Avoiding failures and consequently unscheduled shut-downs of critical equipment such as: top drives for drill-rigs, dredge pumps, pipe handling systems, propulsion systems, steering systems, mud pumps, prime movers, electric motors etc. is the task of the Condition Monitoring System ("CMS"). In conjunction with a predictive modeling method the CM system should detect potential failure conditions before the failure becomes apparent and critical and should allow sufficient time for corrections, such as repairs and getting spares on-board.

**FIRST FULLY INTEGRATED CONDITION AND USAGE MONITORING**

The wear-out process is strongly influenced by the way the machinery is used. Environmental conditions, causing ship motions, can cause fast machinery condition deterioration, even at low loads.

Mainly based on vibration measurement, stand-alone machinery condition monitoring systems have been applied for condition based maintenance ("CBM"). With the appropriate online process variables the usage of the ship can be taken into account as well. The M1 marine automation system is the first programmable integrated solutions offering the required interfaces and software analysis modules to connect the various signals from the present ship systems. The M1 analyses combined information from oil, water and noise sensors, with information on operating hours, operating conditions as well as the environmental conditions (waves, wind and tidal currents).

**MINIMIZING SYSTEM FAILURES**

Machinery systems failures on-board a ship can result in the shut-down of the entire ship operation, leaving the owner with a loss of revenues.
An example of the health monitoring page at the work-stations: a semi-submersible with six steerable thrusters and four generators-driven by diesel-engines.

For many decades a central alarming and monitoring system “AMS” has been used to warn the crew when a critical function has failed or when values become critical. Integration of analyzed “CMS” and usage data is the next step to minimize system failure and informing the crew as accurate as possible.

**M1 MARINE AUTOMATION SOLUTION**

The Bachmann IACMS ‘Integrated Automation & Condition Monitoring System’ combines controller functionality and CMS while acting as a redundant data server for the AMS systems. The operator receives online and timely warning of increasing wear, which enables the owner to reduce life cycle costs of the fleet.

**MORE SERVICE AND KNOWHOW**

Today more than 1800 systems are installed and being monitored by our specialists. Various kinds of applications and a large track record prove the statistics of Bachmann.

Providing online and on-board information on the health of the machinery while controlling the machinery by the same hardware, guarantees actual and reliable data.

**BIG ADVANTAGES FOR THE CREW AND THE OWNER**

Using IACMS means commonality on hardware and software for various systems on-board. This results in easy understanding and training of the crew and lower initial costs for the owner. Adding CMS data to the vessel management system opens ways to on-board estimation of the health state, and the availability during the Job.

**CRITICAL PARTS WHICH CAN BE MONITORED WITH CONDITION MONITORING SYSTEMS**