



OVERVIEW OF SYSTEMS DEVELOPED BY maintech

maintech Systems have been developed in house and customized for individual clients since 1994 giving them control over asset management suited to their operations.

The clients represent a variety of operations like Shell, BP, ExxonMobil, UNOCAL, ChevronTexaco, Marathon Oil, BHP Billiton, Anadarko, Stone Energy, Nabors Offshore/International/Drilling USA, Grey Wolf Drilling, Transocean SedcoForex, Abraj Energy Services, Aquila Drilling, Axxis Drilling, Black Viper Energy Services, Bean Dredging, Tetra Applied Technologies, CalDive International, Aries Marine, Epic Divers & Marine, Torch Inc., Stolt Offshore, CrossMar Inc., River Parishes Co., Offshore Specialty Fabricators, McDonough Marine, San Benito Independent School District, McAllen Independent School District, Idea Academy School.

The **Systems** are set up with the **Modules** giving the functions required by the client:

maintech MAINTAINER Enterprise Asset Management System (EAM)

- **Computerized Maintenance Management System (CMMS) Module**
- **Optional Modules:**
 1. **Asset Tracking Module**
 2. **Inventory Control Module**
 3. **Crew Training and Certification Renewal Module**
 4. **Behavior Based Safety Module**
 5. **Hand Held Computer Module**
 6. **Database Internet AutoSync Module**

maintech MAINTAINER Sales Service System

- **Sales Service Module**
- **Optional Module:**
 1. **Database Internet AutoSync Module**

maintech DRILL LOGGER Computerized Drill Logging System

- **Computerized Drill Logging Module**
- **Optional Modules:**
 1. **Computerized Maintenance Management System (CMMS) Module**
 2. **Asset Tracking Module**
 3. **Inventory Control Module**
 4. **Crew Training and Certification Renewal Module**
 5. **Behavior Based Safety Module**
 6. **Database Internet AutoSync Module**

maintech RENTAL EQUIPMENT System

- **Rental Equipment Audit Follow Up Module**
- **Rental Equipment Selection Module**

maintech Backup Server Database Internet AutoSync System

- **Database Internet AutoSync Module**

FUNCTIONS OF MODULES DEVELOPED BY maintech

The Modules have been developed to be specially suited for handling a large number of Operational Units with Assets moving between them. The Asset History is following the individual asset as it moves.

CMMS Module:

This module provides Work Orders for maintenance and other work required for keeping the Assets operational and complying with regulatory requirements. Completion of the work can be followed up. Individual Asset's maintenance history can be accessed and legal records are available for use in court. The module has special versions with functions specific to the requirements of building and vehicle maintenance. The following has been set up for our clients and other items can be added as required:

- **PLANNED MAINTENANCE** - The Assets are set up with Preventive, Predictive, and Proactive maintenance schedules and procedures according to manufacturer's recommendations and client's requirements. Work Orders are generated according to the schedules and can be printed out with the procedure due. On completion they are closed out in the system with readings and comments.
- **UNPLANNED MAINTENANCE** - Work Orders are made for repairs and improvement on the Assets to maintain a complete record of work done. They are closed out in the system on completion with work done and parts used.
- **CLASS SURVEY FOR VESSELS** - Our CMMS has DNV's Type Approval to be used as the PMS in their "Survey Arrangement based on Planned Maintenance System" (SA-PMS) and also covering "Periodically Unattended Machinery Space" / "Machinery Centralized Operated" (E0/EOC-PMS) for ships and other Vessels Classed by them. It will also be accepted by other Class Societies.
- **REGULATORY COMPLIANCE** - Procedures and schedules are set up for a client's own inspection and third party inspection of equipment and other items covered by applicable regulations. The performance of the inspections can be followed up and reports made for the regulatory bodies. The following has been set up for clients:
 - ✓ **International Safety Management:** We have a complete set up of the ISM system required for Vessels going to foreign ports installed for many vessels.
 - ✓ **SOLAS:** Their schedules and procedures for lifesaving equipment are included for Vessels and other offshore Operational Units.
 - ✓ **USCG Streamlined Inspection Program:** We have the schedules and procedures for the required self inspection in our system.
 - ✓ **EPA Requirements:** Shore facilities for Vessel operators have been set up on our system covering EPA's requirements to testing, inspection, and reporting.
- **OIL SAMPLING:** This function tracks samples sent from the Operational Unit to the Analysis Lab, and provides a website for the Lab to enter date of completion and comments. It imports the Lab results into the CMMS for viewing. Corrective Work Orders can be made where results indicate and these will appear on the screen of the Operational Unit where the equipment is located for the crew to take action.
- **MORNING REPORT** - Readings and comments can be entered daily by each Operating Unit for specific equipment and general comments for the day. Management can view this daily report and the history.

FUNCTIONS OF MODULES (continued)

Sales Service Module

The module is designed for use by companies only servicing other parties' assets with their people, or to schedule service done by an outside party on their own assets. The Assets are set up with servicing schedules and procedures according to manufacturer's recommendations and regulatory requirements. Work Orders are shown as due according to the schedules and can be printed out with the procedure due. On completion they are closed out in the system with readings and comments producing a work order that can be viewed in the asset history.

Asset Tracking Module

The Maintainer Asset Tracking module gives you the tool for documenting each move of your assets and updating the location in your records including the name of the person receiving it in the new place. It is designed to comply with the Sarbanes Oxley (SOX) legislation by keeping track of the Assets as they move between Operating Units, Bases, and Vendors, ensuring that a SOX auditor will find Assets where they should be according to the records. The module has the following functions:

- **Set up of Assets** with specs and other details like present location, condition, parent, manufacturer, model No., serial No., etc.
- **Assets move between locations** like Operating Units, Vendors, and Stores with Asset Transfer Orders detailing sender, recipient, approver, each leg of the journey, and a list of the Assets included.
- **Approval and execution** of the moves are set up with a work flow procedure.
- **Bill of Lading** documents can be printed from the entered records for signing by sender, transporter, and recipient.
- **Assets are Assigned** to the new location in the records when they reach the destination, and the personnel there is now responsible for them.
- **Movement History** can be tracked in the system and completion of the transfer followed up.
- **Customized Assets Reports** can be made by user filtering on any asset details and showing only the required report columns.

Inventory Control Module

The module is a full featured program for assuring that the right parts are on hand in the right quantities to minimize downtime and that the investment in parts inventory is under control. We have set up many vessels and drilling rigs on this system, one with over 22,000 parts in their list. The module has the following functions:

- **Maintaining Parts List** of parts and other items containing all part specific details and an up-to-date On Hand Quantity (OHQ) for all items on the inventory list for each Operational Unit and location.
- **Maintaining Parameters** like Order Point (OP), Economic Order Quantities (EOQ), and others for use in controlling the inventory at each Operational Unit.
- **Issuing Parts** when closing Work Orders. The issued parts show up in the maintenance history under that work order and are deducted from the OHQ.
- **Transfer Parts** from one Operational Unit to another updating the inventory in both places. A transfer document is printed to accompany the part.

FUNCTIONS OF MODULES (continued)

Inventory Control Module (cont.)

- **Making Inventory Counts** by printing count books with OHQ for each location. The actual count, where different, is entered back in the system updating the inventory and making an audit trail of the changes.
- **Making Purchase Orders** to suppliers, or requisitions to purchase department, where parts and quantities to be ordered is calculated by the program based on OP and EOQ. The calculated order quantity can be edited. Parts can be deleted and added to the list.
- **Entering Parts Received** against orders is done in the system to update the On Hand Quantity in the database and show the status of each order item.

Drill Logger Module

The module provides an enterprise wide Directional Drilling Job Management program to generate and store the information required to perform logging of the drilling operation, track Job expenses, provide the required reports to the client, and to retrieve information on work done as a basis for management follow-up and decision making.

- **Set Up of Tools** with details and assign them to Jobs.
- **Enter Jobs** with all relevant data on customer, location, targets, and constants.
- **Build Bottom Hole Assemblies (BHA)** from Job Tool List for selecting when entering Daily Drilling Log.
- **Making Daily Drilling Log** with BHAs used and Time Log data for each.
- **Making DD Survey Reports** with Tie-In and Survey Stations data.
- **Making MWD Reports** with Daily Data and Time / Activity Log.
- **Making DD and MWD Pipe Tally** for each BHA, and print Pipe Tally Sheets.
- **Set up Crew List** and assign them to Job/Base. Set up schedules for training and certification of crew.
- **Entering Expenses and other charges** for making Field and Final Invoices.
- **Entering Points of Interest and Lessons Learned** at the end of the job.

Rental Equipment Audit Follow Up Module

The companies hiring Rentals (vessels, vehicles, drilling rigs, heavy machinery, etc) and the Owner/Operator can here follow up on Safety Audits and Recommendations for complying with the hiring companies' requirements. This has a common database accessed by many companies via the internet using company specific websites.

- **Audit Procedures** are set up according to the hiring companies' requirements.
- **Audit Procedures are assigned to each Rental** according to type. They can be viewed/printed and the vessels be checked beforehand by the Owner/Operator.
- **The Audit** will be done by the Auditor according to the relevant procedure printed out. When completed, the results will be shown on the websites.
- **Recommendation Work Orders** can be issued by the auditor for deficiencies.
- **Audit and Recommendation history** is available on the Hiring company web site for each Rental audited for that company.
- **A Library** is available for the hiring companies to post their manuals, platform sheets, memos, and other information for use by the Owners/Operators.

FUNCTIONS OF MODULES (continued)

Rental Equipment Selection Module

The companies hiring Rentals (vessels, vehicles, drilling rigs, heavy machinery, etc) and the vessel Owner/Operator can here follow up on Safety Audits and Recommendations for complying with the hiring companies' requirements. This has a common database accessed by many companies via the internet.

- **The Owners/Operators** can subscribe their Rentals to be broadcast to the Hiring companies on their Rentals Selection Screens by sending maintech the specs and two pictures.
- **A Rentals Selection Screen** is provided for the hiring companies showing all the Rentals with specifications, last Audit, and any pending Recommendations. This list can be filtered to get a short list of the Rentals suitable for a specific job. The Owners/Operators on the shortlist can then be emailed directly from the screen.

Crew Training and Certification Renewal Module

Training and certification renewal of crew members can be set up with schedules and procedures. The training notices can be viewed / printed when due and completion followed up. Training history can be viewed / printed.

Behavior Based Safety Module

The observation checklists are collected and the data entered in a database. The collected data can be graphically illustrated and analyzed to identify areas for improvement. Work orders can be made for follow-up action.

Hand Held Computer Module

This is used by the crew performing inspections / maintenance to view and close the work orders, enter readings and other data collected. It synchronizes automatically with the Web Server when an internet connection is available.

Database Internet AutoSync Module

The Maintainer program is designed for operation in multiple locations working off a server database, or with separate local databases synchronized with the main location. The AutoSync Module produces and sends changed records in Text Files over the internet when it senses that a good connection is available. These files can also be attached to an E-mail, or sent on disks to the main location. The Module is also used to sync the backup server database with the working server when records are changed.

USAGE AND ADVANTAGES IN SYSTEMS BY maintech

maintech Systems have been developed for use by enterprises with an unlimited number of employees given access to data according to area of responsibility. The base unit in the systems is an Asset or piece of Equipment. The Assets are grouped in Operational Units (OU). The OUs belong to a Group based on organizational responsibility. The Groups belong to a Company owned by an Enterprise.

The database containing the records is in SQL Server or MS Access. The systems are operated using a Web Application and/or an Access Program as follows:

- **Web Application** with the central database on a Web Server, yours or ours. OUs and offices world wide can work on the main database in the Web Site using only an internet browser. We are hosting websites for all our clients on our high powered servers with SSL security, firewalls, and fast connection to the internet.
- **Program in MS Access** linked to a central database over an intranet.
- **Program in MS Access** linked to a local database used where the internet connection is not reliable, or not available. This database is synchronized with the central one automatically over the internet when using our **AutoSync** program which tests the connection and sends the sync files when connection is available. Where there is no internet the sync files can be sent via email, or other file transfer methods.

maintech CMMS Advantages below have been among the key objectives in the development of our system. It was designed and redesigned in close cooperation with crews on drilling rigs and work boats until they were happy. These are the main points:

- **Ease of Use:** We have now replaced many other CMMS programs used by our clients as they found ours much easier to use and containing all the features required. A large boat company had tried to implement one of the top 3 systems for over a year with no success. We set up a system for them on the web and the trial boat completed all the work orders for the first month in time using the Web Site without any training provided by us. The rest of the boats had the same success. Our Access Program has been installed on many offshore drilling rigs and has been operated by the crew with a few hours of training and some phone calls.
- **Productivity:** The computer is doing tasks requiring keystrokes in other programs. As an example, the process of copying one Op. Unit with 250 pieces of equipment to a new similar one took about 1000 manual copy actions of equipment and procedures in the purchased software we used earlier (one of the top 3). In our system this is done by opening the copy screen, selecting the Op. Unit to copy, selecting the one to copy to, and clicking a button. We would require more than twice our present staff for providing the same service to our clients with the previous software.
- **Language Capability:** Our Access Tracker module is provided with screens various languages selected by the user on the opening screen. Languages can be added by the client using a translation screen included where about 500 lines with screen text is translated from the existing ones. Presently it has English, Spanish, Portuguese, French, and Russian. The work orders can be issued in two languages defined for each Operational Unit. English, Spanish, and Portuguese are available now.
- **Legal records:** The program is designed to give records that are accepted in court. The work orders have the complete description of work to be done. Readings and finding are noted, the person doing it signs and dates it, and his superior signs for having checked that it was done. Two years of Work Order history for a drilling rig saved one of our clients over 9 million US Dollars in a court case.

SERVICE PROVIDED TO CLIENTS BY maintech

maintech Service consists of using our expertise to set up the System and perform all, or part, of the daily operation for the client. All our clients have used us to set up the system and we operate it for them fully or partly. You can have a full fledged CMMS up and running in your company within a very short time using our proven software and our experienced personnel:

- Typical Implementations of CMMS are, according to a study by Maintenance Technology magazine, "six times over estimated cost, two to four times over original time schedule, and delivers 80% of proposed functionality."
- We set up 22 Operational Units in one month for a client. All were visited by our staff to inventory equipment and train the crews. We followed up that they all started using the system right away and helped those that had problems.
- We have over 11,000 procedures in our database covering most equipment found on Rigs and Vessels in the Gulf. These can be edited as and when required.
- We have made a complete set up of the ISM system required for Vessels going to foreign ports including all required documentation and training employees. A staff member certified by ABS as an Internal Auditor for ISM/ISO9000 performed the initial Internal Audit. ABS approved the system and issued the ISM Certificate.
- Many Vessels on our CMMS are using our schedules and procedures for the self inspection and maintenance ISM requires.
- We can also manage the daily operation of the system for you according to an agreed division of responsibility as we do for all our present clients. Typically the client prints Work Orders from the website and closes them on completion, including entering corrective Work Orders. We generate Work Orders each month and update the database according to input from the client. The integrity of the client's data input is checked on a daily basis and databases backed up several times a day.

maintech Contacts

For a demo of any of the above modules, or to discuss developing a custom program, please contact one of our sales representatives listed below.

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