

# SCREW COMPRESSORS

MACHINE HEALTH SOLUTION FOR CHEMICAL APPLICATIONS



## THE PROBLEM:

Screw compressors are used to move compressed gaseous fluids for purposes such as air supply or gas storage. In the event of failure, operations are halted as there is no longer a source of high-pressure fluid being pumped. Optimizing running speeds with the health of the overall machine is critical to ensure that the maintenance downtime can be planned, and losses are limited. Bearing failure, shaft misalignment, and lubrication failures are commonly the cause of downtime for these assets.



Figure 1: Screw compressor bearing rolling element defect

### COST OF ASSET FAILURES

**Compressor Rebuild:**  
\$80,000  
4-6 weeks downtime

**Compressor Replacement**  
\$240,000  
15-17 weeks downtime

### INDUSTRY SAVINGS POTENTIAL

**For a Rebuild Asset:**  
\$160,000

**Plantwide:**  
\$480,000  
~10 weeks of downtime

\$1,400 per hour downtime

## ASSET BLIND SPOTS:

There are several inherent challenges related to monitoring bearings within an asset.



**Challenge #1:** Vibration frequencies in the early stages of bearing failure are the only method of detection, as there is no audible noise nor visual indication of failure.



**Challenge #2:** Infrequent equipment breakdown or maintenance allow for minor failures to escalate into catastrophic failures.



**Challenge #3:** Throughput demand causes difficulty in physical failure assessment as downtime is so costly.

# A NEW APPROACH TO SCREW COMPRESSOR FAILURE PREVENTION



Figure 2: Screw compressor internal view

Typically, these compressors are run until there is audible or visual indication of imminent failure. This can result in unplanned downtime and escalated safety hazards in more severe cases.

Vibration sensors and continuous machine health monitoring can be used to account for future failures weeks in advance. For example, vibration signatures of bearing failures, misalignments, and other points of failure can be called out immediately, rather than allowing the issue to persist, causing further damage.



## HARDWARE

- Three to five sensors are all that's necessary per compressor unit
- Place these along shafts of the compressor as well as motor in-board and out-board



## SOFTWARE

- Custom Threshold Settings
- Velocity, Acceleration, and Temperature
- Sensor Configurations
- Individualized Dashboards
- Realtime Technical Reporting



## REAL-TIME DATA

- Asset specifications for each screw compressor including bearing data, asset running speed, and common past points of failure



## TRAINING

- Sentry
  - Site visit for site assessment and installation
  - In-person training
- KCF Academy
- Customer training/handbooks
- Asset playbook

**CONTACT US!**

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