

GASIFIER INCIDENT

What happened?

- While starting up a gasifier after the ash lock top cone replacement outage, a fire was observed at the coal lock main flange.
- The gasifier pressure was ramped up as per start-up procedure.
- The flare ECV was not closing fully and thus pressure increased.
- At that instance, a fire occurred at the coal lock main flange.
- Prior to this event, the main flange gasket experienced above OWAP temperature conditions.
- The above OWAP conditions lasted for more than 2 hours with maximum temperature of 460 °C.
- The gasket is designed for maximum temperature of 420 °C.

Causes

- Coal lock main flange and gasifier main flange temperature increase and exceeded the operating and design temperature resulting in degradation of the gasket material.
- On the day of the fire the pressure increases above normal operating pressure. The ECV did not close completely.
- Breakdown of coal feeder cycle pin, the maintenance is OTF (operate to failure). The failures are random due to this the coal lock could not be loaded automatically to maintain temperature.
- The manual loading procedure is inadequate. Using vibration to determine the level is not practical. No timer is provided to measure the time required for manual loading as per procedure.
- Coal lock could not hold pressure due to obstruction on the coal lock top cone resulting in slides not closing.
- Coal could not be continuously loaded manually to maintain TR2 temperature as per procedure.
- OWAP procedure not followed. The understanding of the technician was that false readings could be generated due to gasifier being offline.

Learnings

- Improve and follow the process of reporting OWAPs when gasifiers are offline.
 - Excursions from the defined OWAP limits should be reported in the relevant operations interface.
 - Where the significant excursion management process is required, the GMR2 (1) should be notified of the excursion on the first working day after the excursion, at the latest. This applies to any type of deviation which results in the possibility for an integrity concern on equipment.
- Improve communication between panel SPC and outside personnel when loading the coal lock manually to prevent overfilling of coal lock. Procedures should be written in such that it details exactly how the operator should respond or be written with sufficient detail considering adequacy of the required time interval for each activity.

Questions