

Process isolation Sasol

Background

- The intent is to prevent harm to people, assets, and the environment.
- First break procedure for process systems included
- Execution of the isolation process:
 - When isolating a system using blanks the blanking shall be done under permit conditions.
 - Opening of process equipment or pipeline shall be done according to the first break procedure.
 - Where the isolation requires a mechanical lock out system to be activated, the mechanical lock out procedure shall be followed.

Positive isolation

- The blank that will be installed in the line shall comply with the line specifications.
- Gaskets shall conform to the requirements of the line specification and on both sides of the blank.
- Bolts and nuts used to box up the flange shall conform to line specifications.
- All flanges shall be fitted with the correct number of bolts in accordance with the flange requirement, these bolts shall be tightened.
- Blanks shall be installed as close as possible to the process equipment being positively isolated.
- After the installation or removal of blanks or the changing of the figure 8's position, production and maintenance shall sign the approved blank list.

Isolation methods

- The type of isolation used is determined by the hazard or the chemical and physical properties of the material in the process system. The variations of process isolation are as follow:
 - Closure of isolation valves without attaching a “do not open” board.
 - Closure of isolation valves with a “do not open” board attached.
 - Closure and locking of isolation valves with a chain and pad lock.
 - Closure of double block and bleed system where the vent valve must be open.
 - Positive isolation using a figure 8 or blank to positively isolate the process system from a potentially live process.
 - Positive isolation by removal of a spool piece with the installation of end blanks.

Closure of isolation block valves without attaching a “do not open board”

- Not considered as positive isolation and not be used when the process system is to be opened.
- Equipment may be vented and drained when isolated in this manner.
- Isolating process equipment during decommission or normal operation of the plant.
- Only external maintenance such as the following may be carried out when equipment is isolated in this manner:
- Examples:
 - Lagging or insulation replacement and removal.
 - Sand blasting.
 - Removal of coupling.
 - Wall thickness check.

Closed isolation valve with a “do not open” board attached

- Method used where the process system contains non-hazardous material.
- Operated at a temperature and pressure that is not harmful to personnel.
- Examples are:
 - Cooling water.
 - Lube oil.
 - Potable water.
 - Prior to installation of positive isolation.

Closing an isolation valve and fitting pad lock and chain

- This method is applied to systems where accidental opening of valves must be avoided; the following process conditions apply:
 - Flammable liquid above flash point but below their boiling point.
 - Corrosive liquid or toxic liquids have an NFPA health rating less than 3.
- Where equipment in the above service is removed and replaced within eight hours.
- Should removal and replacement of equipment take longer than 8 hours positive isolation shall be installed.

Closing of double block valve and opening the vent valve between the two isolation block valves

- This isolation method is used when blanks cannot be installed i.e., on welded pipelines.
- The valves need to be locked with a chain and pad lock.
- Should a double block and bleed system be used for process isolation then production personnel specify the monitoring for hazardous material at the vent as an additional precaution on the issued permit to work.
 - **Note:** This method is not considered positive isolation as there can be human interference with the valves, whether the valves are locked or not.

Positive isolation methods

- The following methods are considered as positive isolation:
 - Installation of a slip plate or blank. figure 8.
 - Disconnecting of pipelines with the fitting of end blanks on the open ends.
- Positive isolation shall be used:
 - Equipment needs to be isolated for vessel entry.
 - Hot work is to be done on a process system containing flammable material.
 - Equipment is removed from system containing hazardous materials for periods more than eight hours.
 - Under process operating conditions, flammable liquids are above their boiling point.
 - Under process operating conditions, there is a flammable gas under pressure.
 - Under process operating conditions, there is a toxic or corrosive gas with an NFPA health rating of 3 or 4.
 - There is a process system containing pyrophoric or highly oxidising materials.

Questions