



acos[®] NMS Productsuite

**IT-Based Network Management for the
Power Supply Industry in a liberalised
Energy Market**

ACOS[®] NMS Product Suite

The liberalisation of the energy market has considerably increased the cost pressure on power supply companies; most lately, this pressure has been exacerbated through the incentive-based regulations. Given that there is a direct connection between the quality of supply networks and the investments in system management, grid expansion and upgrading, and service and maintenance works, it is important to synchronise these costs and the supply quality.

Against this background, energy suppliers require efficient and uniform IT solutions for the connection of technical and commercial domains even across system borders.

With their ACOS NMS product suite, IDS offers tailor-made IT solutions for the power supply industry's core processes. Through a wide range of services, from advisory and consultancy services up to complete turnkey solutions, the ACOS NMS product suite enables power suppliers to successfully operate on the energy market.



A Familiar Situation?

Incentive-based regulations and sinking system usage fees have led to an increasing cost pressure on power supply companies. By the same token, a high supply quality is becoming an increasingly important factor with regard to competitiveness, and has to be proven – e.g. in the form of fault statistics – to the (German) Federal Network Agency. Also, the internal evaluation of energy data is made difficult by inconsistent data management.

Economise – But How?

In order to effectively meet these challenges, the optimised and efficient implementation of all business processes is of prime importance. What if, however, these business processes are not optimised and have long-winded execution periods? Or if we have an IT environment that has developed over years and is therefore hampered by a heterogeneous structure, thus leading to a disruption of communication between the different departments and, ultimately, the loss of know-how because all the important knowledge is merely stored in the brains of a few individual employees?

If you are aiming at further improving the efficiency of your power grid, the decisive question is this: is there a central solution in your company which enables the optimum mapping of the different areas - equipment and resource management, documentation and reporting, staff and resource planning – in accordance with the business processes? Do you have a solution which provides information exactly where it is required at any given moment?

Tailor-Made Software Solutions

The ACOS NMS product suite provides tailor-made solutions for a uniform and consistent network management. ACOS NMS can be employed in different expansion stages and provides standard modules for

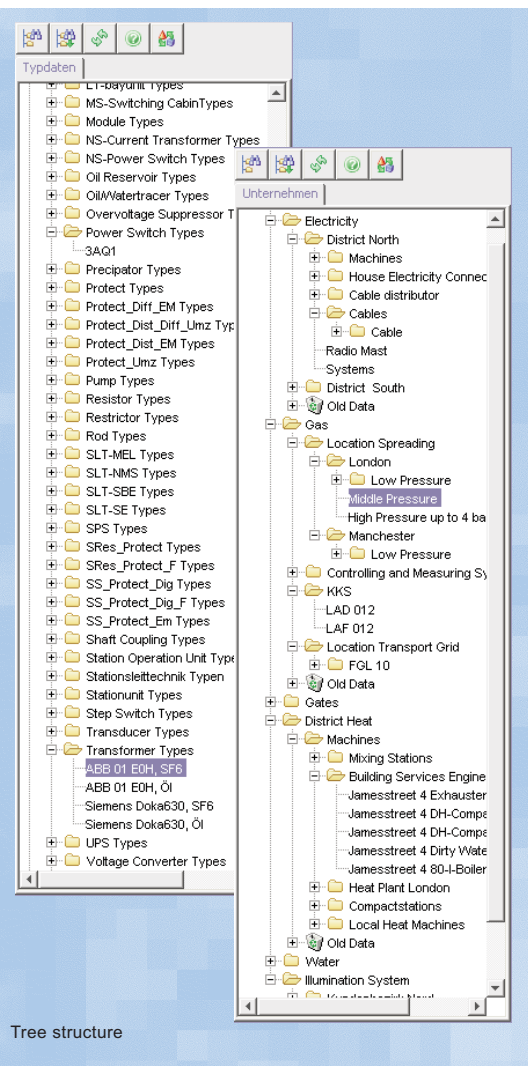
- equipment and resource inventurisation and management
- cyclic and status-oriented maintenance
- fault detection and documentation
- order and workforce management
- company-wide integration of IT systems (ERP, GIS, SCADA, ...)

ACOS AM – For Thorough and Efficient Asset Management



As a rule, power supply grids include a variety of different pieces of equipment and resources, each of which serves for a particular purpose. Reliable information on these resources forms the basis for efficient grid operation.

Through the structured archiving of all information on equipment and resources, the ACOS AM module makes sure that information and know-how within a company are permanently saved and can be made available to a large circle of persons. Rapid access to the archived data ensures short response times in the event of faults.



Optimal Typification Concept

The unique typification concept of ACOS AM permits a classification according to manufacturer type and also a rougher categorisation, where, for instance, pieces of equipment from different manufacturers are grouped according to their technical features. The classification of similar pieces of equipment into types creates a considerable saving potential, e.g. in the m.v. range. The uniform evaluation methods enable benchmarking of equipment because it is now possible to separate reliable from unreliable types of equipment. By placing the focus on the reliable types of equipment, the typification concept provides a strategic means for the reduction of maintenance costs. By the same token, it also enables the comfortable assignment of rules and activities for each type of manufacturer, thereby creating the basis for subsequent maintenance activities.

Object Management in Tree Structures

The management of equipment and resources in ACOS AM can be done according to different aspects and different hierarchical depths. It is possible to create virtual tree views for each user identity, therefore supplying each user group with their specifically relevant information.

Centralised Document Management

Whether it is technical manufacturer data, service and maintenance instructions or technical diagrams and planning records – all the relevant documents of a certain type of equipment are available in a central database, thereby considerably facilitating e.g. the search for similar types. Synchronisation mechanisms that are compatible with all standard GIS systems prevent the costly and laborious redundant archiving of data.



ACOS MM – Maintenance Management Made Easy



Based on the equipment and resource management feature, all equipment and resource data are centrally available on the ACOS MM maintenance management module. Maintenance know-how that was formerly restricted to individual employees is replaced by standardised maintenance concepts and rule-based evaluation strategies, thereby enabling the optimisation of maintenance processes and the reduction of costs.

Pre-Defined, Industry-Specific Maintenance Measures

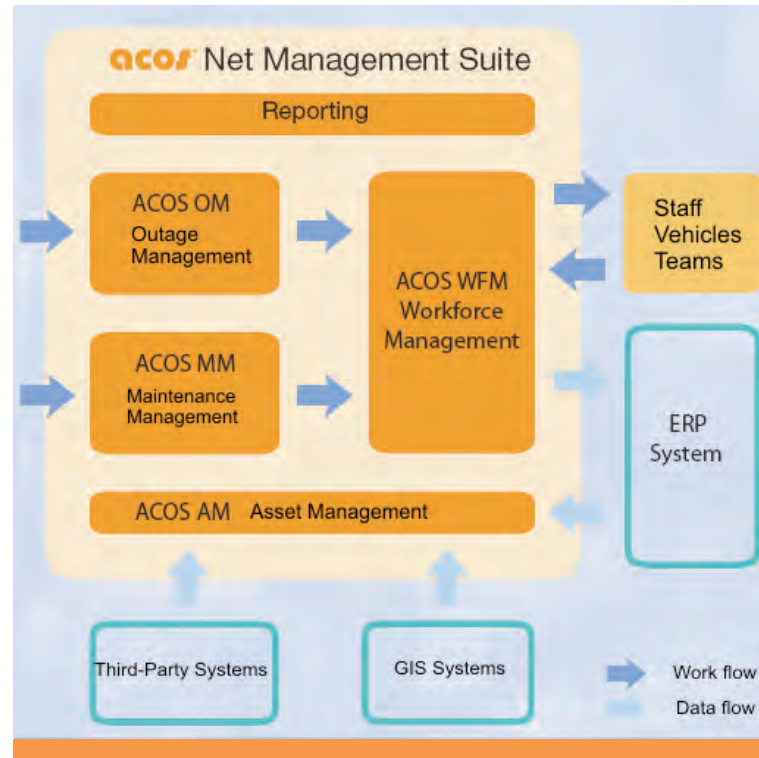
The provision and planning of industry-specific maintenance measures ensures the adherence to security regulations and laws. Checklists can be archived specifically for each type of equipment and provide a useful means for the execution and documentation of maintenance tasks.

Comfortable Mapping of Cyclic and Status-Dependent Maintenance Strategies

It is possible to specify different maintenance strategies for different object types. For cyclic maintenance, an activity/measure is generated after a specified period has elapsed, and is then released for commissioning. For status-oriented maintenance, activities/measures are generated depending on specific status criteria, e.g. when a preset number of operating hours or switching cycles is exceeded. For the determination of these values, data from previous maintenance activities (e.g. visual inspections) or from the connected network management system (operating hour or switching cycle meter) is used. It is also possible to combine both strategies.

Cost Optimisation through efficient Equipment Evaluation

Predefined evaluation rules provide a sound basis for decisions on investments for maintenance, replacements or the erection of new systems or installations. The status and relevance of the individual components are assessed, connected to each other and shown in a clear and concise manner by way of prioritised lists. Any and all measures and activities executed in an object, as well as the costs resulting from erection, maintenance and fault clearance are documented in maintenance history reports.



Efficient Document Management

Similar to all other ACOS NMS modules (equipment and resource management, fault clearance, ...), the ACOS MM maintenance management module includes an efficient document management function which enables the operator to call up all documents created in the course of a specific activity/measure, such as, for instance, measuring protocols.

ACOS OM – Centralised and Comfortable Fault Documentation



Fault documentation

Reliability figures for 2008				
Scheme A				
Parameter	Quantity	Hu [1/a] with frequency of disturbance	Tu [min] with duration of disturbance	Qu [min/a] Outages
MV, District North	43	41.16	13.20	543.31
MV, District South	42	42.23	14.20	599.67
MV, District West	41	43.16	10.20	440.23
MV, District Central	40	44.16	11.20	494.59
MV, District East	39	38.16	12.20	465.55
LV, District North	1		0.00	
LV, District South	4	0.03	59.70	1.79
LV, District West	5	0.5	60.68	30.34
LV, District Central	6	0.02	70.65	1.41
LV, District East	7	0.23	56.48	12.99
Total	228	209.65	308.15	2,589.88

Visualisation of reliability figures

The ACOS OM outage management module provides all the necessary functions for a standardised, industry-specific recording of faults and events occurring within a power grid. The acquired data are used as a basis for legally prescribed evaluations and for in-house reporting. Reactions to faults are documented in such a way as to be court-proof.

Support of Call Centres and Operative Staff

Faults, events and complaints can be recorded by means of predefined input forms (user-guided). Checklists are available for every kind of fault, to facilitate the description and classification of faults. This enables a systematic analysis of causes and the identification of the focus of faults, thus permitting a quick and targeted handling of faults and errors.

Analysis of Faults and Weak Spots

The data gleaned by means of fault analysis provide the basis for decisions on further activities and proceedings. Together with the equipment and resource management function, this function enables the allocation of faults to the individual pieces of equipment/installations, thus permitting an analysis of the weak points by means of a simple evaluation.

Automatic Reporting with Integrated Plausibility Check

One of ACOS OM's focal advantages is that it enables the automatic operation of the reporting system prescribed by the German Federal Network Agency (Bundesnetzagentur) and of the fault and availability statistics of the German Federal Association of the Energy and Water Industry (BDEW). Its integrated plausibility check function makes sure that only accurate data are passed on to the aforesaid authorities.

ACOS WFM – Optimized Order Processing via Workforce Management

A company's operations involve a wide range of jobs for the operational staff. The ACOS WFM workforce management module enables the efficient assignment of orders coming from preceding processes to the operating staff, thereby reducing processing times - particularly if the service teams are equipped with portable terminals – as well as costs, while increasing customer satisfaction.

Central Dispatching of Orders and Assignments

The dispatching officer who is in charge of allocating orders to his staff has access to the entire order pool of the different processes (erection, grid control, maintenance, fault localisation and elimination). Via the central dispatching module, the dispatching officer assigns the upcoming orders to the different teams for execution.

Graphic Compilation of Shift Schedule

In the coordination of appointments and deadlines, the responsible planning officer is effectively aided by a graphic representation of schedules in the form of Gantt diagrams and by the geographic visualisation of the current whereabouts of staff vehicles.

Order-Specific Booking via ERP

All orders works and costs acquired in ACOS WFM can be automatically exported to an ERP system (e.g. SAP), where they can be booked to different accounts in an order-specific manner and according to predefined rules. This enables the use of ACOS WFM as a "technician-friendly" front end while ensuring transparency on the commercial side in the ERP system.



GANTT Diagram



ACOS NMSmobile – The Mobile Solution

Mobile terminals, such as tablet PCs or hand-held terminals, can be used to aid staff in the execution of orders, the reporting of orders and the recording of working hours. The system architecture of ACOS NMSmobile enables both the on-line and off-line connection of the mobile terminals. For off-line operation, a separate database is installed on the mobile terminal and the data/orders of each employee are cyclically synchronised with the central server, thereby making employees independent of possible connection problems.

For on-line operation, the mobile terminal has direct access to the central server via browser by means of UMTS/GPRS or GSM. All functions are provided to the users in such a way as to simulate their being directly within the network. The integration of navigation systems provides information as to the current position of staff vehicles. Especially owners of distribution networks are able to optimise the processing of orders through the use of mobile terminals and the wireless transmission of ad-hoc instructions.

ACOS X4 – The Integration Platform for Your IT Systems



In an increasingly process-oriented environment, it is no longer practical to operate software systems as isolated systems. Data have to be imported from other systems and may have to be further processed, added to and passed on to subsequent systems to ensure a consistent and uniform mapping of the company's processes. The ACOS X4 integration platform enables the comprehensive integration of your other systems into ACOS NMS. Why not benefit from the combination of IT systems that is ground-breaking with respect to data integration and real-time communication?

Complete Integration of Applications and Processes

As an integrated EAI (Enterprise Application Integration) and BPM (Business Process Management) platform, ACOS X4 offers maximum flexibility for the mapping of uniform system-wide processes and provides reusable interface adapters to all commonly used standards (ASCII, XML, ODBC, ...) and to a variety of standard IT systems

(GIS, SCADA systems, ERP, reporting/BI systems...).

Graphic Modelling of Company and Interface Processes

The ACOS X4 server provides graphic tools for process design and data mapping, thereby enabling the graphic modelling, as well as visualisation and monitoring, of predefined integration processes related to the core processes of the power supply industry (grid control, erection, maintenance and fault elimination), in combination with ERP and GIS systems.

The Present and the Future: High-Tech Solutions with ACOS NMS

ACOS NMS is not only an excellent basis for mapping the present structure of your enterprise and today's processes. Thanks to its flexibility and the consistent implementation of business processes by means of a state-of-the-art software architecture, ACOS NMS can always be upgraded and further developed to meet your requirements in the future.

ACOS NMS is based completely on Java2EE. Java2 EE (Java2 Enterprise Edition) has become the established standard for modern Enterprise applications and is characterised by the following features:

- Web capability – immediate access to the complete system from each and every point within an enterprise
- Extreme scalability
- Continuous development of the platform
- Largely independent of operating systems

A powerful modern database is used for the management of the relevant data for process mapping. ACOS NMS employs an ORACLE database which offers the following advantages:

- Quick and efficient data access
- Supreme availability
- Flexibility and scalability – from single-user terminals to more than 800 users

The ACOS NMS Tools parameterisation tool enables you to adapt your system to your company-specific requirements – even without programming knowledge. Clear and user-friendly dialogues aid you in the parameterisation of company-specific

- screens
- data models
- workflows



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