

LIQUID NITROGEN SYSTEM



New liquid nitrogen tank

Problem: A customer's process required tanks of high pressure air to operate equipment. The existing tanks gradually lost pressure over time due to leaks within the system and ambient temperature changes, and/or required emptying for maintenance. Refilling the tanks using the existing compressor took an unreasonably long time. In addition, a liquid nitrogen truck needed to be used to refill the tanks much quicker but cost a lot of money.

Solution: The customer wanted to refill the tanks much quicker than the existing compressor and more cost effectively than utilizing a liquid nitrogen truck. In summary, a new liquid nitrogen system was installed onsite. The new liquid nitrogen system included a 6,000-gallon liquid nitrogen tank, a high-pressure compressor, and a vaporizer.

Project Technologies & Services (PTS) provided the customer with support by:

- Managing the project
- Creating and following the project schedule
- Maintaining the project budget
- Gathering all required permits
- Reviewing the safety plans
- Designing the foundation
- Designing the piping layouts
- Screening and providing subcontractors
- Managing the construction
- Ensuring the safety of the employees and subcontractors
- Testing the final system
- Training the employees to run the new system
- Creating the procedure for employees to run the new system



New vaporizer

Since the new equipment required a new foundation, PTS designed the new foundation. The area was excavated and the new foundation was constructed.

The new tank, compressor, and vaporizer were installed on top of the new foundation. These pieces of equipment were piped to the existing compressed air tanks.

All piping required welding for high pressure piping. PTS designed the piping to be able to send compressed air to any of the 7 tanks. In addition, new headers were installed at each of the tanks.

PTS engineers were onsite through the entire installation process to provide construction management and to ensure the safety of the employees and subcontractors. All construction was scheduled by PTS to not interfere with the customer's production schedule.

Once the equipment and piping was installed, PTS remained onsite to test the system. All of the welding was tested, the system was pressure tested, and the system was commissioned. The system required special care due to the dangers associated with high pressure and liquid nitrogen.

PTS provided the customer with operations instructions. All of the required employees for all three shifts were trained on the proper operation by PTS. PTS also created documentation to assist with the maintenance of the equipment.

The installation of the new equipment was finished on schedule and within the budget. As a result of the project, the customer can refill the compressed air tanks quicker than their old compressor and more cost effectively than with a liquid nitrogen truck.