

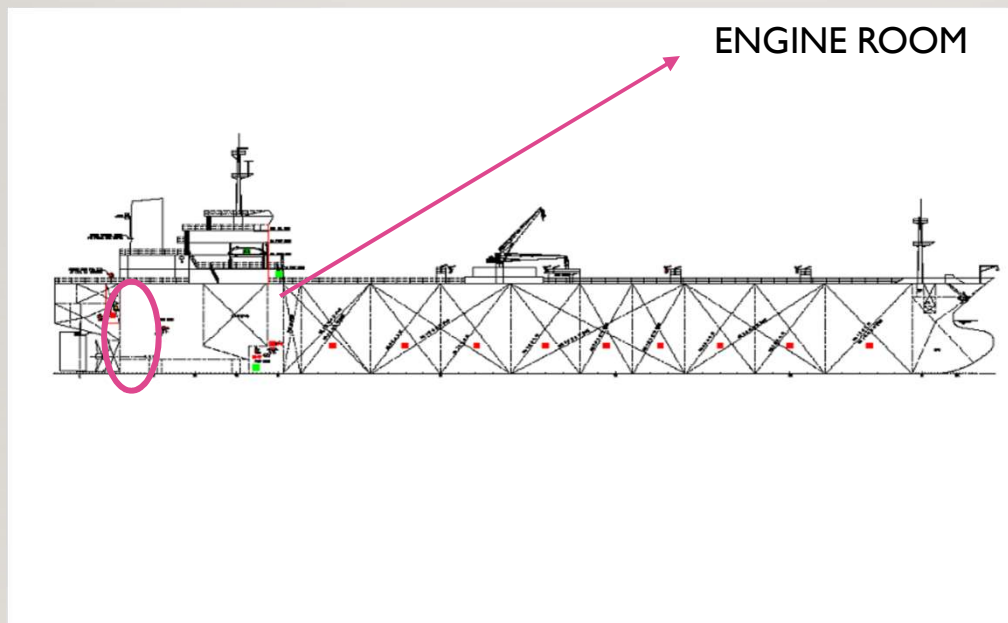


A ship's Engine Room

What do we look for
when we
talk about a
ship's Engine room ????

What is Engine Room and where is it located ?

It is Best described as the **heart** of the ship, where amongst other pieces of vital machinery, the main engine (which runs the ship), the generators (which provide the power) are located.



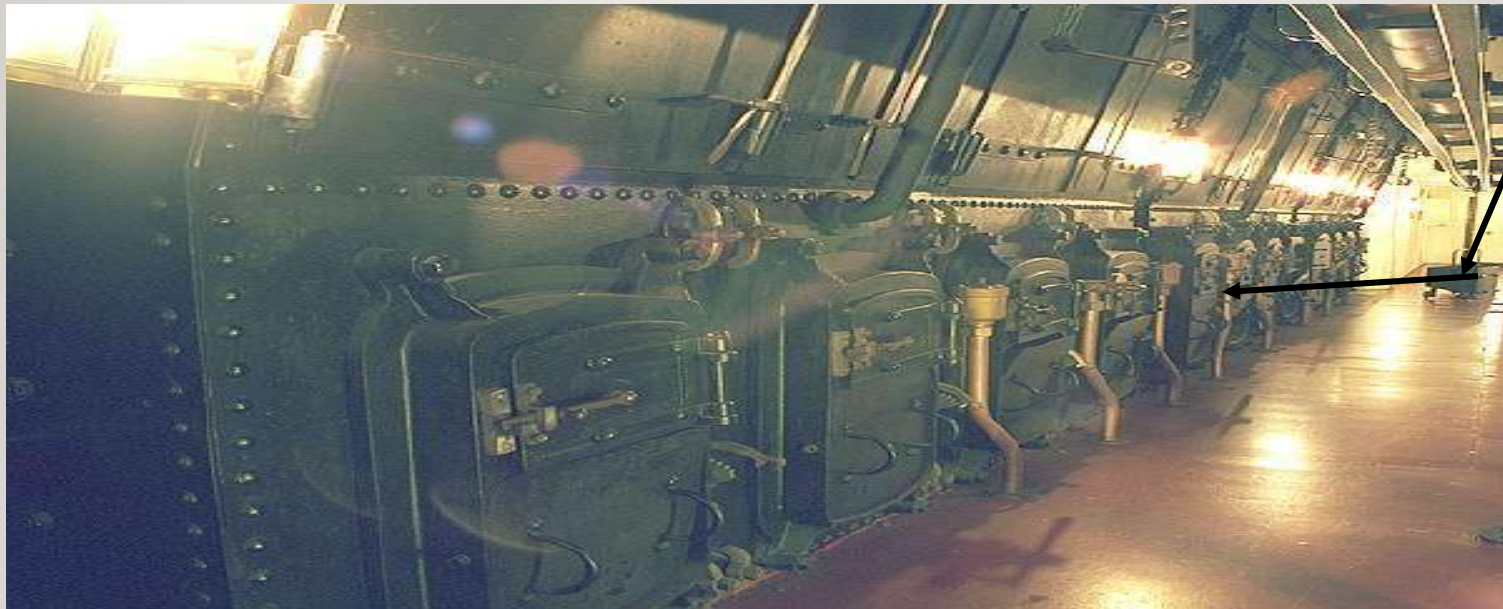
HEART OF THE SHIP



- The engine room is maintained by a team of Engineer Officers and rating's who make up the complement of the engine room staff.
- The Chief Engineer is the senior most officer in the engine room.

HISTORY

The first ships to have Engine Rooms were the war ships



COAL
GANTRY

VIEW OF ONE OF THE FIRST ENGINES – The “HMS WARRIOR”

Steam power gave *Warrior* an immediate advantage over any similar sized sailing warship. She was not dependent on the wind and could sail at will and where she wanted..





The heart of a Ship

A ship without Engine is

Known as a  DEAD or DISABLED SHIP

In order to understand the mechanics, we will first understand what it means to get the *heart Beating* , i.e. Get the Ships Engines running to get the-

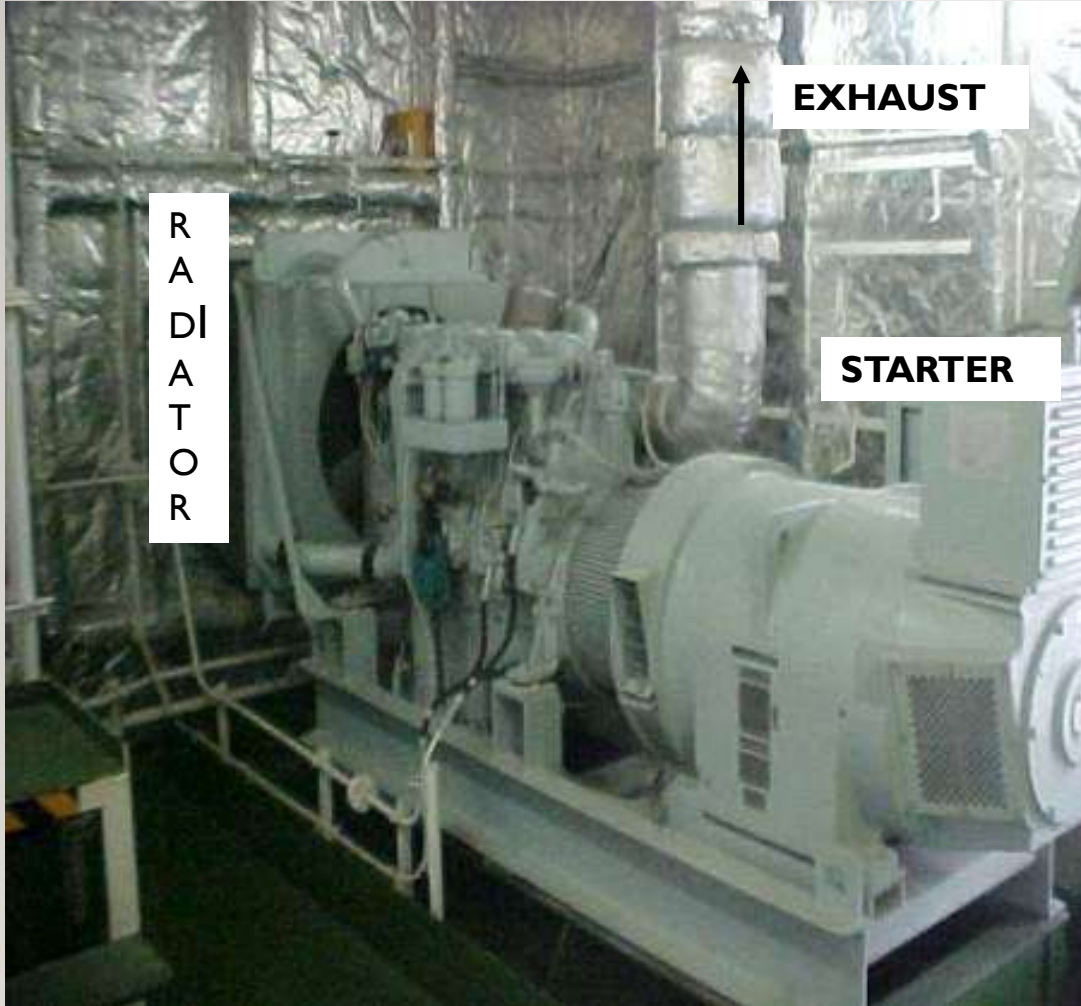


SHIP ALIVE

We can now have a quick look around at some of the more important Engine Room machinery in a sequential manner



EMERGENCY GENERATOR



START THE
EMERGENCY GENERATOR



This gives power to start
all the critical machinery .
This in turn then gives
access to start the....

MAIN GENERATORS



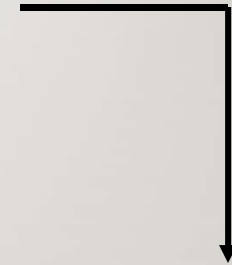


MAIN GENERATORS (or AUXILLARY ENGINES).



Generates Electricity on board the vessel.

Start the
Main
Generator



Main Generator
usually has a
Pneumatic Start

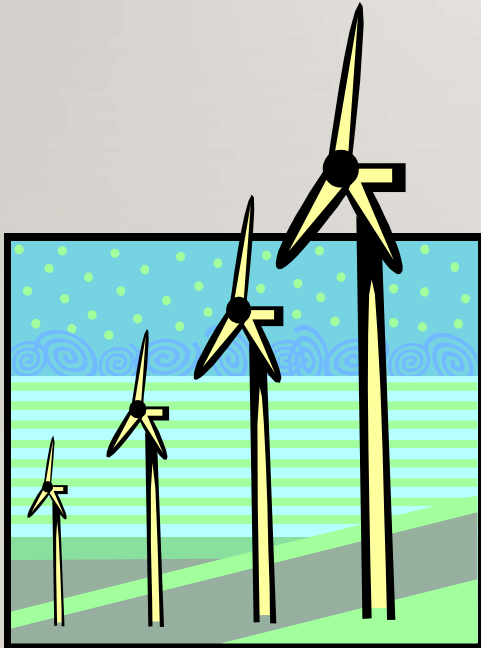
POWER MEASURED IN KW
COMMONLY-700-900KW

Can have two to three
Generators, Normally Three



MAIN GENERATOR TAKEN ON LOAD

Full Electric Power Restored on The ship



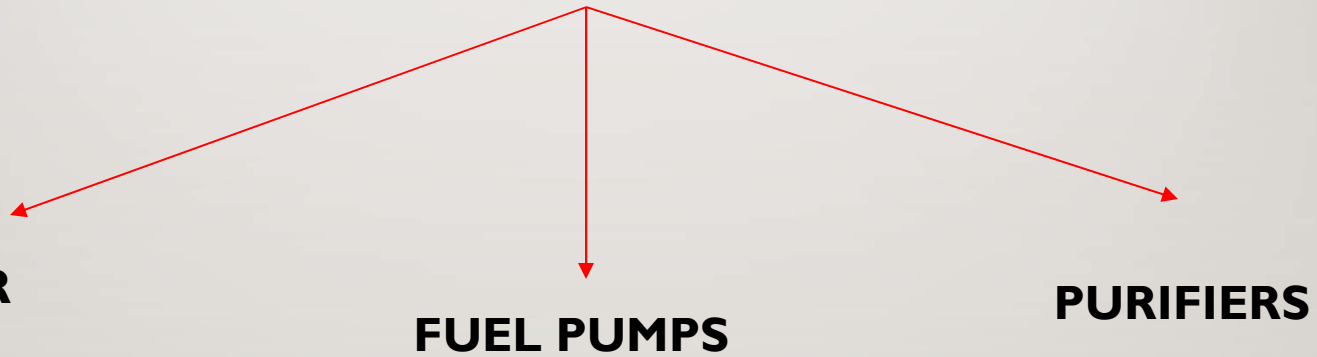
**NOW THE SHIP
IS
ALIVE**

EXHAUST





Now that there is power available, the Engine Room, which has a lot of Pumps and associated Machinery which can come alive or The pumps can be made operational now.



SEA WATER PUMPS

Remember all machinery in Engine Room needs to be cooled and this is done by using sea water.

FUEL PUMPS

Fuel Supplied to this Equipment is pumped using these pumps

PURIFIERS

All the Fuel passes through a purification process before finally supplied to the machinery.





SEA WATER PUMPS



COOLERS

COOLING of Machinery is achieved by WATER

- ✓ Fresh water on engines for internal cooling and
- ✓ Seawater for cooling this circulating fresh water.

PURIFIER ROOM



PURIFIER ROOM



MICRONISER

SIT INSTALLATION

COMBUSTION IMPROVEMENT
&
SLUDGE REDUCTION

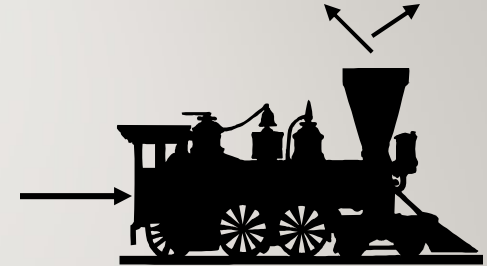
Before any oil is put into service it is passed through Purifiers which are basically Centrifugals and separate water and sludge from oil / and passes clean Oil to **service oil** Tanks

What do we Need now ????



STEAM

STEAM



Where is the steam coming from????



BOILERS



Fired on

Diesel Oil and Changed over to Fuel Oil



BOILERS

BURNER FOR THE BOILER

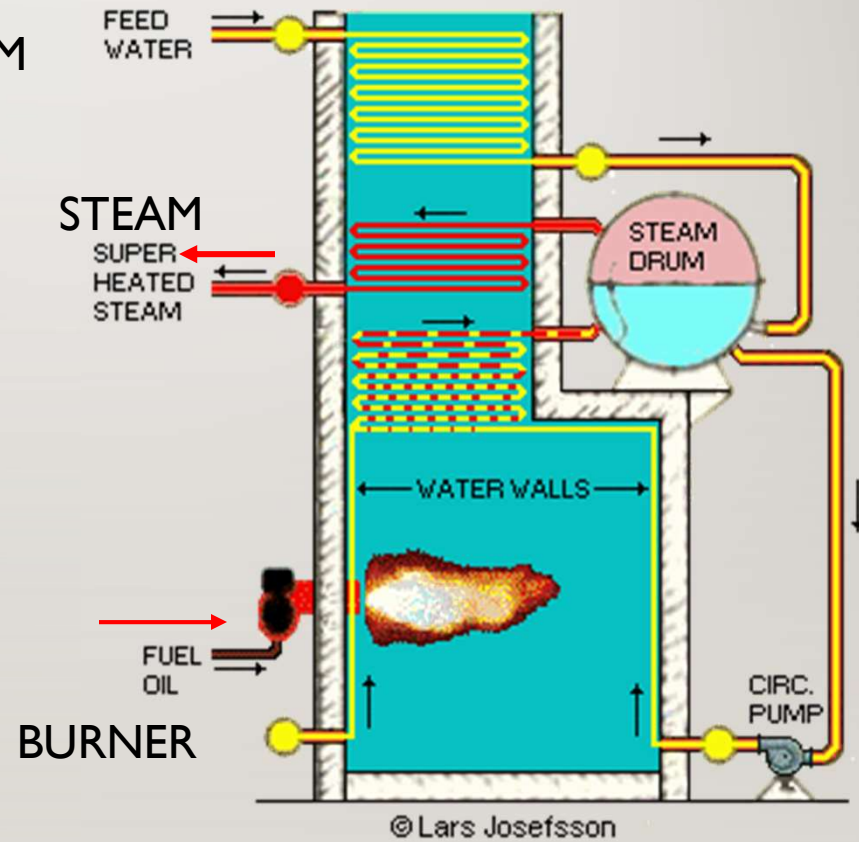
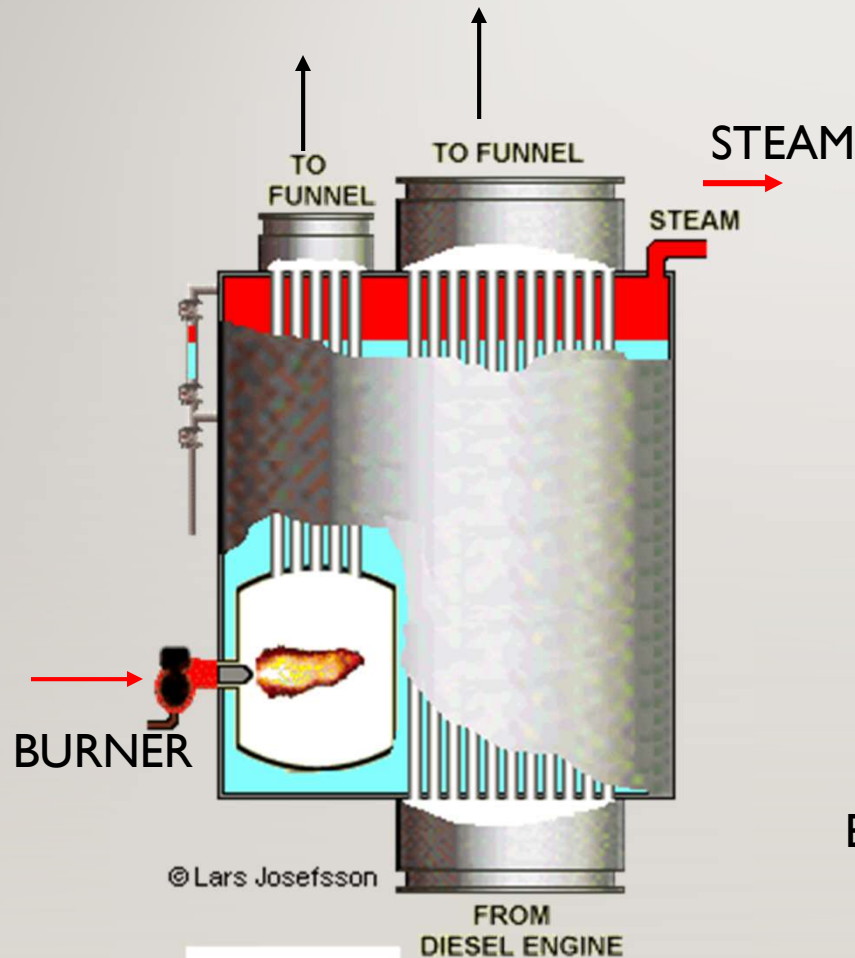


FRONT VIEW OF THE BOILER



Normally a vessel would have either ONE or TWO BOILERS onboard.

A boiler is a closed vessel in which water heated under pressure. The steam is then circulated out of the boiler for use in various process or heating applications. A safety valve is fixed to prevent over pressurization and possible explosion of a boiler.



TWO BASIC DESIGNS OF A MARINE BOILER

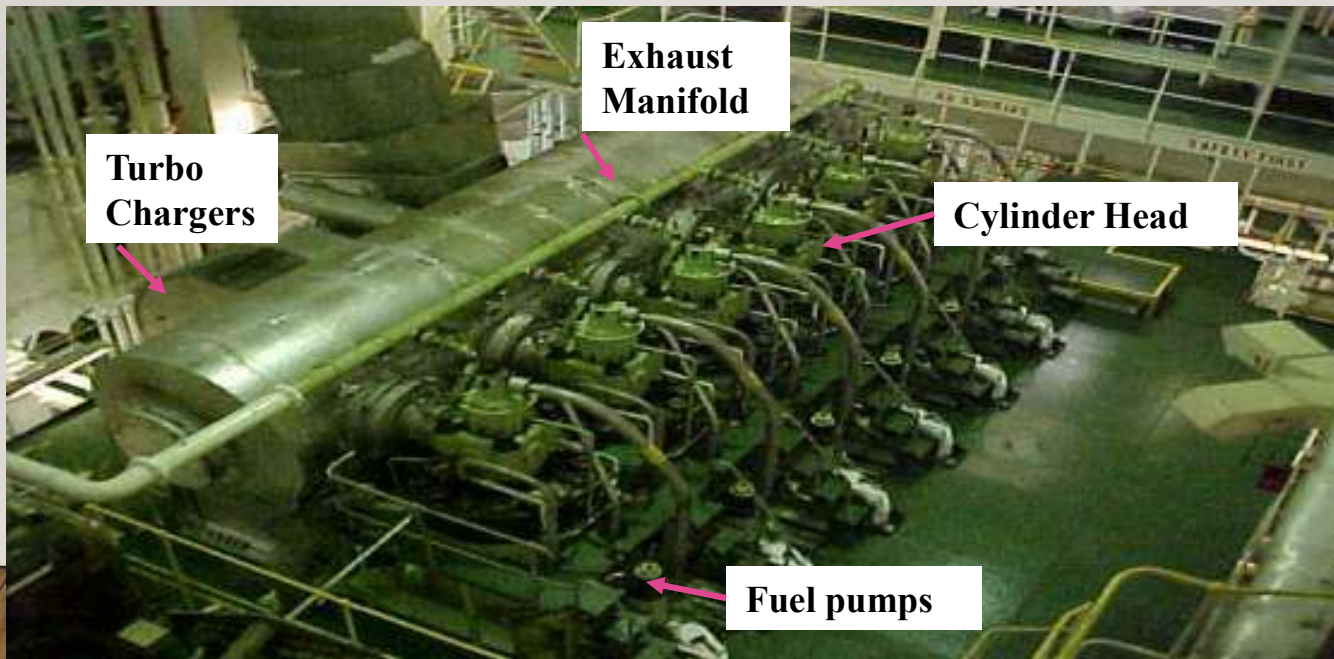
POWER MEASURED IN KG (COMMONLY: 16-24 KG)



TIME TO PREPARE THE MAIN ENGINES....

A Ship may have one or two Main Engines depending on the design, Normally one Engine found on most ships

Overview of the ships main Engine or Propulsion Plant





MAIN ENGINE

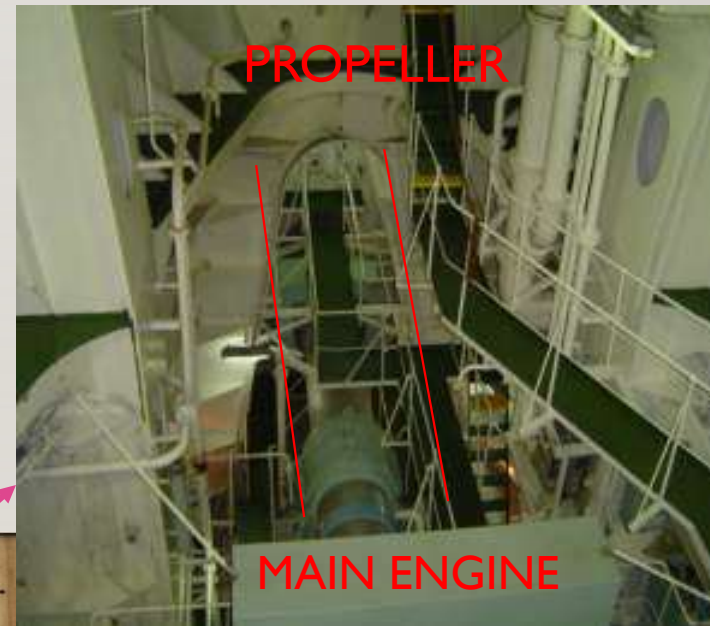
Generates enough power to move or propel the ship through the seas.

The power of this engine is measured by **HORSE POWER.**



A ship would normally have **10,000 to 35,000 BHP**

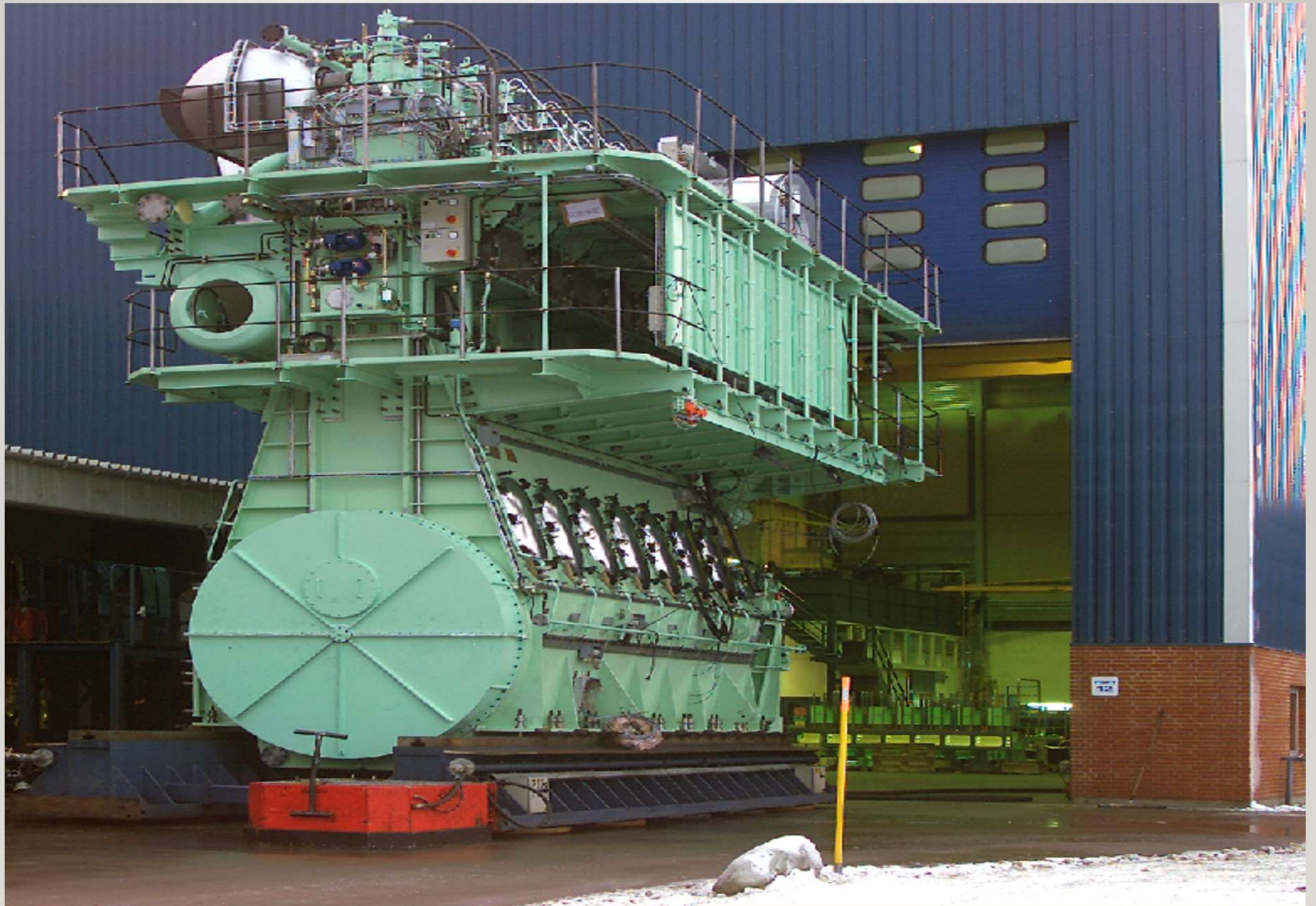
Through a shaft which is connected to the propeller , vessel is able to move.



VIEW OF PROPELLER SHAFT



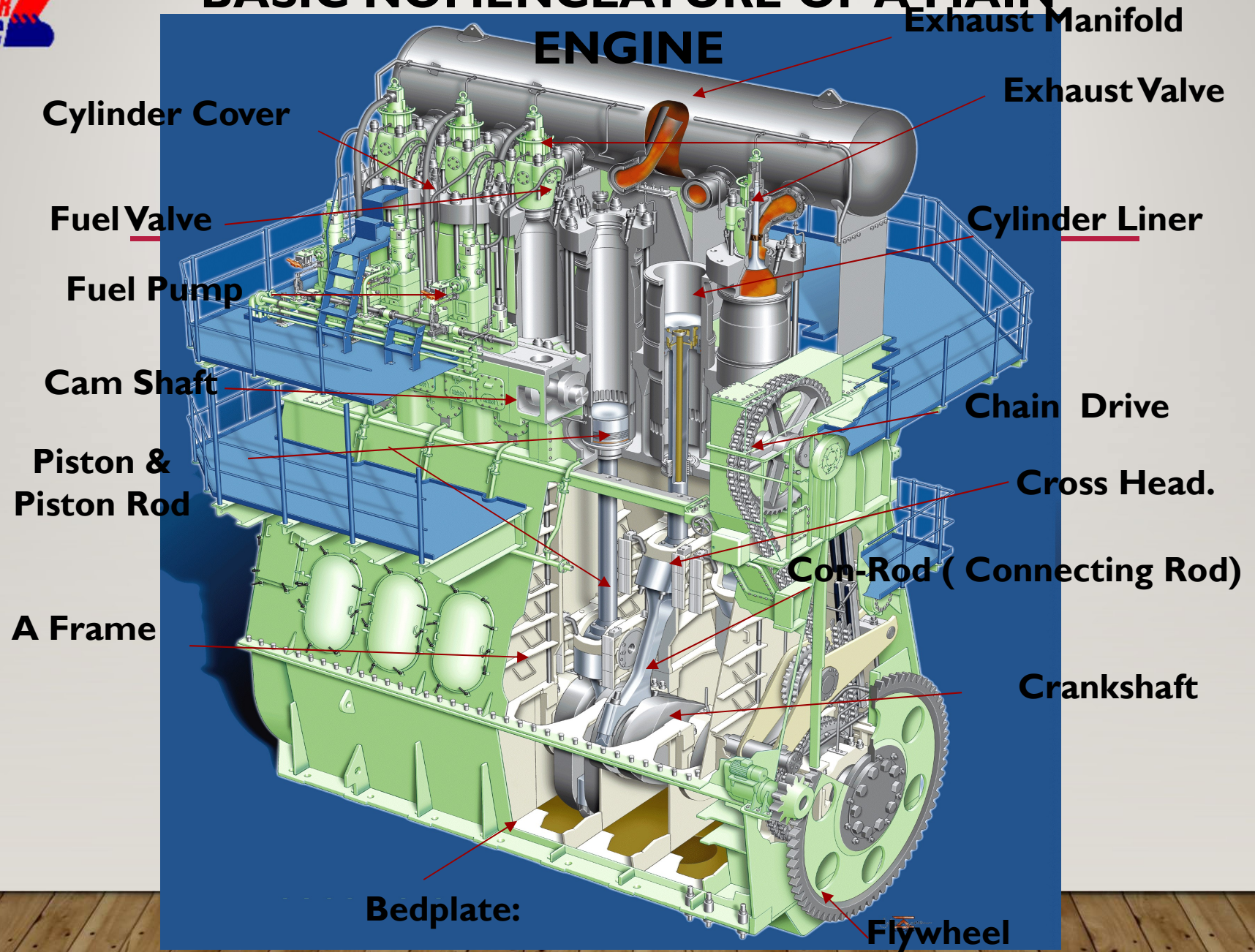
MAIN ENGINE BEFORE ITS FIXED ON A SHIP



AROUND THE SIZE OF A DOUBLE DECKER BUS



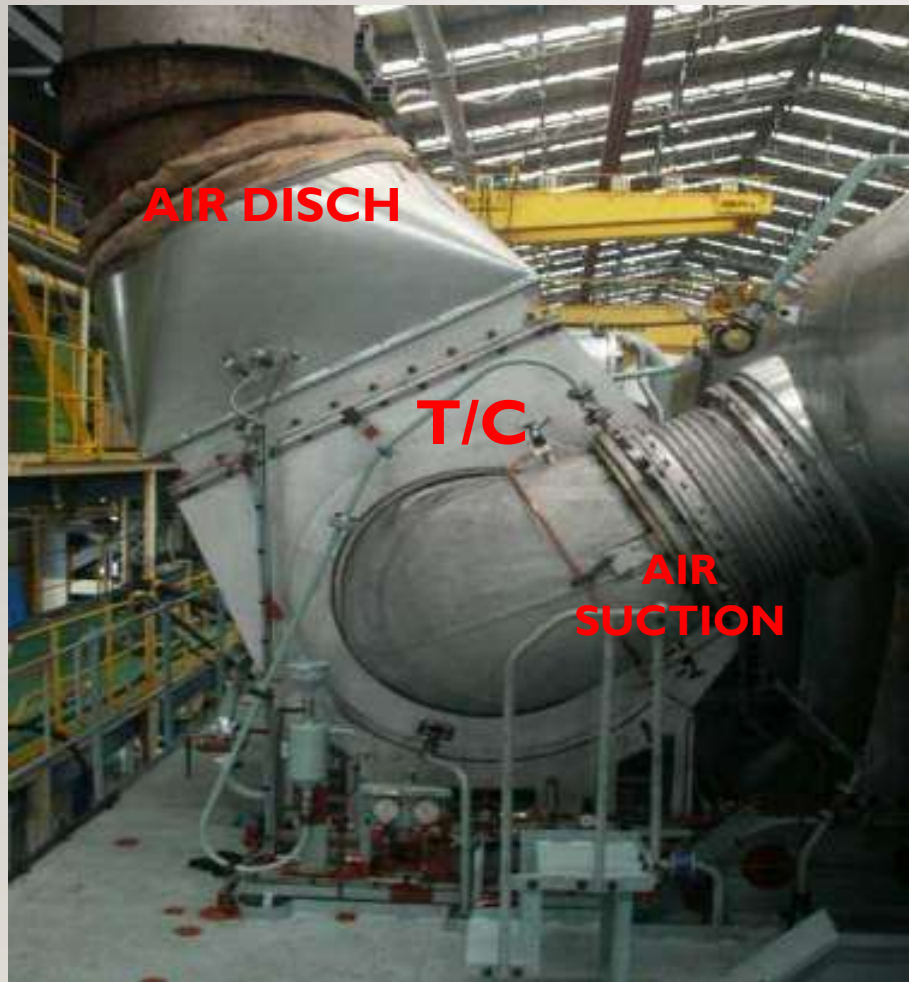
BASIC NOMENCLATURE OF A MAIN ENGINE





Now let us look at some of the
other important
Engine Room Equipment
which you may have heard of....

TURBO CHARGER OR T/C's



Turbo Charger

What a T/C does is simply increase the volumetric efficiency of the Engine. It ensures to give the Engine a positive air supply which is required to support combustion...that gives an incremental boost in power.



It is driven by Exhaust gases, and takes air suction from the Engine Room atmosphere.



ECONOMISER



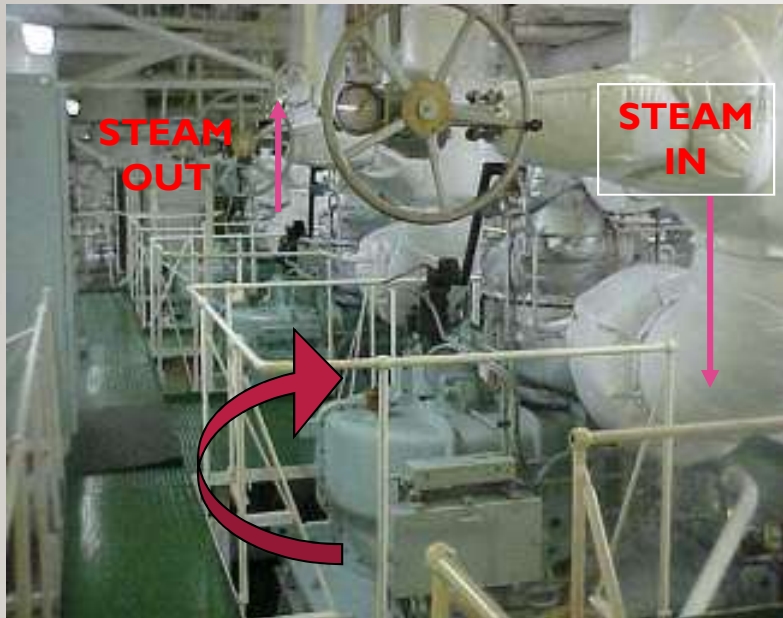
ENGINE EXHAUST MANIFOLD

ECONOMIZER

All the Exhaust gases from engine room are lead to the funnel passing through the Economizer. This exhaust is used for production of steam which can be used for various equipment on board.



Called an Economizer as we save fuel by using Exhaust gasses for heating rather than the Firing the Main Boiler.



COP TURBINES

Steam from the boiler turns the steam Turbines in the Engine Room which in turn rotates the cargo oil pumps in the Pump Room.



FIRE AND G.S PUMP

Mostly electric Motor driven centrifugal pumps used for Fire fighting and various other Purposes.



IG PLANT

INERT GAS which is sent to inert the Cargo tanks is sourced from the Engine Room. Boiler Exhaust gasses are Passed through the **Scrubber** and the to IG blowers which push the inert gas to the Deck TANKS USING **I.G. BLOWERS**.



FRESH WATER GENERATORS

- Uses steam from the economizer to produce fresh water

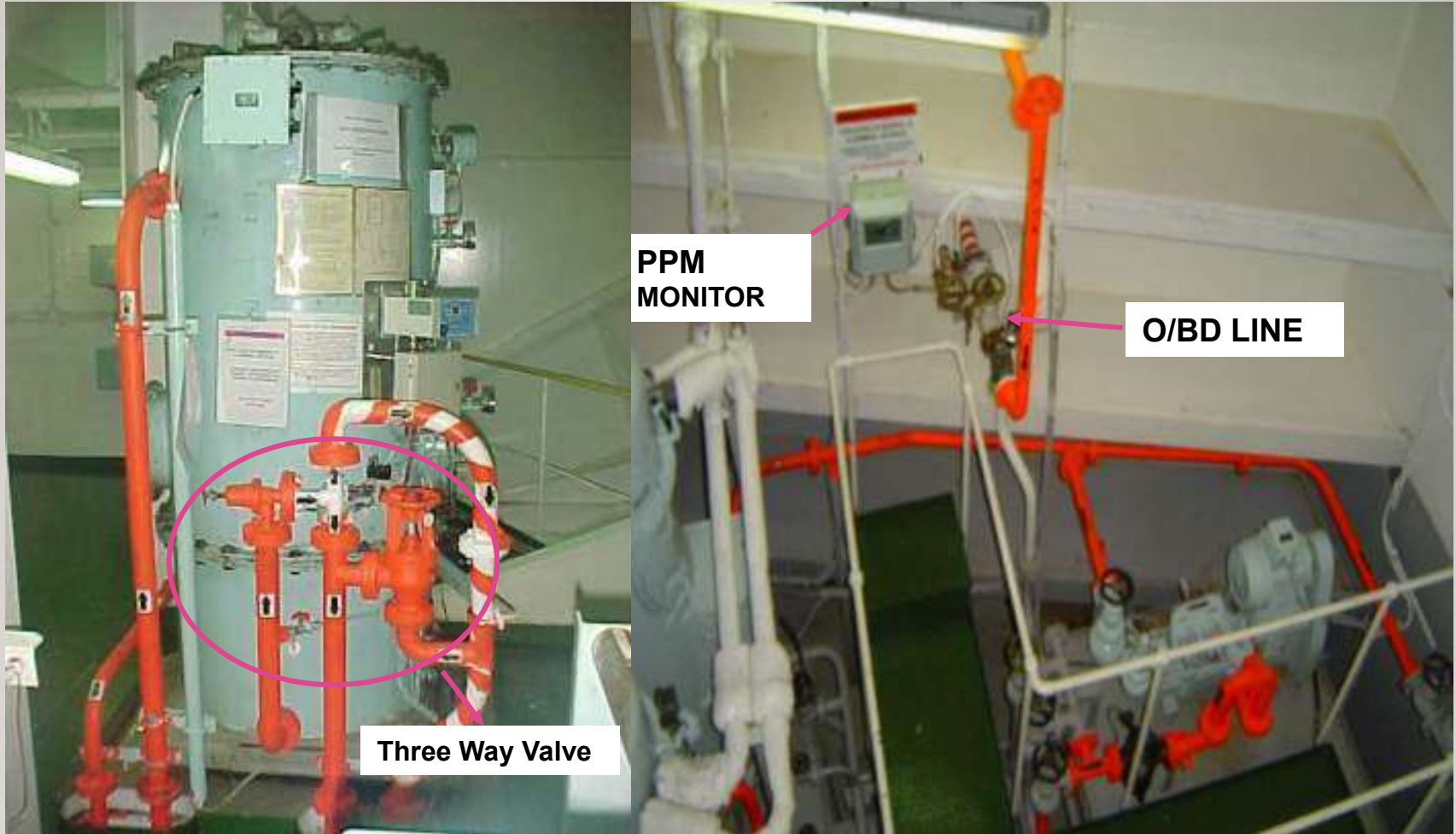
Normally a ship Produces 20-50T of fresh water Daily.



STEERING GEAR ROOM

Consists of the main steering motors / Telemotors which enable the ship to steer from the Bridge.

OILY WATER SEPERATOR/15PPM MONITOR



Oily Water separator - Separates Oil & Water passing them through Coalascer
15ppm Monitor - Sensor measures the oil content passing through & allows only liquid with less than 15ppm over the side else it is diverted to the oily bilge tank via a 3 way v/v



INCINERATOR

As the name Specifies used for Incinerating / Burning of specified Garbage , also for Steaming out water from Bilge tanks.



PPE TO BE WORN AT ALL TIMES

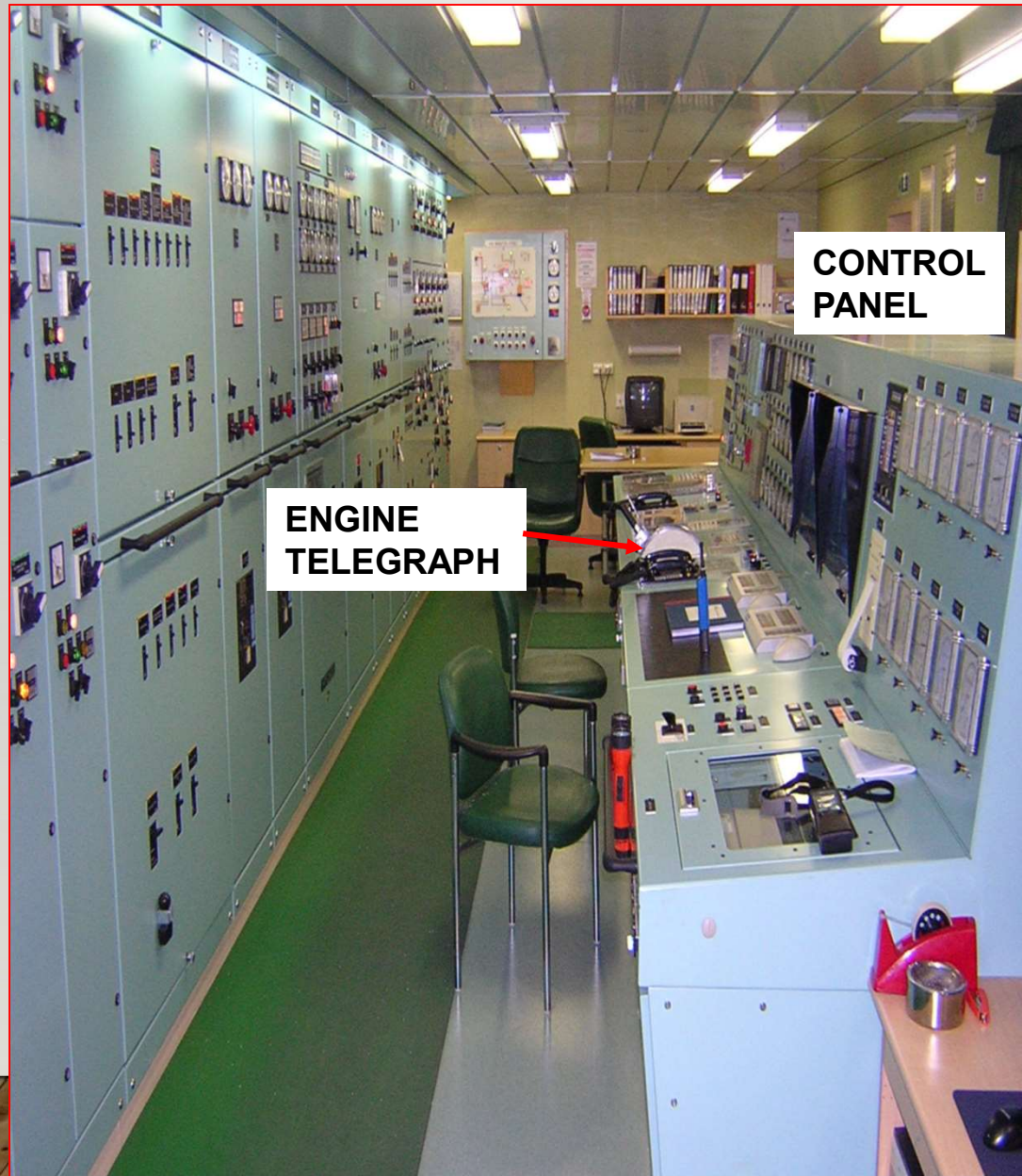
DESIGNATED AREA FOR HOT WORK

ENGINE ROOM WORKSHOP

Just the right place to find all the tools that are required to maintain all the above machinery. Includes a seggregated area for Hot work



LASTLY—THE CONTROL CENTER FOR ALL OF IT



CONTROL
PANEL

ENGINE
TELEGRAPH

**E.C.R (ENGINE
CONTROL ROOM)**

Most of the
Machinery
Parameters can be
monitored/ Controlled
from here.



**AFTER THIS BRIEF FAMILIARISATION OF THE SHIPS ENGINE ROOM
YOU ARE ALL READY TO **GO TO ENGINE ROOM****

BUT DON'T FORGET YOUR

SAFETY SHOES

SAFETY HELMETS

And of course with all this machinery running ...

EAR MUFFS