



Asset Data Management for The Energy Sector

EAM Setup & Optimization

Good asset management is the key to ensuring cost efficiency in maintenance-heavy industries. Companies in the heavy industry are forced to get the most potential from aging assets while ensuring reliability and optimizing costs.

Asset integrity is fundamental for complex technical installations such as a drilling rigs. To ensure the integrity of the asset, there is a need to have full control of the Computerized Maintenance Management Systems (CMMS), to have high quality data, and to have the company's business processes reflected in the CMMS.

Keel specializes in CMMS systems such as SAP. We offer full-circle services ranging from hands-on on-site inspections to asset data optimization and setting up the maintenance system for optimal asset integrity. This involves improving procedures, documentation, reporting, and ensuring compliance. The full-circle approach gives the customer a "one stop shop" experience, where involving several service companies is not necessary.

A Different Approach

Keel is different from other companies, because we are a combination of an engineering/technical services company with deep understanding of operations, equipment/materials, maintenance - and a high tech IT company with specialized knowledge of systems used in the heavy industry. This includes IT tools, developed specifically to collect, analyse and manage data.

For many years, Keel has performed ongoing asset data management related to maintenance in the our customer's Enterprise Asset Management (EAM) environment. This work covers more than 30 drilling units, including jack-ups, semi-submersibles, and drillships. We have also worked with onshore installations (production) and merchant vessels.

Saving Cost

The main focus in our maintenance management approach is cost savings and optimization. This requires a thorough analysis of all documentation and collecting master data from e.g.:

- Manufacturer and vendor documentation;
- Maintenance and user manuals, certificates;
- Spare parts lists

We offer asset data management covering the whole plant maintenance business process, including:

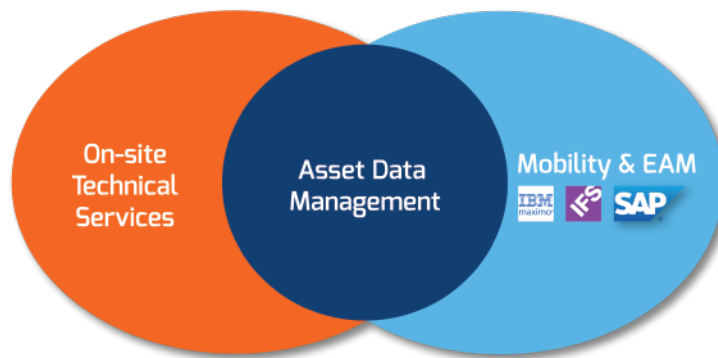
- Checking, updating and optimizing maintenance procedures;
- Aligning the maintenance system with requirements from customers and authorities

Master Data Management

Managing master data is an essential part of maintenance management. Keel specializes in this and helps customers ensure a high data quality, which is the basis for optimization and cost savings. The work includes:

- Updating vendor and manufacturer records, manuals and other data;
- Creating and assigning maintenance plants to materials;
- Suggesting changes to setup and procedures in SAP Aligning the maintenance system with requirements from customers and authorities



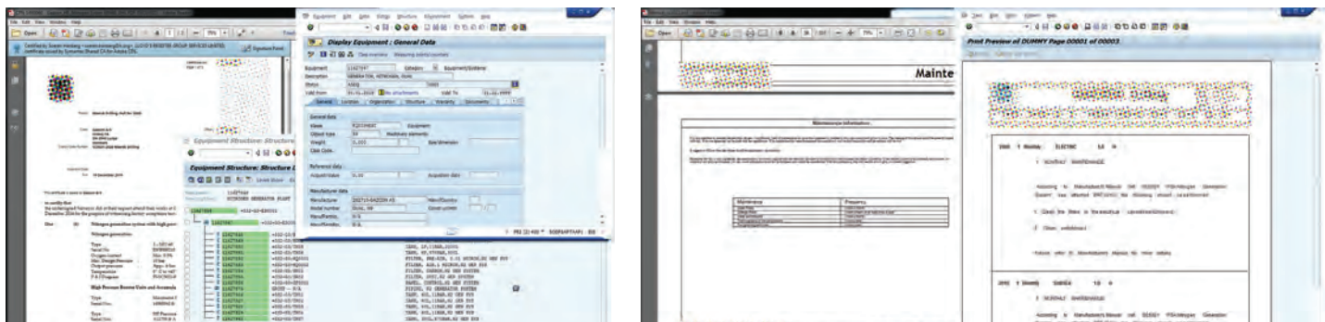


Setting up Plant Maintenance in CMMS (SAP, IFS, etc.)

Keel has performed a full set up of maintenance in our customers' SAP systems according to customer procedures for drillships, jack-ups, and semi-submersible rigs.

This can include:

- Registration of equipment (maintainable items);
- Creating maintenance plans (incl. maintenance schedule, reference to main equipment and maintenance items);
- Building a new equipment structure in SAP, registering all equipment;
- Creating task lists (work instructions), measuring points and maintenance items;
- Creating functional location structures of equipment;
- Assigning performance standards;
- Implementing an equipment naming convention



CMMS Application Support

We also help the customer with ongoing issues in the form of regular support of the CMMS (SAP, IFS, etc.) system. This way, we have helped reducing the customer's spending on maintenance significantly.

We have handled:

- Compliance with standards and procedures for maintenance;
- Data quality optimization;
- Criticality analysis;
- Creating task lists (work instructions), measuring points and maintenance items;
- Enhancing maintenance documentation, storing them correctly in the CMMS;
- Attaching documents to technical objects and maintainable items;
- Assigning Bill of Materials (BoM) to technical objects;
- Classification of data;
- Equipment verification and updating them in the CMMS system;
- Making system changes based on request from customer, e.g. Maintenance Supervisors;
- Statistical analysis based on historical data, e.g. Failure Frequency Analysis



A part of the work is handling issues (notifications with change requests) in the customer's SAP PM system. Keel has performed such tasks for several customers solving more than 15,000 issues and removing the backlog of issues. The work has covered:

- Uploading data to the SAP system:
 - Functional locations
 - Equipment
 - Standard text keys
 - Task lists
 - Maintenance plans
 - Master Inspection Characteristics (MIC)
- Drawing verification (red-marking of errors on drawings) or creating new technical drawings

Our services can be customized to support a certain maintenance strategy, e.g:

- Preventive maintenance, including updating maintenance plans, task lists etc.
- Reliability-centered maintenance (RCM)
- Risk-based inspections (RBI)

Maintenance Governance & Data Cleansing

Keel also consults clients on a maintenance governance level, streamlining the maintenance strategy and planning across an entire fleet or set of assets according to best practice standards. This can mean an entirely new set up of maintenance in the PM system, but the optimization and cost reduction perspective is enormous. An example of the scope can be:

- Compliance with legislation, classification societies and customer requirements
- Correct criticalities and functions are defined for each individual equipment
- ISO 14224 for equipment classification is implemented
- Spare part forecasting is implemented for preventive maintenance
- Barrier elements assurance activity is implemented

Full Traceability

We are ISO 9001 certified, which indicates the quality of our management system, including:

- Our services meet statutory requirements and customers' needs;
- Our applications are constantly being improved to provide high-quality services



On-site Technical Services (Manpower)

Keel also provided on-site (offshore) maintenance management work on the rig, performed by experienced technical engineers.

- On-site tagging (RFID) of equipment or verification of existing tags;
- Verification of technical drawings (red-marking);
- Inspections, checking that technical documentation fits with reality;
- On-site training of customer staff;
- Providing SAP planners on site

Specialized Tools

Keel uses various IT tools to collect, analyze, optimize and manage asset data within the Energy Sector. We help the customer ensure compliance with internal company procedures and goals, and produce reports to document compliance.

Our tools are SAP-certified, cloud-based and developed for mobile devices. Performance analyses done by SAP reveal that the companies performing best within maintenance incorporate mobile strategies into their organization, excelling at:

- On-demand and real-time monitoring and scheduling;
- Automation and integration of maintenance execution data from floor level to enterprise level

These companies have gained:

- 64% less unplanned downtime;
- 54% lower asset services and maintenance;
- 29% higher service parts inventory turns

This matches perfectly the Keel approach. We have a proven track record of delivering projects on time and on budget with full compliance to regulations.



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