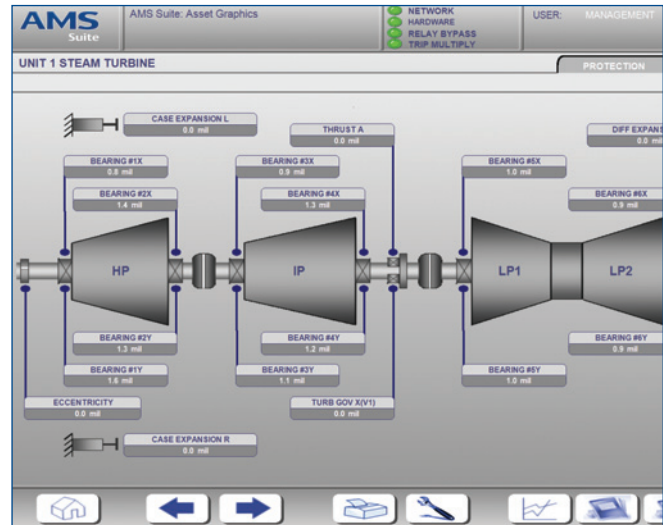


# AMS Suite: Asset Graphics

- Powerful graphical display development tool
- Deployable as a local graphical display dedicated to a CSI 6500 Machinery Health Monitor
- Scalable to provide enterprise network graphical displays for summary views of machinery health
- Integrated SQL database report system
- Multi-lingual switching in real-time
- Web-projects by means of terminal servers
- Redundant multi-user systems



A graphical display provides a simplified view of your machinery health. Like a real-time operator view for process control, AMS Asset Graphics is the "operator view" for maintenance.

## Introduction

Machinery health management and performance monitoring are often data intensive, and you can easily lose sight of the effects that upstream assets have on rotating machines or overlook valuable interrelationships between process parameters and machinery health.

AMS Asset Graphics is a graphical user interface with easy-to-understand graphics. By combining information from rotating machinery monitors, machinery performance monitoring, and process control, AMS Asset Graphics becomes the real-time operator screen for the maintenance department.

AMS Asset Graphics is used for both simple single applications and complex enterprise-wide applications. It has been deployed effectively in safety-relevant areas such as tunnel control rooms or turbine-monitoring systems in nuclear power stations.

## AMS Asset Graphics as a Local Display

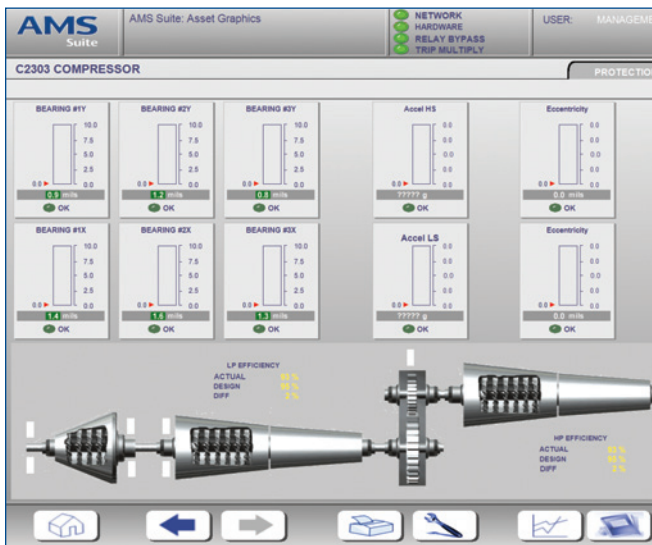
In many cases, machinery protection systems are deployed "blind," which means there is no local display for the machinery monitoring system. However, if there is no possibility for a remote display or if the machine needs tending to locally, then a local display is necessary. AMS Asset Graphics can be deployed on an industrial touch screen display with easy-to-understand bar graphs that represent machine vibration and position parameters. In addition, instrumentation health and monitoring system health parameters assure you that the CSI 6500 is operating flawlessly.

An AMS Asset Graphics industrial display may be connected to a single or multiple CSI 6500 racks, depending on your viewing needs.

### AMS Asset Graphics: The Operator View for Maintenance

Just as an operator needs process control screens and vibration parameters to confidently run a plant, the maintenance staff needs vibration screens and process parameters to confidently and accurately manage and make recommendations on machinery health issues.

AMS Asset Graphics deployed in a maintenance office provides a high-level, graphic-intensive user environment that brings together information from machinery protection, predictive monitoring, process control, and performance monitoring systems to help you see alarms, changing parameters, and machinery relationships across the plant.



AMS Asset Graphics provides simple touch screen local display support or enterprise wide visualization.

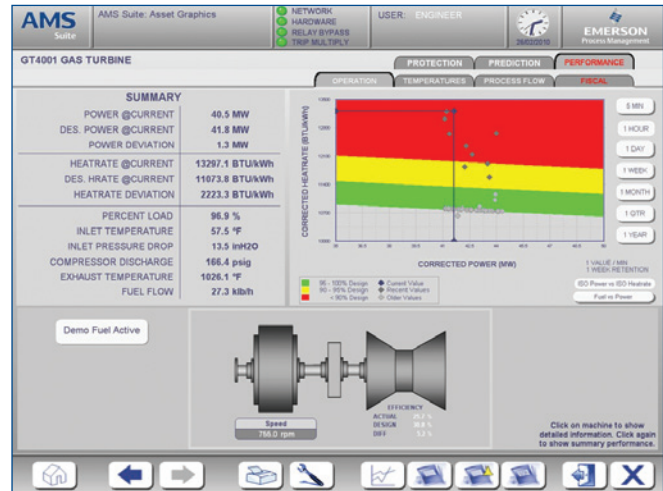
### AMS Asset Graphics: Consolidation of 5 Data Sources in One Graphical View

#### CSI 6500 Machinery Health Monitor

The CSI 6500 can communicate directly to AMS Asset Graphics and provide detail in the form of graphical information about overall vibration levels, machine position, instrumentation health, and monitoring system health.

#### AMS Suite: Machinery Health Manager

Where AMS Machinery Manager provides detailed diagnostic tools, AMS Asset Graphics provides a graphical view to help you see the plant from a high level and equipment relationships across the plant.



AMS Asset Graphics provides graphical visualization from data sources, including CSI 6500, AMS Machinery Manager, AMS Performance Advisor, CSI 9420, Ovation, DeltaV, and third party process parameters.

#### AMS Suite: Global Performance Advisor

AMS Performance Advisor provides real-time performance and efficiency updates and is displayed in graphical form in AMS Asset Graphics.

#### CSI 9420 Wireless Vibration Transmitter

Wireless CSI 9420 transmitters distributed around your plant provide vibration data, which can be graphically depicted and summarized in AMS Asset Graphics.

#### Process Automation Information

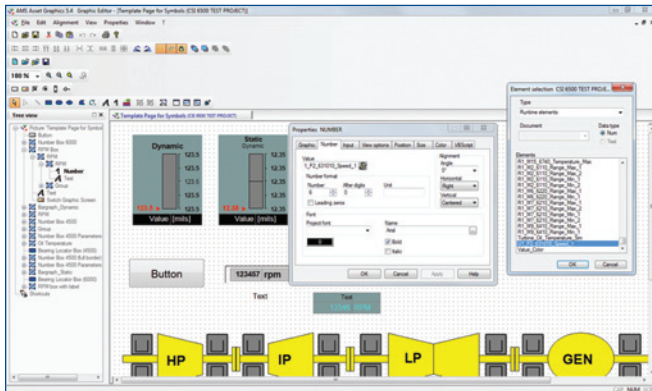
Information such as speed, temperature, pressure, runtime, starts and stops can put context to vibration parameters. Process parameters can be integrated into AMS Asset Graphics to provide the maintenance staff with valuable information that can be correlated with changing vibration or performance information. Information from DeltaV™, Ovation™, or third party control systems can be integrated through open standard protocols.

#### Graphic Editor

##### Powerful Graphical Display Development Tool

The Graphic Editor allows you to draw process pictures, configure the user interface, and define the appearance of process data on the screen using vector graphics. The image is constructed with graphics selected from the symbol bar and is fully editable. The graphics have three main properties:

- Static properties such as position, size, and color
- Dynamic properties such as changes in position, changes in size, rotation, color change, and color filling
- Scripts in Visual BASIC syntax



Properties can be customized for each graphic including data sources, permissions, color, size, etc.

By grouping the objects, complex graphics and animations can quickly be created. Save graphics as symbols or reference objects and then reuse them in other applications. A tree view summarizes components in more extensive object groups. An object in a group can be selected directly and edited, without the need to ungroup the structure.

- Group individual graphic objects into a new object
- Comprehensive graphic library
- Customizable configuration for every graphic object
- Modify single objects without ungrouping graphic
- Tree view with direct access to single graphic objects
- Graphic object types include \*.wmf, \*.emf, \*.bmp, \*.tif, \*.jpeg and \*.png
- Pipe functionality (3D lines and polylines)

Integrated tools allow you to create and edit pictures quickly and easily. Pictures from other graphic programs, including scanned images or drawings, can be embedded and edited as a Windows metafile or bitmap graphic.

- Edit text and numbers with various font types and attributes
- Add multi-line text objects
- Integrate pictures with active functions
- Automatically adapt to various screen resolutions
- Align objects (height, distance, size, etc.)

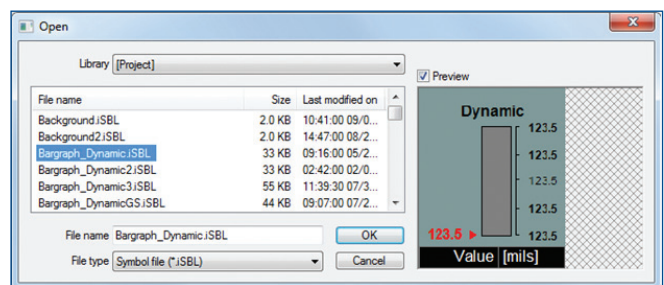
### Symbols

When objects are used frequently, your work is made easier with the use of symbols. Gather system-specific images with dynamic object properties into an integrated library that contains the most common images such as pumps, drives, and valves.

### Facilitate Usability

Define user actions during runtime in the development system. For each image, you can define a runtime user action that is authorized based on user credentials.

- Function keys for projects and pictures
- Buttons, slides, or scroll bars
- Input and output fields for numeric and text characters
- Windows (picture in picture)
- Touch display input of numeric values and texts
- Trend lines



A library of application specific graphics is included for building local displays and machinery health visualization.

### ActiveX

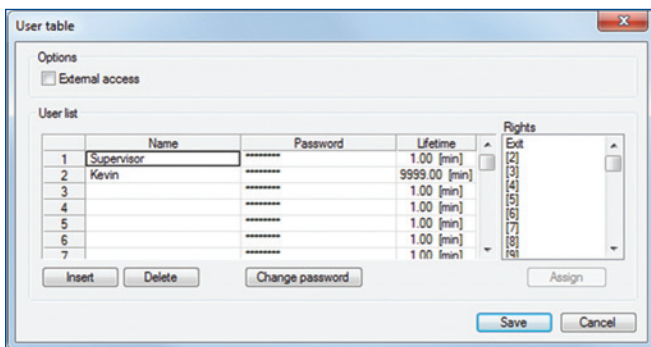
ActiveX objects, embedded in the process pictures, extend the possibilities of the complete system. With pictures, audio sequences, text documents, or Excel tables and graphics, meaningful information is easily available.

### User Administration

#### No access for unauthorized persons

Changes of set points, alarm acknowledgments, and operation of buttons can be locked against unauthorized access with user rights, user names and passwords. Individual editors of the project engineering software can also be locked. Login can be required when runtime is entered or during specific actions while in runtime mode. Users are automatically logged out at the end of the session or upon request.

- Protection of assets through user permission
- User access to individual graphics at runtime
- Audit Trail changes to create historical record



Define passwords and rights for each user.

### Process Assignment

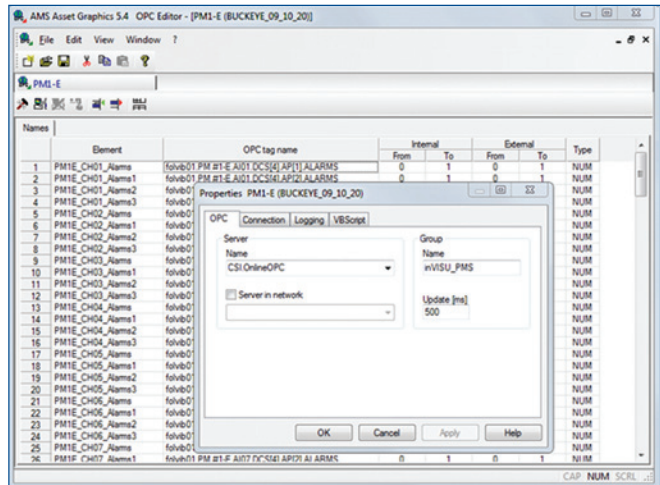
The process assignment tool helps you map the data elements in AMS Asset Graphics with third party data sources like process values. Drivers include Modbus TCP and OPC. Optional drivers include Siemens S5/S7 and S7 Ethernet. Not all process values will be stored permanently by the control unit. With the help of different assignment tables, it is possible to exchange data as required in order to achieve an optimized project-specific data communication.

- Driver for Siemens S5/S7 and S7 Ethernet
- Driver profiles for common features of assignment tables
- Parallel communication between control devices and bus systems

### OPC Client, OPC Server

#### Open for many control devices and bus systems

The AMS Asset Graphics OPC Server allows the transmission of AMS Asset Graphics data to other OPC clients.



Connectivity to 3rd party sources includes OPC, Modbus, Siemens S5/S7 and S7 Ethernet, etc.

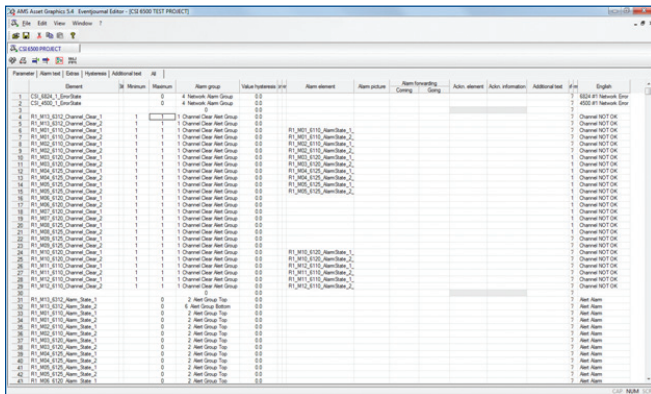
### Alarm and Event Management

The event journal provides a table for all system events with a time stamp and event acknowledgement. Examples of events include:

- Vibration value has exceeded limit
- Valve has opened / closed
- Alarms
- Lost communication
- Relays bypassed

Events are archived in the AMS Asset Graphics SQL database.

- Up to 100 event groups, each group may transmit a collective message
- Up to 20,000 individual event texts
- Upon alarm, events can automatically be sent to printer
- Acknowledge function
- Additional text can be edited for each alarm
- Events can be linked to email
- Definable filters
- History
- Alarm statistics



Alarms and events are captured, displayed, acknowledged and can be linked to email for mobile user notification.

**Data Storage**

Data such as vibration values, process values, and time stamps are stored in a Microsoft SQL server, MSDE database. Data may be stored based on time or set to store on change of value. Data can be stored redundantly on two drives on a PC or two drives on two separate PCs.

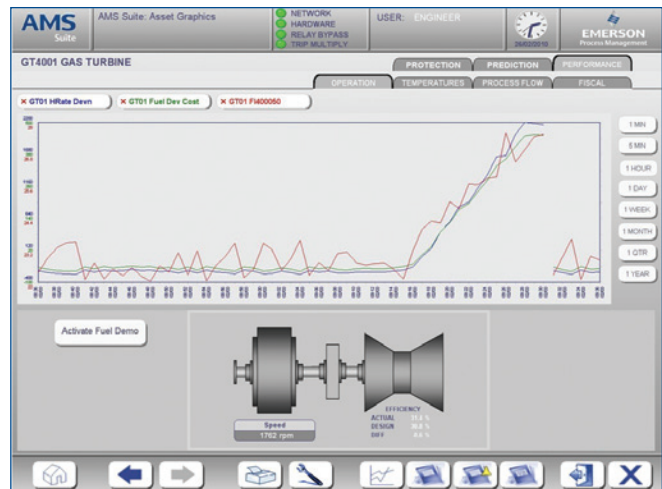
Import / export functions, including MS Access or CSV files, allow external applications to have access to data.

- Time and event controlled storage
- Dynamic number and text storage
- Data export (Access or CSV format)
- Data import in CSV format
- Redundant data storage

**Trend Lines**

Trend lines are an easy way to graphically depict changes and correlations. Trend lines are user adjustable from one millisecond to several years in runtime.

- Up to 20 different trends in a diagram
- Fading in and out of individual parameters at runtime
- Arbitrary number of trend lines per picture
- Zoom in and out on X and Y axis at runtime
- Individual scaling for every process parameter
- Real-time readout of single and multiple trends on data points
- Zoom function, selection of value ranges
- Printout
- Min/max diagram representation
- Access to historical data



Trends can be pre-defined at graphics configuration or adhoc trend lines can be added at runtime.

## Dynamic Data Exchange (DDE)

AMS Asset Graphics supports Dynamic Data Exchange in Windows. AMS Asset Graphics uses client and the server functionality, which allows the AMS Asset Graphics database elements to be combined dynamically with source data in other Windows applications. The DDE connection can also be used across networks. Production data can then be provided to other departments for processing purposes.

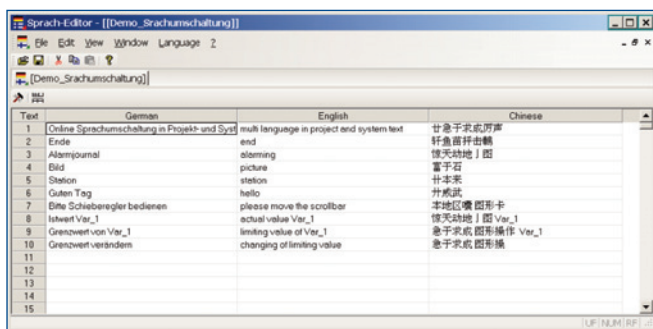
- Convenient user interface for project realization
- DDE client and server assistance

## Language Switchover (Unicode)

### AMS Asset Graphics can also be run in Chinese

AMS Asset Graphics uses Unicode to enable the support of Chinese or Cyrillic font. AMS Asset Graphics supports:

- Easy, real-time language switchover
- Multi-lingual editors
- Current and historical alarm in chosen language
- Separate switchover of system and project language



Text	German	English	Chinese
1	Online Sprachumschaltung in Projekt- und Syst	multi language in project and system text	甘急于完成呀声
2	Ende	end	轩鱼苗祥由麟
3	Alarmjournal	alarmimg	惊天地地   图
4	Bild	picture	富于召
5	Station	station	非非此
6	Guten Tag	hello	升成此
7	Bitte Schieberegler bedienen	please move the scrollbar	本地区嘴图形卡
8	Istwert Var_1	actual value Var_1	惊天地地   图 Var_1
9	Grenzwert von Var_1	limiting value of Var_1	关于完成 图形操作 Var_1
10	Grenzwert verändern	changing of limiting value	关于完成 图形操
11			
12			
13			
14			
15			

Translations for any language is as simple as adding a new column, and adding the local language.

## Logbook (Audit Trail)

### Tracking actions

System messages and operations are registered in the logbook. The logging on or off of an operator and the changing of a formula can be documented. For projects that are subject to Standard 21 CFR part 11, the Audit Trail is an essential component for attaining a validity check of the entire system.

Even changes that are carried out in the development stages can be recorded. Changes in the process will be archived, commented on, and evaluated.

- Track operator actions in critical process situations
- Detect system messages and operator actions
- Standard database format
- Sorting and filter functions
- Comments
- Archive functions
- Multi-user ability
- Script created messages

## Multi-User Ability

### AMS Asset Graphics on the network

The multi-user ability allows several computers to visualize and operate an AMS Asset Graphics project. This can be restricted by creating a project structure where individual operators are restricted by password levels.

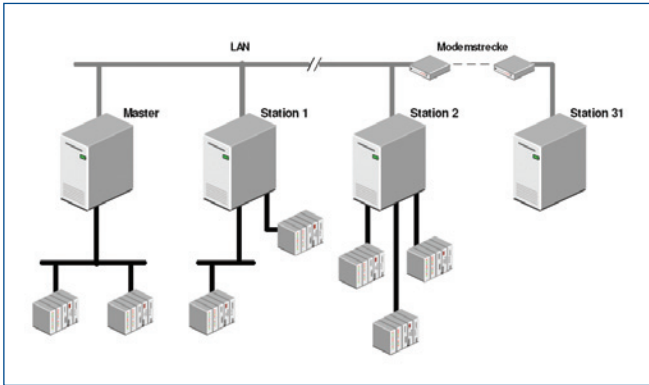
The multi-user ability is made possible by TCP/IP communication. A master-station monitors the AMS Asset Graphics stations and is the only workstation that has to be in continuous operation.

A single station system can also be extended to a multi-station system. AMS Asset Graphics can be re-organized to fit your needs with up to a 32-station installation. At every station, there is the possibility of a connection to the process.

The logbook records all of the events and operator actions of every station. A multistation system may be administrated and modified centrally by one PC, which minimizes the administration expenses. To reduce unnecessary data communication, a local data directory is installed.

As the project changes, an automatic synchronization will adjust all stations. In case of interruptions in the network, a single station will continue to operate even without connection to the master.

- Single user system, expandable up to 32 stations
- Easy design of multi-user projects
- Process connection possible for every station
- Remote monitoring of the system through remote data transmission
- Automatic synchronization of changes

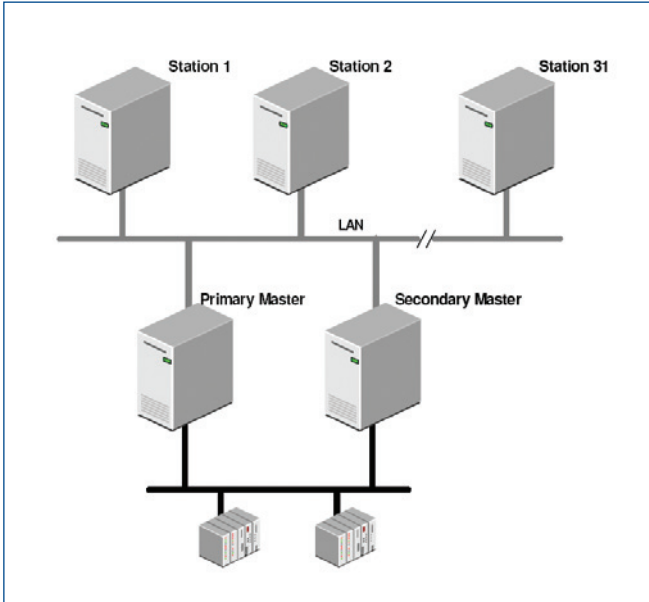


Scalable architecture from one seat to many seats.

### Redundancy Module

In the event of a master system failure, the AMS Asset Graphics redundancy module switches over to a secondary AMS Asset Graphics master, which runs in parallel operation with the primary master. For each of the masters, an individual process connection is required.

- Failure protection for the entire system
- Continual data recording even with the failure of a computer



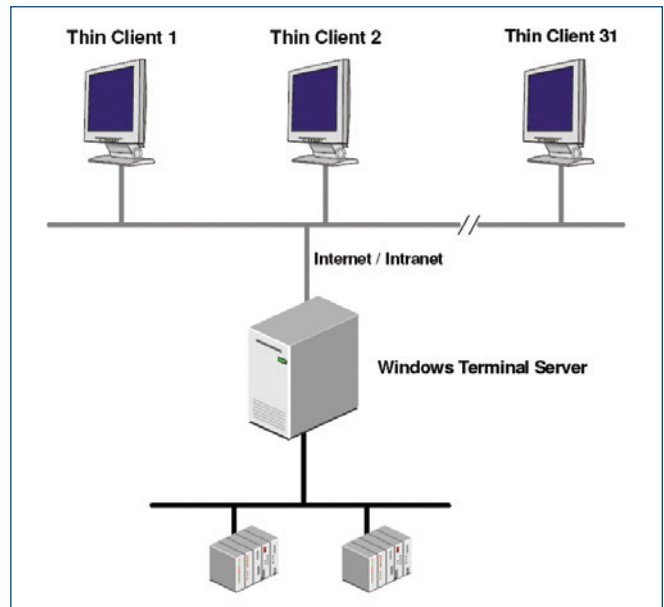
Architecture supports simplex and redundant server modes.

### Web Ability

#### Web-applications by means of terminal server

By using Windows terminal server, AMS Asset Graphics multi-user projects can be applied as either an Intranet or Internet solution. Simple thin clients are sufficient for the full utilization of the AMS Asset Graphics application.

- Economical thin clients usable
- Full web access on the host computer
- No project adaptation required



WAN capable through the use of Terminal Services.

### ODBC Connection

#### Simple, efficient database communication

The ODBC interface (open database connectivity) creates a simple exchange of process parameters with current database systems (Oracle, MS SQLServer, Informix, Paradox, dBase, Access, Excel, etc.). This allows you to transfer all relevant process data into different database systems or to read data from the system and transfer it to the third party process.

Using the AMS Asset Graphics ODBC database connection, production data can be managed and plant operating data recorded. With its extensive functionality, complex system requirements can be realized quickly and easily.

- Convenient user interface for project realization
- Bi-directional data flow
- Different filter and sorting options to be defined for every table
- Standard functions integrated in the ODBC editor
- Easy configuration menu for AMS Asset Graphics connection to the database
- Direct SQL commands

### Application Program Interface

The application program interface offers you the possibility to adapt AMS Asset Graphics to your own requirements. This open interface to the online database permits simple access to all data items.

- C++, VB, Delphi, and Java compatible
- Example program for a quick start

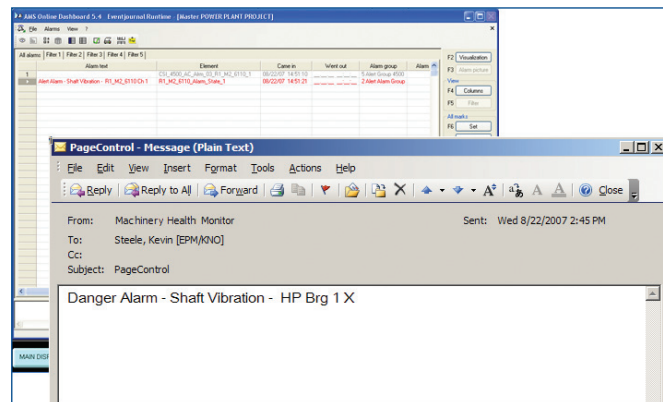
### Driver Interface

In addition to source code interface, there is also an open driver interface that can be used for embedding individual drivers for control units, bus systems, or PC printed boards.

### Notification System PageControl

Important alerts and events regarding your machines and process should be passed on to your maintenance staff even when they are not at a computer. PageControl provides notification to users when they are mobile. The alarms and alarm text is taken from the event journal. An acknowledgement function can ensure that the message is received. If the user is not available, the next user will be automatically contacted. Receiver choices can be D1, Voodafone, E-Plus, SMS, Fax, email, or speech output.

- Supervision of plants and machines by mobile phones, SMS, fax, email, voice message
- Automatic conversion of alarm texts to voice messages
- Acknowledgment function
- Group call, sequential call and work shift functions
- Remote acknowledgment



*Email notification of machine or system alerts allows mobile workers to stay connected.*

### System requirements

- P600
- 64MB main memory (512MB recommended)
- Fixed disk > 40GB
- VGA graphic card
- Compatible with Windows 7, Windows Vista Business, Windows XP Professional, Windows Server 2008, and Windows Server 2003

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