

EARLY MARINE AUTOMATION.

During WW2, as everyone knows, 2710 Liberty ships were constructed in the USA, using an old British design; these sturdy vessels were steam engine powered but the machinery was obsolete in design at build, and was almost totally bereft of any automation. All adjustments had to be by hand controls and watchkeeping required the use of all five senses! (There was a thermostatic control on the boiler oil fuel heater but it was generally agreed by all engineers that this was a useless piece of equipment which did not work, and they resorted to hand control! And still do.)

Ironically, but not so well publicised, three American yards were, in the same time period, constructing a 525 in number fleet of 16,000 dwt tankers, the famous T2's, and these ships were very advanced in automation .

At this time the gear hobbing facilities in the US were fully occupied in providing reduction gearing for warships and fast freighters so the US Maritime Commission turned to the power generating industry to provide the machinery for the T2's. Essentially this meant both the General Electric Corporation and Westinghouse, both firms being capable of mass producing turbines, alternators and large ac motors. Hence the required speed reduction between turbine and shaft motor was achieved electrically rather than mechanically. Again, following land power station practice water tube boilers were supplied and these were controlled by sophisticated pneumatic installations which monitored and adjusted fuel pumps, fuel heaters, steam pressures, fan speeds etc to correctly control combustion. Usually a Westinghouse electrical installation was matched to a Bailey combustion control system whereas a GEC installation would have Hagen controls. Boiler water levels were controlled automatically as were feed pumps and there were remote indicators for water level and funnel uptake conditions. Further, in these turnkey installations many other functions were controlled automatically, such as control air pressures, steam bleed pressures and temperatures, tank heating, evaporators, refrigeration etc. Although these ships were not particularly fuel efficient they were a delight to operate.

Moving on, in the early 1960's Doxfords provided a diesel engine to Redheads shipyard at South Shields which they fitted into a cargo vessel they had built for Strick Line. At the owner's request this was to be, for them and for Doxfords, an installation whereby many of the machinery controls including those for the main engine, were operable from an air conditioned control room within the machinery spaces. As I was Installation for Doxfords at the time I attended the engine dock trials at the Redhead fitting out berth. We were waiting, in the control room, for clearance from the bridge regarding turning the propeller slowly when a Redhead chargehand fitter came into the control room to stop one auxiliary pump and start another from the switchboard. When he did this the main engine immediately tried to automatically start up on compressed air and made a couple of revolutions but did not fire on fuel. This was NOT supposed to happen! All were puzzled and the GEC electrical engineers, who had designed the control console, eventually discovered that, as many control cables were secured in bundles on cable trays, then induction from one wire had generated a signal in an adjacent wire, this causing the malfunction! The solution was simple; just spread the cables about a little! We were learning fast.

By the mid 60's automation was well advanced and in some cases electronic data recorders installed in the engineroom logged important temperatures and pressures and other variables and some owners even had this data transmitted to head office!

Many Clan Line refrigerated cargo vessels and the two fast cargo mailships for Union Castle- Line, Southampton Castle (1965) and Good Hope Castle (1966) were considerably automated in particular in the area of cargo temperature control this equipment being found to be very reliable.

However, the current container ships and cruise liners are automated to a degree which would make the ships of the 1960's seem in the same class as a WW2 Liberty ship!

Nowadays it could be a moot point as to who is the most important officer on a cruise liner, the Master, the Chief Engineer Officer or the Electronics Officer!

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Sorry David, we are reliably informed that it is now the Cruise Director! Ed.

