PSCI PHARMACEUTICAL SUPPLY CHAIN INITIATIVE
Building responsible supply chains

Pressure Vessel

N T Prasad – Head EHSS Bangalore
Syngene International Limited

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Biography

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N T Prasad – Head EHSS Bangalore
Syngene International Limited

- Prasad comes with over two decades (23 years +) of experience in Process engineering, Production, Projects, Process safety, Safe system of work and Emergency management in chemical industry.
- He is currently working in Syngene International limited as Head EHSS Bangalore for (6 operational sites), he has previously worked in company like Syngenta, Deccan fine chemicals.
- He has completed his Bachelor's in Chemical Engineering and Master's degree in Environmental Engineering from Birla Institute of technology, he has done Advance Diploma in Industrial safety (ADIS) and Management degree (MBA) from Goa institute of management (GIM).

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Introduction to Pressure Vessel

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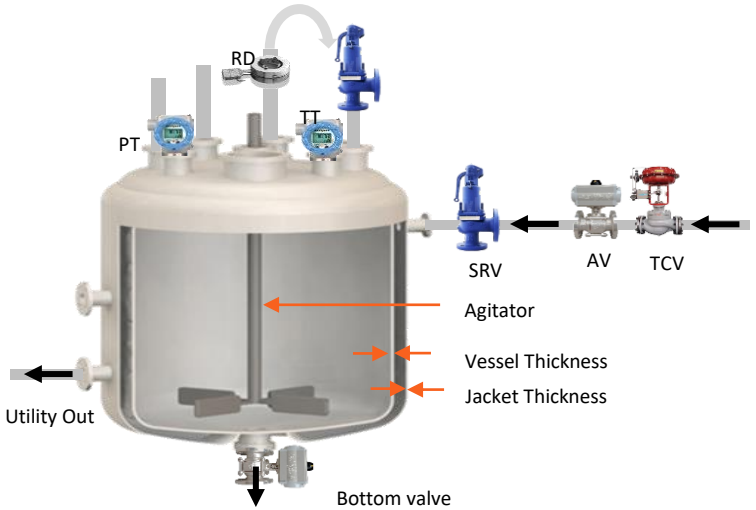
Pressure Vessel

A vessel that may be used for containing, storing, distributing, transferring, distilling, processing or otherwise handling any gas, vapor or liquid under pressure greater than the atmospheric pressure and includes any pipeline fitting or other equipment attached thereto or used in connection therewith.

Key points to consider

01 Operating Pressure (OP)

02 Maximum Operating Pressure (MOP)



03 Design Pressure (DP)

04 Maximum Allowable / Permissible Working Pressure (MAWP/MPWP)

05 Safety Relief Device

Operating pressure < Set pressure of Safety relief device < Set pressure of Rupture disc < Maximum Allowable / Permissible Working Pressure / Design pressure

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Legal requirements for Pressure Vessel:

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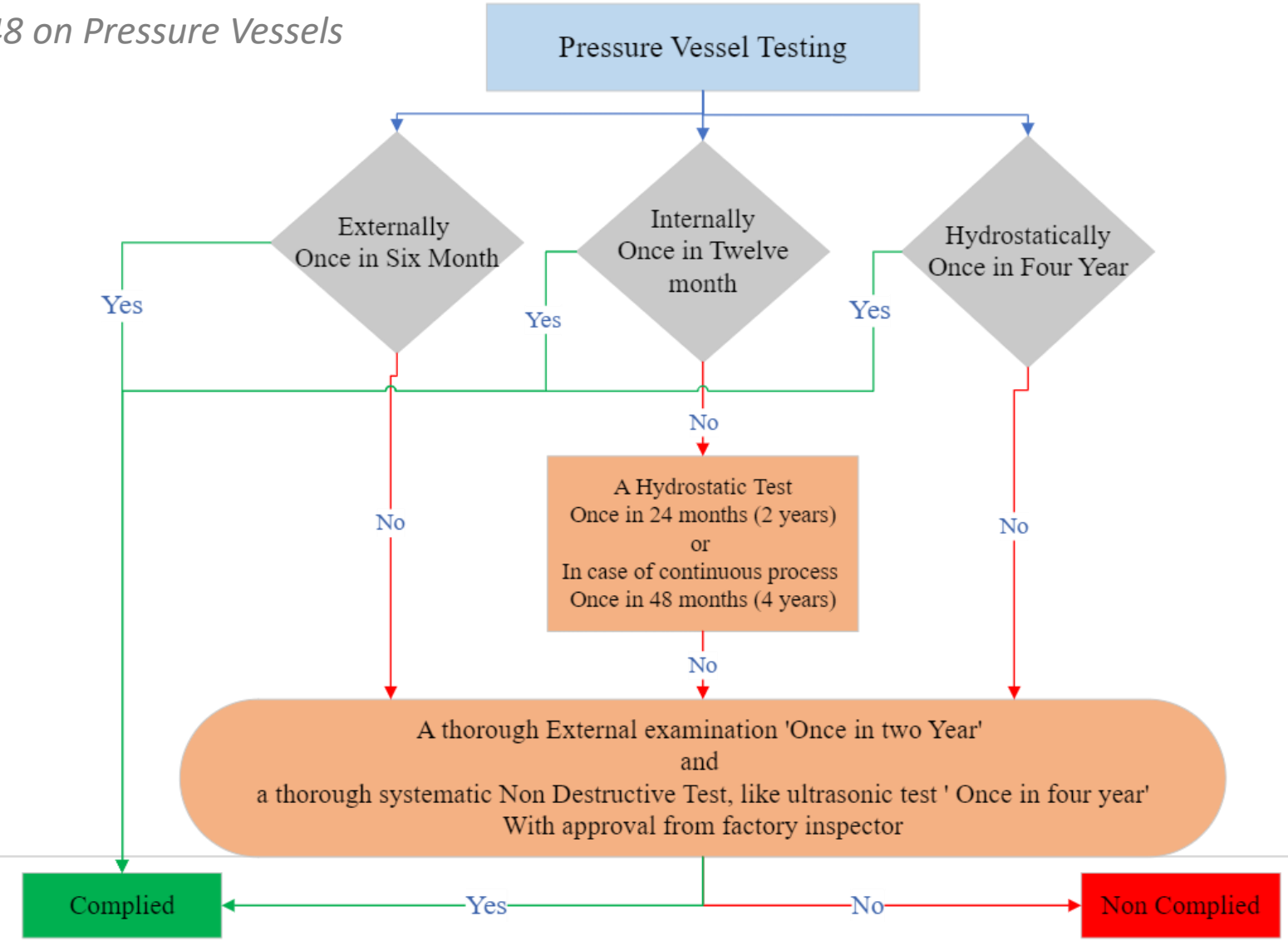
Factory Act, 1948 on Pressure Vessels or Plant



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Case Study

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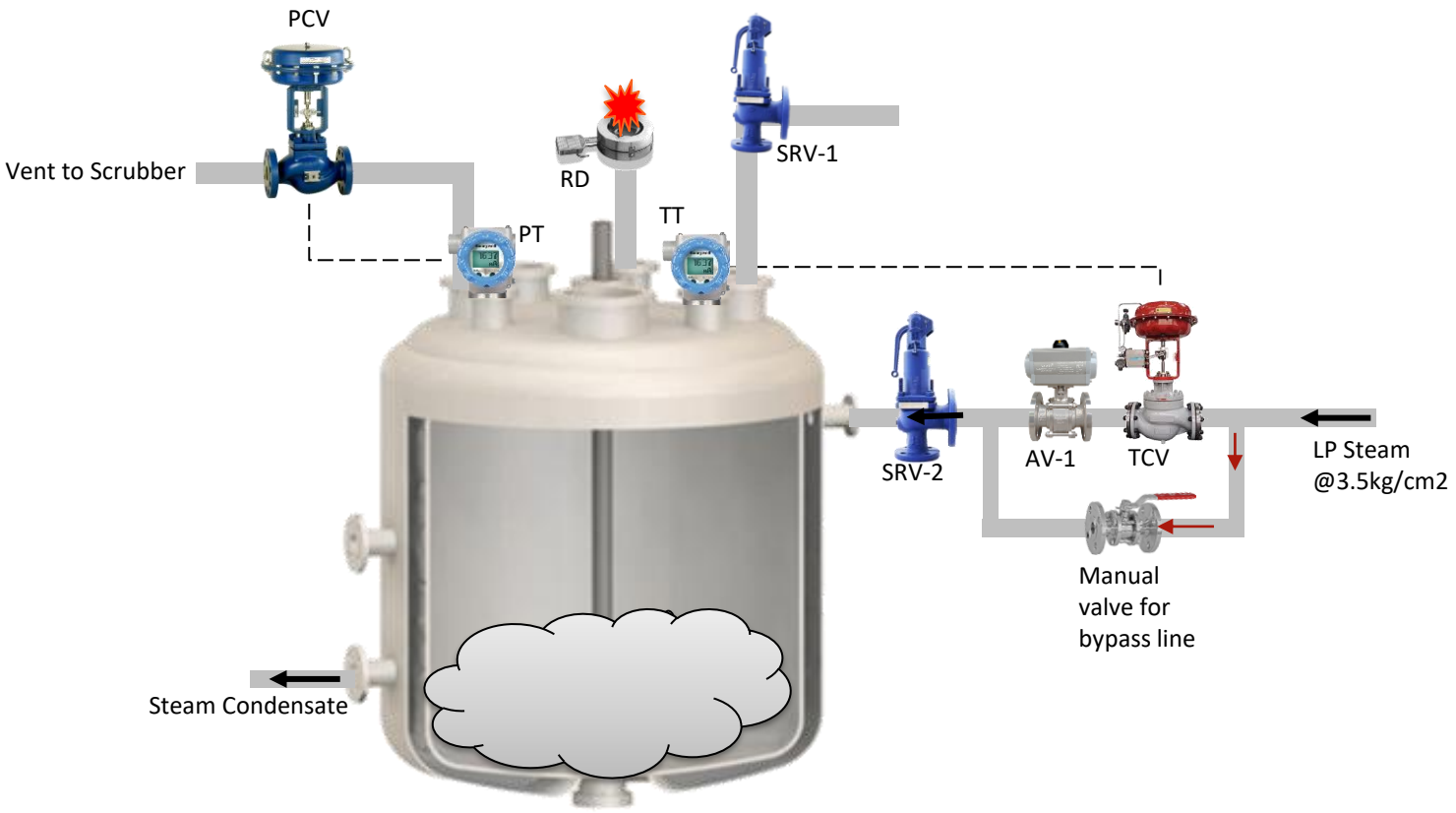
Incident: Activation of rupture disc during process operation, due to sudden pressure buildup inside the tank



Root Cause:

- Malfunction of normal venting system
- Entry of high-pressure steam inside the kill tank
- Bypass of temperature control system

Learnings:

- Check and verify the operation of venting systems, and interlocks.
- Ensure rupture discs and safety relief valves are set accordingly
- Perform regular bench tests and physical checks.
- Ensure no systems are bypassed during operation.

RD: Rupture Disk; PT: Pressure Transmitter; TT: Temperature Transmitter; SRV: Safety Relief Valve; TCV: Temperature Control Valve; PCV: Pressure Control Valve; PRV: Pressure Reducing Valve; CW: Chilled Water; LP Steam: Low Pressure Steam; VF: Vent Filter; AV: Actuated Valve

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Importance of ITPM (Inspection Testing and Preventive Maintenance) for Safety Critical Equipment

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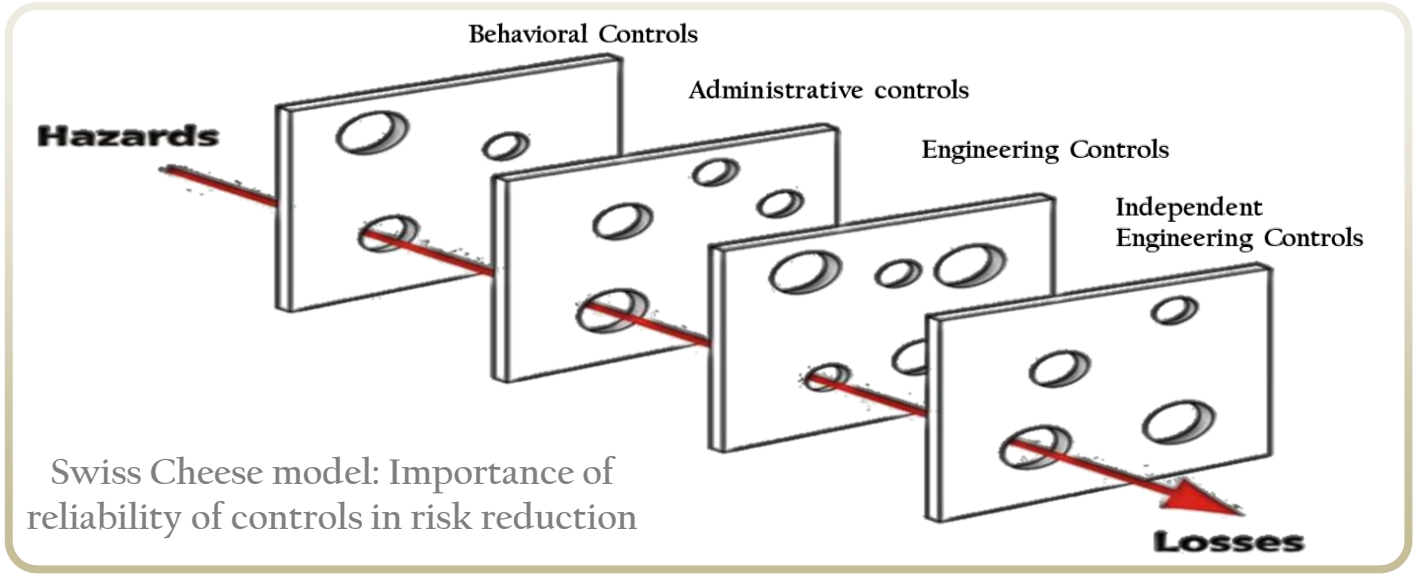
Safety critical equipment is an individual piece of equipment, a control system or an individual protection device which in the event of a single point failure may:

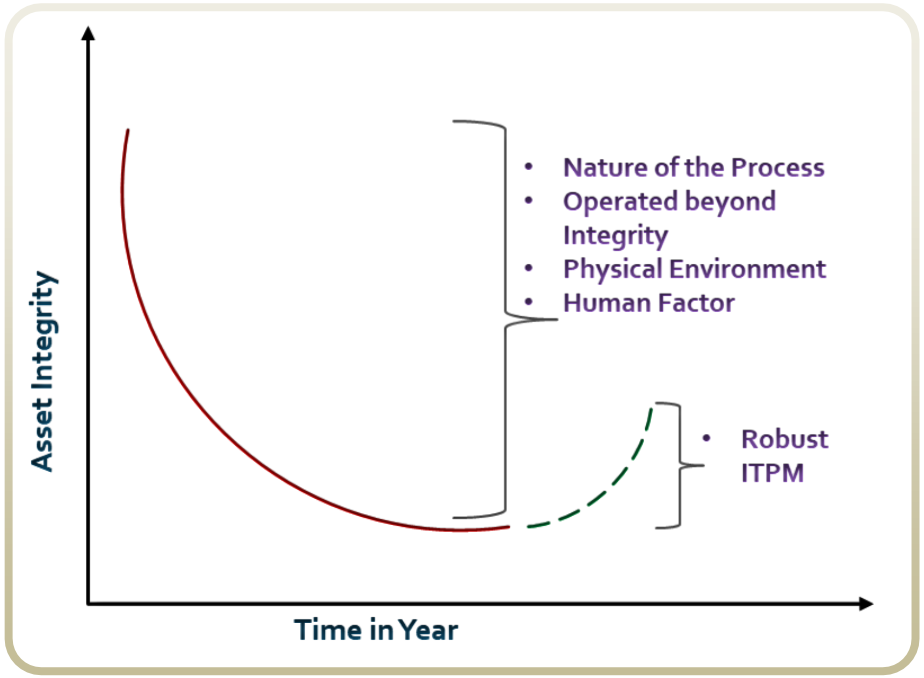
Result in a hazardous situation which could lead to an Incident

OR

Directly cause an incident that results in harm to people or the environment



Swiss Cheese model: Importance of reliability of controls in risk reduction



It's a Last Layer of Defense

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Q&A

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