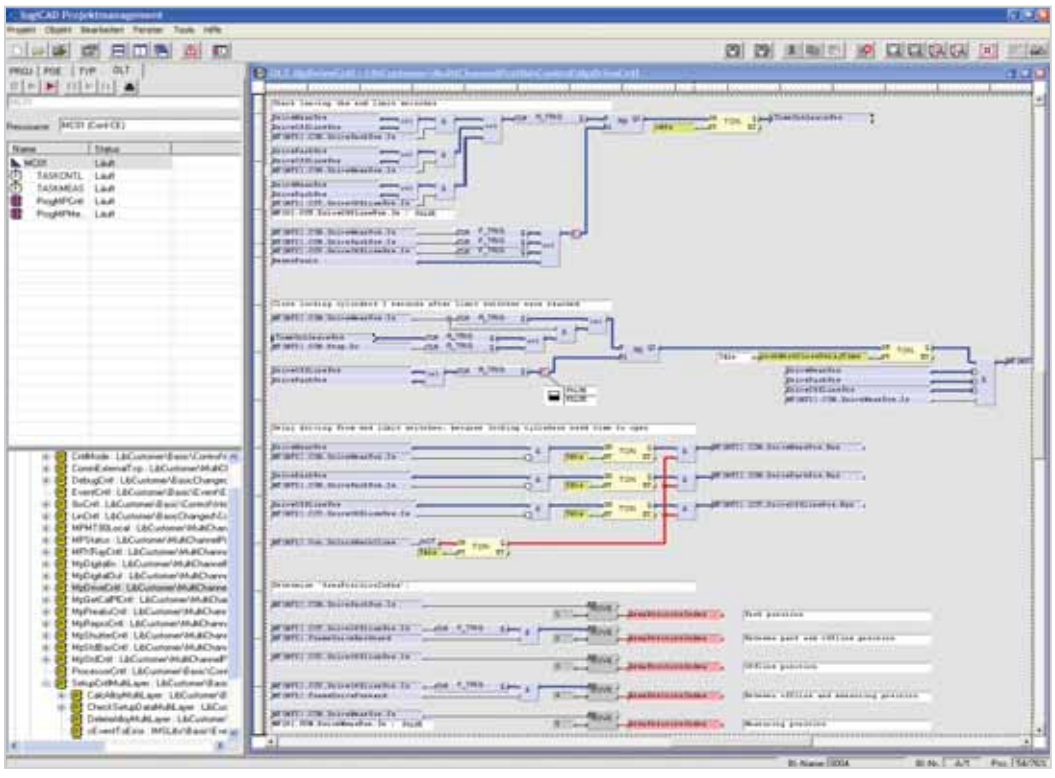
All the configuration data for the M-Server, M-Client and V-Client are stored on the M-Server. The data are downloaded during initialisation. The same applies to the applications running on the M-Clients and the monitor screens shown on the V-Clients. This system of central data storage facilitates management of the system. It is also easy to set up a new V-Client, e.g. after replacing a defective computer. If an operating system is already available, it is merely necessary to install a number of standard components. The data for the monitor screens (XML) are loaded automatically on starting the V-Client.

The complete data flow is stored temporarily on the hard disk of the Q-Server. This results in a separation in the time of data acquisition and time of data archiving in the database. A special service sees to the transfer of the data to the database.

Hardware and Project Management



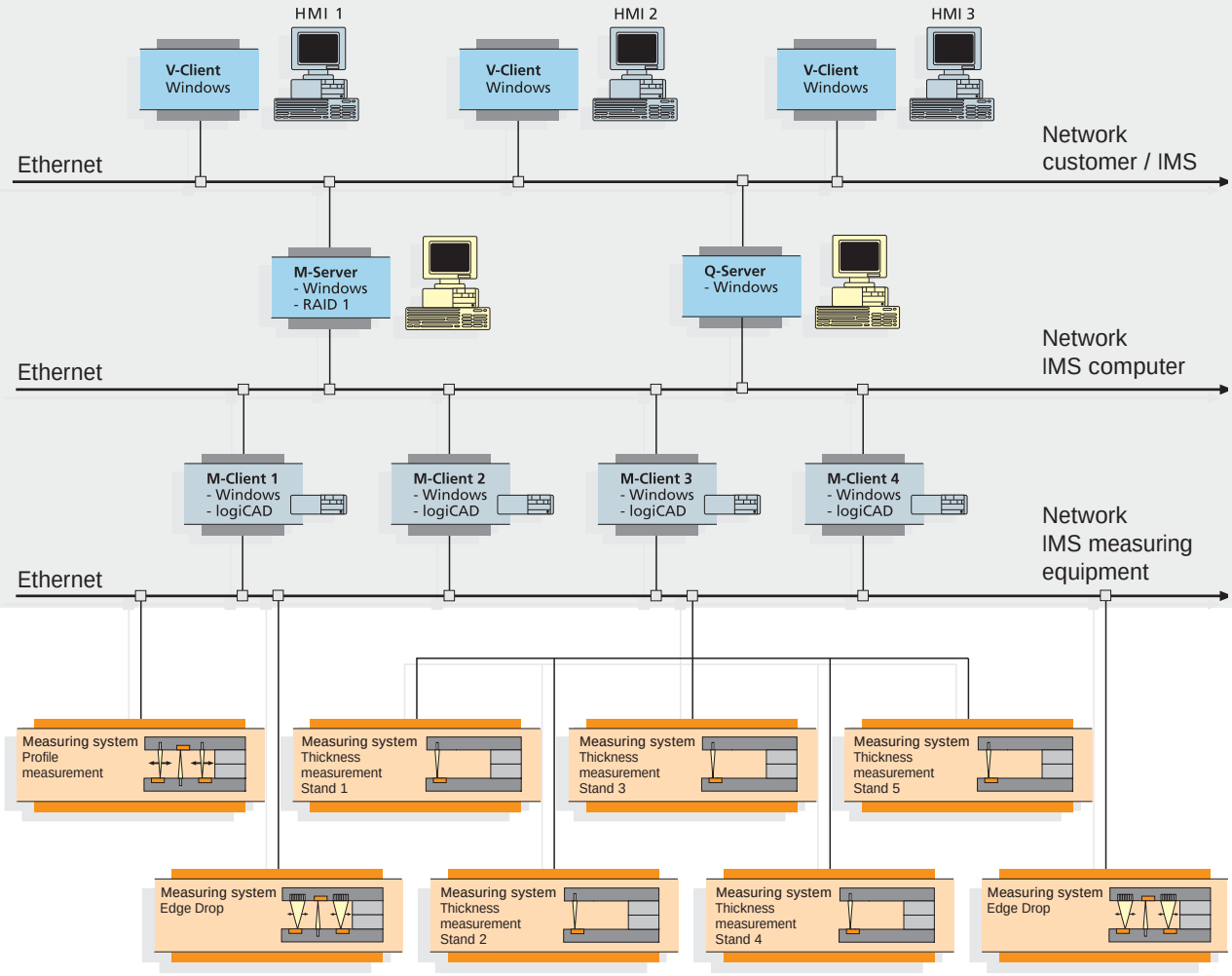
Cubicle configurations: Standard design (left) / Design with MEVlnet-Q (right)



Application design logiCAD

Application Example

Tandem Mill



The figures “Cubicle configurations” and “Application tandem mill” are representative only.

IMS Messsysteme GmbH

Dieselstraße 55
42579 Heiligenhaus

Postfach 10 03 52
42568 Heiligenhaus

Germany

phone: +49 2056 975-0
fax: +49 2056 975-140
e-mail: info@ims-gmbh.de
internet: www.ims-gmbh.de