

PROBLEMS AND SOLUTIONS WITH OUTDATED ALARM AND CONTROL SYSTEMS ONBOARD SHIPS

An increasing problem today is that many automation systems on ships are obsolete and that it is almost impossible to get spare parts and service. Docking periods have been extended to 3-4 years and the amount of days in dock has been greatly reduced to save money. Many ship owners\managers also finds it difficult to find time to do the upgrading necessary to make the system a safe one.

HØGLUND MARINE AUTOMATION TAKES THE CHALLENGE

Wilhelmsen is one of the companies in Norway that has this problem and saw the need to be creative. They contacted Høglund Marine Automation (HMA) in spring of 2008, as they needed to upgrade the IAS system on one of their seismic ships, The MV Ramform Explorer. This ship is build in 1995, owned by Petroleum Geo-Services and managed by Wilhelmsen in Oslo.

The ship is diesel electric with ABB automation system, integrated Power Management system and compressor controls, totally about 3000 signals.

What was so special about this request was that they wanted to do the upgrading and replacement of the system, parts in transit and parts alongside in Singapore.

HMA took the challenge and Høglund, together with PGS and Wilhelmsen, started to plan how to do this. The criteria's were as follow:

The ship was to end its commission in Malaysia in the end of September, then 3 days transit to Singapore, then 5 days along side in Singapore before another 7 days in transit to India.

An evaluation was done to figure out the risk of doing this compared to the need of the upgrade. PGS was very skeptical and concerned about the consequences if the deadline for the job was not met while Wilhelmsen was concerned that the existing alarm and control system would not last much longer.

They than agreed to proceed with the upgrade.

STRATEGIC PLANNING

Four people, one engineer from HMA and three electricians from Acel in Aalesund Norway, boarded the ship in Malaysia on September 30th to start the preparation for the job. They started with pulling cables, change-over and replacing the control system for the seismic compressors.

Five more people, two from HMA and three electricians from Acel boarded the ship when it arrived Singapore on October 4th. MV Remform Explorer had to stay two days at anchor and during this time more preparations were done. The doors to the I/O cabinets were removed for easy access and one operator station was removed.

Then the team got a problem. The plan was to turn off the whole system and change out everything without loosing the control of the "high temp" on the engines supplying the ship with power. The original plan was to control this "high temp" manually so to lower the temperature a few degrees to avoid higher temperature with increased load. This could not be done; the valve could not be controlled manually and they had to find a solution to this problem.

Two hours later, on Sunday evening, the problem was solved. The HMA engineer did, on the spot, program a temporary controller and the signals for the "high temp" were connected to this one.

STARTUP

The ship was along side early Monday morning at Loyang offshore supply base in Singapore and the go ahead to start the job was given at noontime.

Most of the 3000 I/O signals were connect in 5 cabinets in the control room. The 5 electricians got each one cabinet with a detailed connection diagram. The new connection units were placed above the old ones to make reconnection easy.

All signals were connected thirteen hours later, at 1:00AM, and PMS controllers were up and running. The last remaining controllers were up and running on Tuesday morning and the whole system was running normally shortly after. All signals and functions were tested the next couple of days and everything was made ready for DNV inspection on Friday.

ACCEPTENCE BY DNV

The DNV representative in Singapore came onboard on Friday and after some extensive testing the superintendent from Wilhelmsen received the papers that the new system was approved.

SATISFIED CUSTOMER

Jon-Asle Røyset from PGS was convinced that this must have been a world record in automation retrofit and that "no other team could have done this job in so short time with so few mistakes". The error in connection was about 0.3%, which is very low considering under what circumstances the job was done.

Then 8 people were dismissed and set home while the project manager from HMA sailed with the ship to India. This to check out the last details and to train the crew in use of the system.

WE CAN DO IT AGAIN

We asked Hans Høglund, the project manager from HMA how it was possible to do a project like this in such a short time with no complications:

A: "Good planning is always the key", he said. "We had to have detailed knowledge of the existing system, like old connection drawings, cable plans and how the system worked. The electrical work onboard is actually a small part of the whole picture, more important is that all new software are finished and tested before startup. When we power up the new system it is very important that all alarms, pumps, fans regulators and so on are functioning correctly.

The electricians from ACEL did a tremendous job, there was hardly any wrong connected wires and the cabinets and everything else looked very nice when they were finished"

Q: "Do you think it will it be possible to do the same upgrading job on ships with other types of automation systems?"

A: "Yes, the key is good preparation. One thing we would like to do is to sail with the ship for about one week to lean about the functions of system onboard

Q: "Does HMA have more projects like this coming up?"

A: "The day after we were done with this job we got an inquiry from Wilhelmsen for a little bigger challenge; **To look at the possibility of doing the same job on another ship while in transit from Suez to Singapore"**



the old ABB Masterview screens



Mounting of new desk in the control room



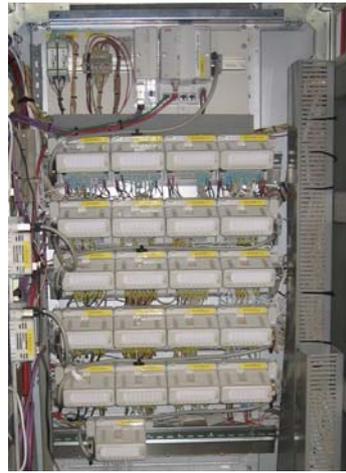
One electrician in each IO cabinet.



Control room desk after retrofit.



One of the IO cabinets before upgrade



24 hours later



THE TEAM