

Five Tips for Safer Turnarounds

Technical Brief



Plant management teams at refineries and other petrochemical facilities periodically schedule turnarounds (TARs), a process to inspect, test, repair, replace, or upgrade production unit equipment. TARs generally occur every two to five years, requiring shutdown of production units for one to four weeks.

A TAR typically involves a large number of employees, temporary and contract workers. Workers often perform multiple inspection and maintenance tasks simultaneously to bring the plant online as quickly and as safely as possible.

TAR Hazards

TARs can be especially disruptive due to their complexity, and are potentially more hazardous than normal plant operations for many reasons, including:

- 1 Issues with communication, planning and scheduling.
- 2 Phased shut-down of production units or the entire plant.
- 3 Employees who must perform unfamiliar, specialized tasks.
- 4 Contractors are present who are unfamiliar with plant employees or operations.
- 5 Production units that must be brought online to full production.

When you add unusual TAR issues to typical hazardous operating conditions present within every petrochemical plant, opportunities exist for potentially serious accidents. TARs also require extra safety planning, communication and training to avoid accidents that could injure workers and/or damage equipment.

The success of a TAR ultimately depends upon safely completing all tasks necessary to ensure plant operation at peak efficiency. Plant safety is everyone's responsibility; every facility's process and plant safety teams should be involved initially in planning, scheduling and completion of TARs.

For example, with respect to process control, fixed gas and flame detectors should be tested, repaired or replaced as necessary. Safety managers also need to determine whether the plant has appropriate types of portable gas detectors, respirators and fall protection in sufficient quantities to support employees and contractors.

TAR orientation and plant training also should be scheduled, especially if temporary workers or contractors are onsite. All the safety equipment in the world is useless if employees or contractors fail to understand how to use and maintain safety equipment properly, especially during unusual operating conditions such as a TAR.

In addition, don't forget that serious accidents have occurred during plant shutdowns and when bringing a plant online, just one more reason that safety should be a primary concern during what might seem to be the impending intensity of a TAR.

Five Tips for TAR Safety

To help avoid serious accidents during TARs, listed here are five process and plant safety tips to help you successfully complete necessary tasks without incident:

- 1 Inspect fixed combustible gas detectors.
- 2 Evaluate flame monitoring systems.
- 3 Check portable gas detectors.
- 4 Review breathing apparatus.
- 5 Inventory fall protection equipment.

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Fixed Combustible Gas Detectors

The explosive potential of combustible gas is always one of the more serious hazards present at any plant during regular operations or a TAR. MSA offers multiple fixed combustible gas sensing technologies, including point infrared (PIR), open path IR (OPIR), catalytic bead (CB), and ultrasonic gas leak detection (UGLD). These proven sensor technologies with years of performance within thousands of installations, offer choice of sensor technology depending upon gases of interest, application and plant environment.

Flame Monitoring Systems

Accurate detection of flame hazards is challenging at any time, but especially during a TAR, as ultraviolet (UV) and IR flame detection sensors can experience false alarms due to ambient plant conditions, such as reflective energy from storage tanks. The latest generation of multi-spectral IR (MSIR) detectors from MSA, however, combines IR sensing with neural network technology (NNT) intelligence that can be trained to distinguish between plant conditions that generate false alarms and actual flames.

Portable Gas Detectors

MSA portable gas detectors are designed with patented MSA XCell® Sensor technology, and are ideal for use in areas where fixed gas detectors are impractical, such as inside storage tanks

that must be cleaned periodically, possibly during a TAR. MSA has developed a comprehensive suite of XCell Sensors for the MSA portable ALTAIR® 5X Gas Detector to warn employees of the presence of up to six gases, such as carbon monoxide, hydrogen sulfide and combustible gases, as well as oxygen deficiency.

Breathing Apparatus

Some tasks are hazardous to the point of requiring breathing apparatus due to the concentration of toxic gases or possible oxygen deficiency that could occur with TAR activities. MSA's AirHawk® II Air Mask is a self-contained breathing apparatus (SCBA) for immediately dangerous to life or health (IDLH) conditions that can be present when performing routine maintenance activities or during a TAR.

Fall Protection

During intense TAR work schedules, employees frequently must scale and access areas high above ground where falls are a serious hazard due to potential slips from fatigue or loss of concentration. The MSA Latchways® Personal Rescue Device (PRD) is a lightweight, unobtrusive system with integrated full body harness system for self-rescue. In the event of a fall, the device lowers the worker to the ground in a controlled descent.

Conclusion

If you're planning or about to begin a TAR, MSA is the integrated safety company with more than 100 years of experience in protecting petrochemical plant workers. The highly trained team of safety experts at MSA provides a complete selection of process control safety instruments and personal protective equipment to help ensure that your TAR is completed without injury to workers or damage to the plant.

TARs are a good example of the advantages in integrating process control and plant safety functions more closely. Other benefits include better hazard identification, coordinated plant safety procedures, joint equipment decisions, comprehensive training and cross-training, vendor selection, incident reporting, and cost management. If you're concerned about a particular TAR safety issue, the chances are excellent that MSA has already solved it for someone else, and can easily offer our safety solutions expertise to you.

Note: This Bulletin contains only a general description of the products shown. While uses and performance capabilities are described, under no circumstances shall the products be used by untrained or unqualified individuals and not until the product instructions including any warnings or cautions provided have been thoroughly read and understood. Only they contain the complete and detailed information concerning proper use and care of these products.



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