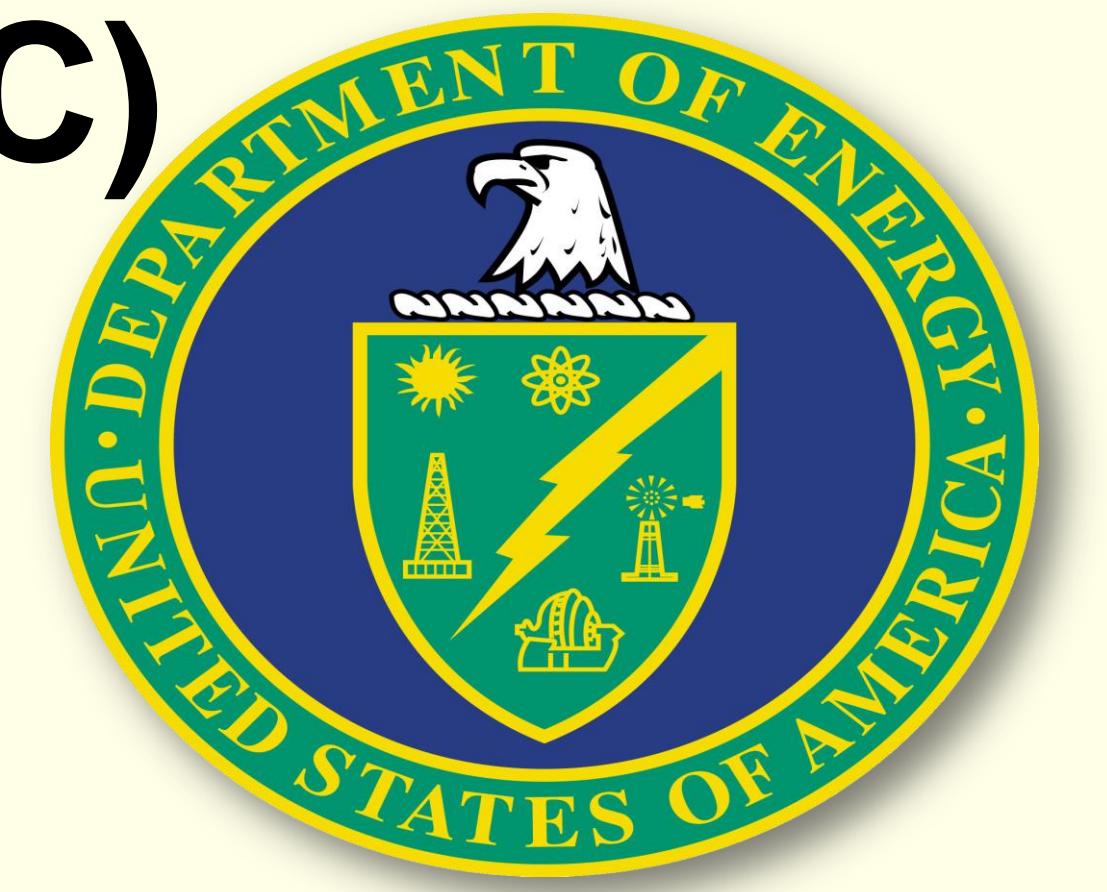


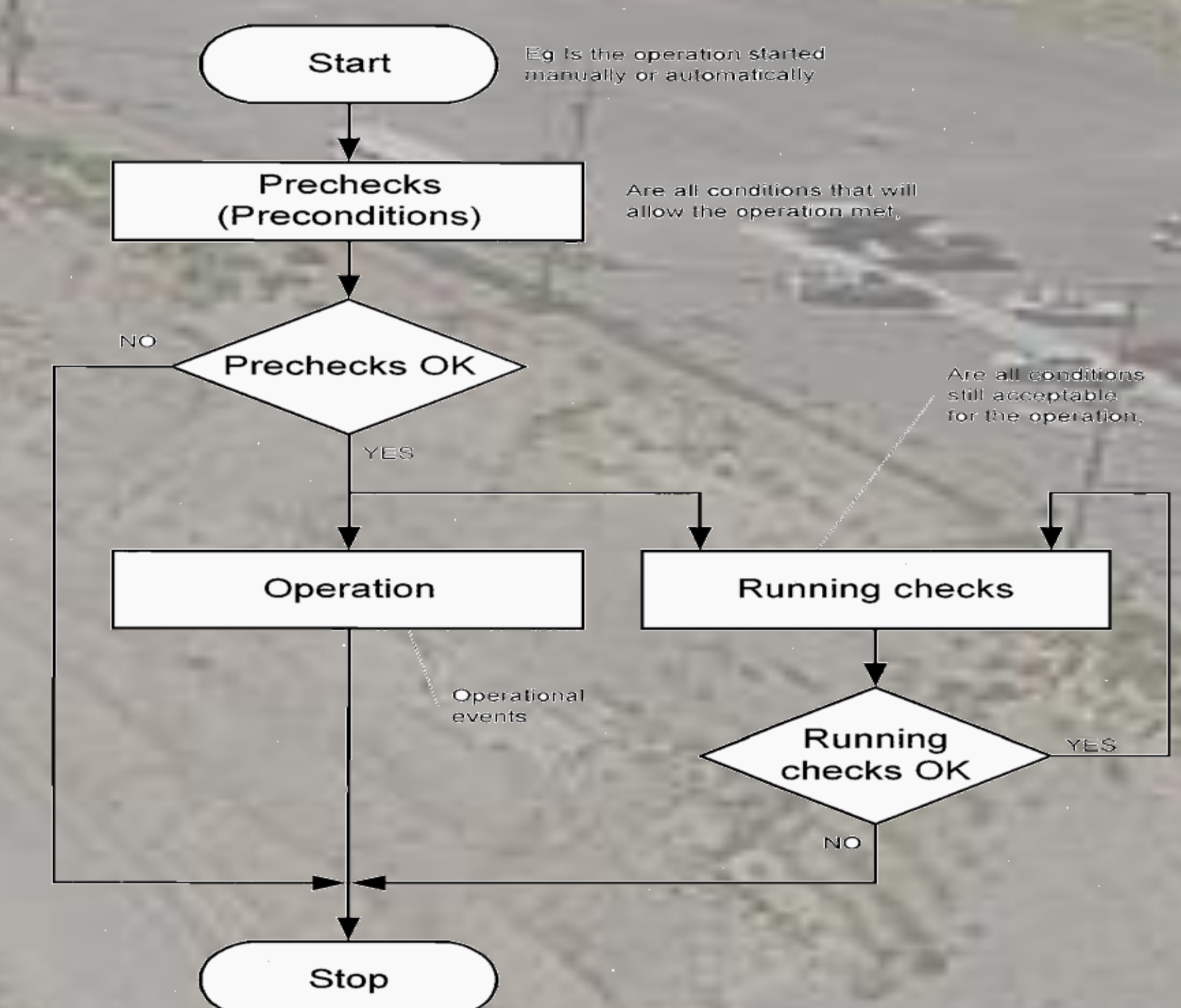
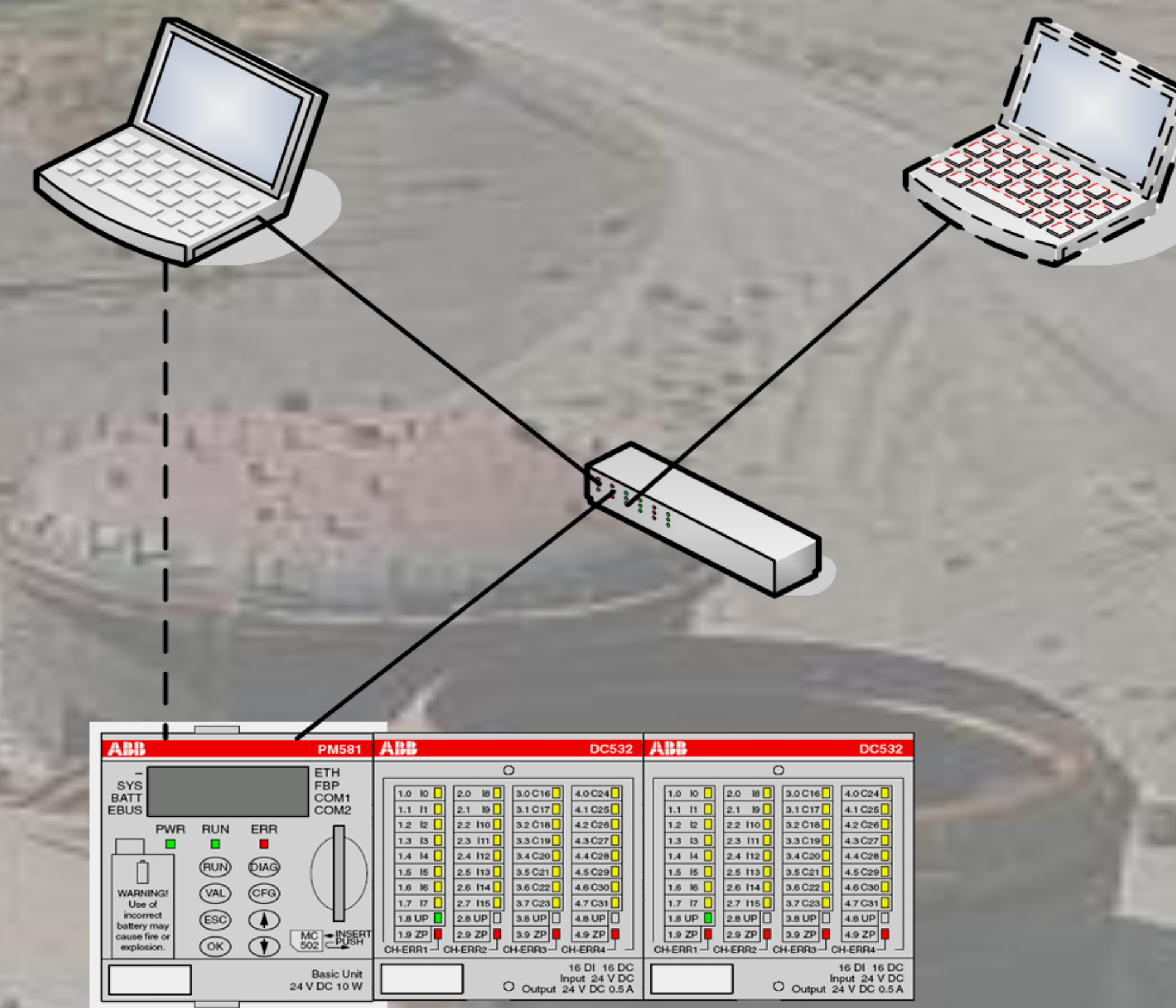
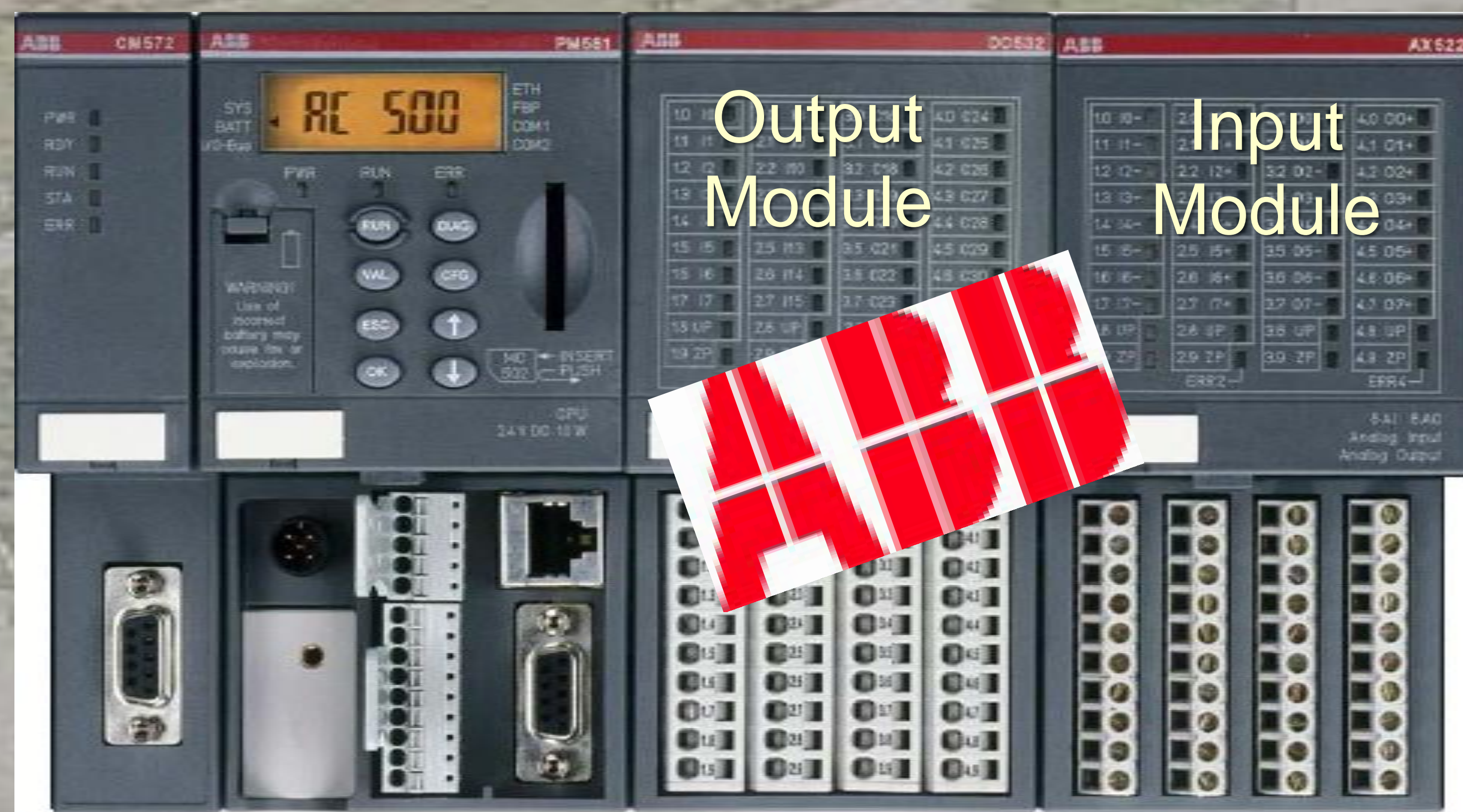
Automated Operation Control via Programmable Logic Controllers (PLC) for Pre-Engineering Platform (PEP) Prototype model of Waste Treatment Plant (WTP)

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Waste Treatment Plant (WTP) is designed to treat and vitrify radioactive waste stored in underground tanks at the Hanford Site. A Pre-treatment Engineering Platform (mock up scaled model) was constructed as a prototype of WTP to test all the procedures (shown on bottom left corner).



PEP has 2 types of operations that are controlled by the PLC and many sub-operations within the main ones.

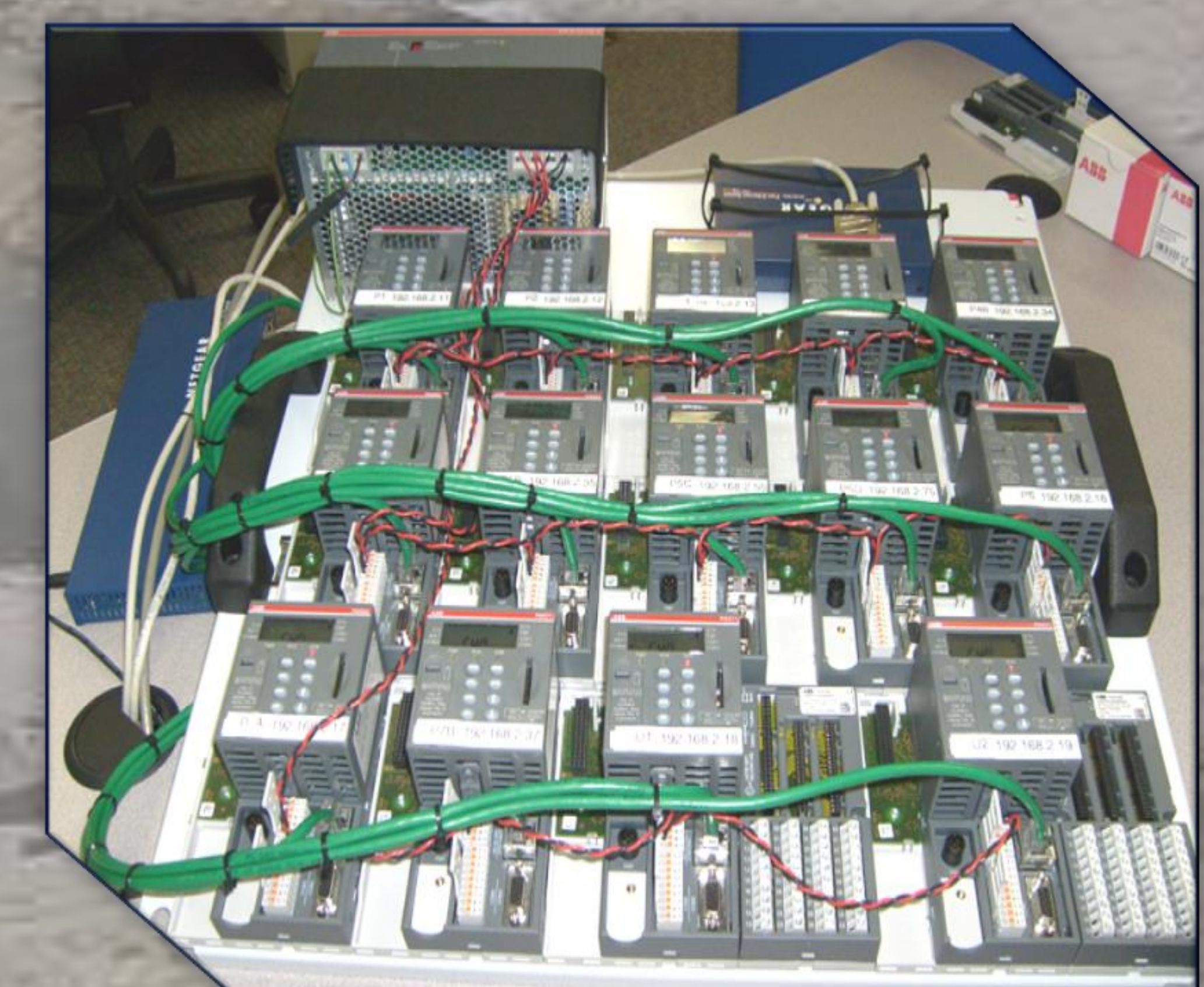
Primary Operations:

1. Simulant Feed Receipt
2. Caustic Leaching
3. Solids Concentration
4. Caustic Leaching
5. Re-concentration
6. First Solids Washing
7. Oxidative Leaching
8. Final Solids Washing
9. Solids Transfer
10. Filter Washing
11. Filter Cleaning

Support Operations:

1. Receipt/Stage
2. Sampling
3. Dilution
4. Mixing (Pump Recirculation, Pulse Jet Mixers (PIMs, Spargers)
5. Mixing (in-line)
6. Heating
7. Cooling
8. Reagent Addition
9. Transfer
10. Line Flushing
11. Filter Back-pulsing
12. Control
 - Pressure
 - Flow (Instantaneous and Totalized)
 - Temperature
 - Level
 - Density

Task Description: To develop an experimental lab based PLC control station (shown on bottom) and ensure the communications configurations as well as the functions are same as the PEP model.



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