INDUSTRIAL TRAINING PROGRAM FOR M.E
(CONTROL & INSTRUMENTATION)
UNIVERSITY VISVESVARAYA COLLEGE OF ENGINEERING, BANGALORE

ORGANIZED BY
POORNAPRAJNYA INSTITUTE OF SKILL DEVELOPMENT, BENGALURU
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A

Industrial Training Program Report on

Submitted to Bangalore University in partial fulfilment for the award of Degree in
Master of Engineering
In
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ABSTRACT

For small boilers having relatively high storage volumes and slow changing loads a simple level control may suffice. Two element control is primarily used on intermediate sized boilers in which volumes and capacities of steam and water system would simply make the total level inadequate because of swell. Total level control is undesirable when it is detected by sensors.

As the boiler becomes greater in capacity the economic condition makes it highly desirable to reduce drum sizes increase velocities in the water and steam system. Under these conditions the boiler is less able to act as an integration to absorb the result of incorrect or insufficient control. 3 element is used in the large boilers. A feedforward control is recommended to maintain steam-water balance. Any error in the steam water balance will cause a falling or rising level, therefore the level control must read the set point of the flow difference controller to strike a steady state balance.

An oxygen analyzer for stalk gas measures the content of oxygen in the exhaust gas after combustion. It provides a data to help to control the fuel-air ratio in the combustion process so as to increase the boiler efficiency.

If the piece of rotating equipment run above the limit specified, damage to the internal component occur. An overspeed protection system of the turbine shuts off the steam flow to the turbine.
The position of the turbine shaft plays an important role in steam turbine. It is important to maintain the position of the shaft. If there is any mispositioning of the shaft leads to the vibrations in the system which results in the damage of the turbine system. Therefore, continues condition monitoring the system is done.

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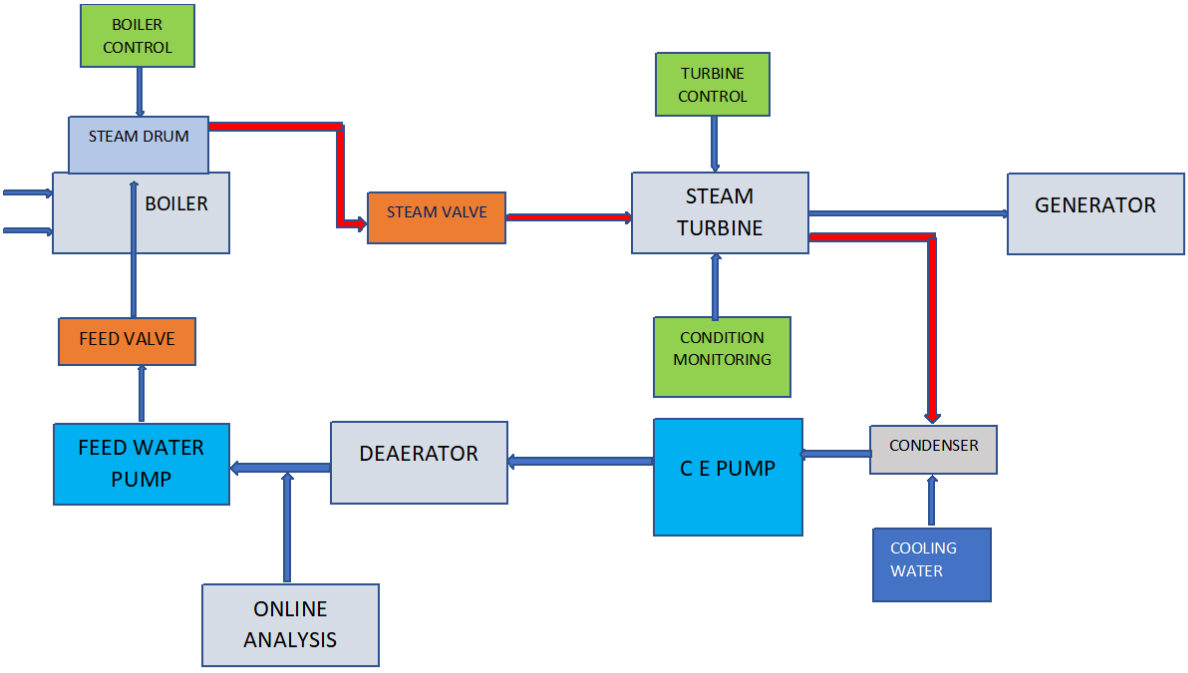
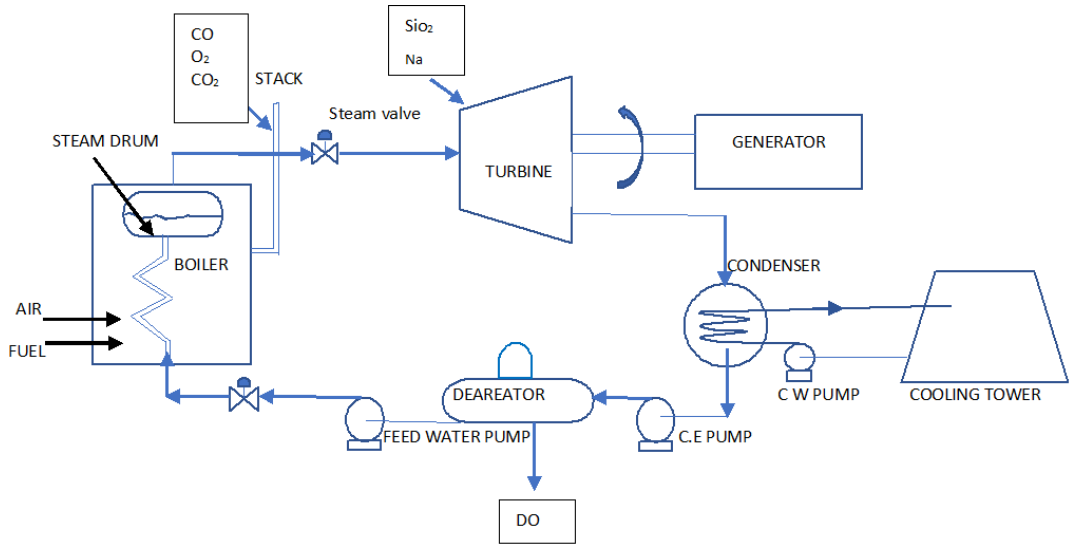
BLOCK DIAGRAM:



PROCESS FLOW DIAGRAM:



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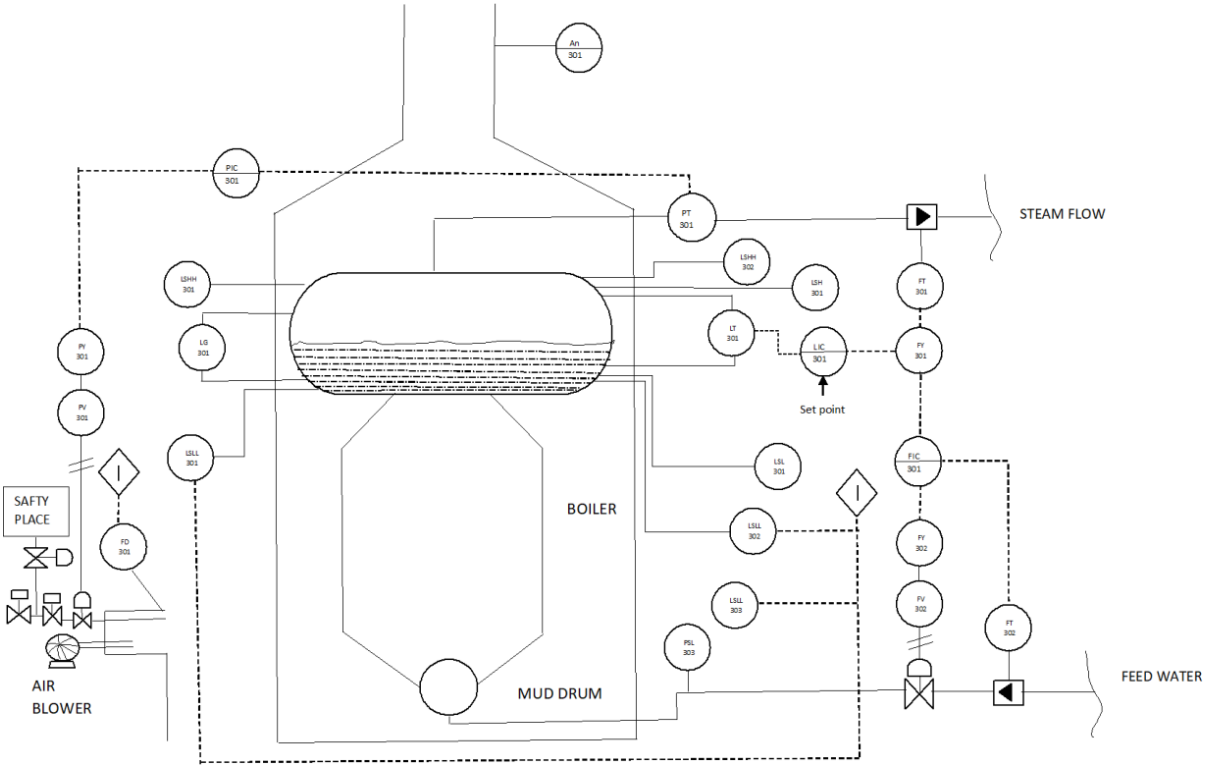
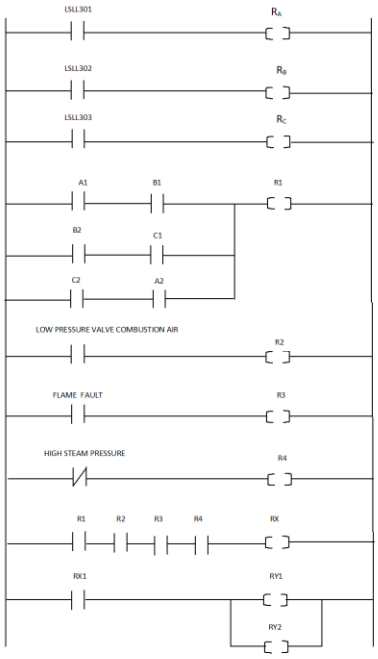


TRIP LOGIC:



CONCLUSION

The primary goal of this Industrial training is to understand the overall execution of a real time project in an industry. This has been understood by the execution of a mini-project. The mini-project on the “Steam boiler level control (3-element system) in a power generation unit including trip logic with 2oo3 voting” involved various steps such as analyzing the requirement, developing the design in the form of a P and I Diagram, listing the equipment required, developing the ladder diagram of a timer, trip, voting system etc.

The various factors of the system including the efficiency, reliability, safety, life time etc. are considered during the design. Different cases of failure of the system and the corresponding actions to be taken during each case are also considered. Monitoring, measurement and control of various system parameter such as level are understood.

Principle of working of operation of transmitters, controllers, switches etc. are understood. The importance of documenting and a sequential execution of various steps to finally attain the requirement is understood.