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CHEMICAL ENGINEERING

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CHE 312

ASSIGNMENT

1. Briefly describe chemical process Diagrams.

Chemical Process Diagrams

A chemical process flow diagram (PFD) is a specialized type of flowchart. With the help of chemical process flow diagrams, engineers can easily specify the general scheme of the processes and chemical plant equipment. Chemical Process Flow Diagram displays the real scheme of the chemical process, the relationship between the equipment and the technical characteristics of the process. Chemical Process Flow Diagram illustrates the connections between the basic equipment as well as the overall structure of pipelines and other supporting equipment. The purpose of PFD is to build the image of the basic idea of the chemical process. It is designed for chemical industry engineers and designers.

2. Outline the purpose of P&ID and list its division.

i) A P&ID shows all piping, including the "physical sequence of branches, reducers, valves, equipment, instrumentation and control interlocks."

ii) A P&ID is used to operate the process system, since it shows the piping of the process flow along with the installed equipment and instrumentation.

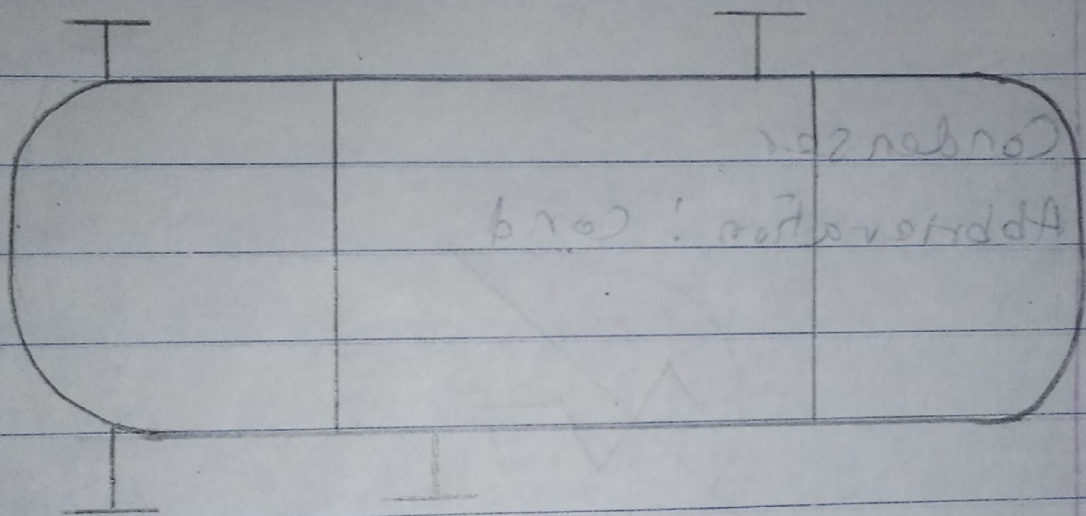
iii) P&ID plays a key role in maintaining and modifying the process they describe.

iv) In terms of processing facilities, a P&ID is a visual representation of key piping and instrument details, control and shutdown schemes, safety and regulatory requirements, and basic start-up and operational information.

- b.) Divisions of P&ID includes;
- i Instrumentation and designations
 - ii Mechanical equipment with names and numbers
 - iii All valves and their indentifications
 - iv Process piping, sizes and identification
 - v Vents, drains, special fittings, sampling lines, reducers, increasers and swaggers.
 - vi Permanent start-up and flush lines.
 - vii Flow directions
 - viii Interconnections references
 - ix Control inputs and outputs, interlocks
 - x Interfaces for class changes
 - xi Computer control System
 - xii Identification of components and subsystems delivered by the process.

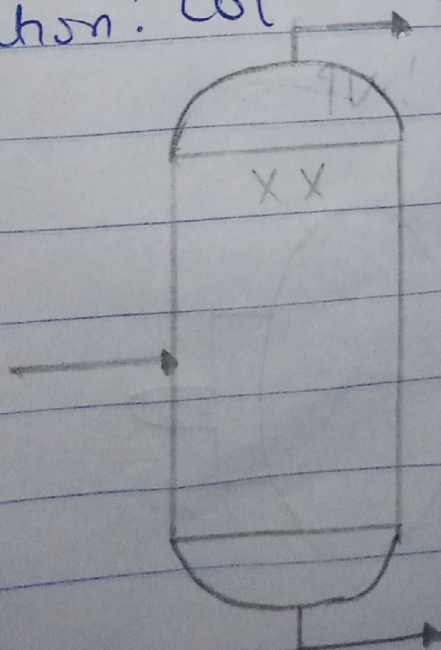
3.) Give five (5) Common P&ID Symbols with the instrument abbreviations used in instrument diagram

1.) Heat exchanger
Abbreviation: HX

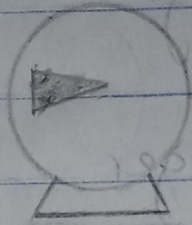


2.) Column

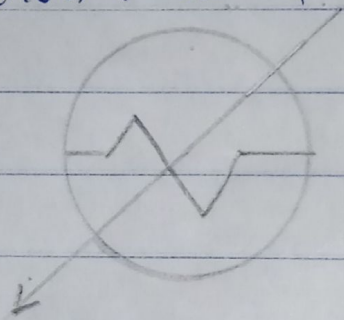
Abbreviation: COL



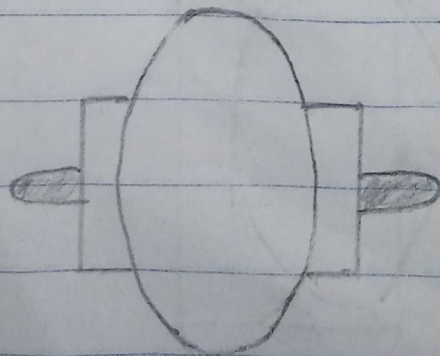
3. Pump
Abbreviation: PMP



4. Condenser
Abbreviation: Cond



5. Vacuum Pump
Abbreviation: VP



References:

- i Conceptdraw.com/examples/chemical process.
 - ii Camcode.com/assess-tags/what-is-pid/
 - iii Perry's Chemical Engineer's Handbook 8th edition Perry, Green, Page 10-45 section 10-76
- N. BATTIKHA, N. E (2006) condensed Handbook of Measurement for Process
- iv <https://www.pipengineering.org/pid-symbols-for-mixers/>