



STREAMLINING LEAK DETECTION MONITORING IN CATALYTIC REACTORS



INTRODUCTION:

This application note describes how a custom data logging system from CAS DataLoggers helped an oil refinery significantly reduce the time required for leak detection in large catalytic reactor bundles.

CHALLENGE:

As part of the normal maintenance process the refinery relied on manual pressure testing of hundreds of small tubes within a large <u>reactor</u>

bundle. This process was time-consuming and inefficient, requiring technicians to quickly identify leaks amidst a large number of tubes. Because the refinery had to be taken off-line for this testing, downtime during maintenance sessions resulted in significant production losses.

INSTALLATION:

CAS provided two <u>dataTaker DT80</u> Intelligent Universal Data Loggers each equipped with 2 Maple Systems remote touchscreen displays and 2 <u>pressure transducers</u>. This allowed for simultaneous testing of 4 different reactor bundle quardrants. To perform the test, a technician at one end of the bundle would insert a plug with the pressure sensor in a specific tube then the technician at the other end would pressurize the





corresponding tube. As the reactor tubes were pressurized, the dataTakers monitored the pressure and gave technicians a continuous readout of the value on the Maple display. After the tube's pressure stabilized, users were notified and then simply pressed 'Start' on the display to begin the pressure data recording and a count-down timer. Users could then quickly identify leaking tubes simply by watching the pressure displays: whenever a tube's pressure read below a lower limit when the timer expired, the alarm in the datalogger triggered, indicating a leak. As part of the program, the logger provided an identifier of the failed tube # by row and column.

BENEFITS

- Real-time Pressure Monitoring: Technicians received continuous pressure readings during tube pressurization.
- Automated Leak Detection: Configured alarms notified users upon pressure drops below a set limit, indicating a leak.
- **Tube Identification:** The system displayed row and column data for each tube, pinpointing the exact location of the leak.
- **Streamlined Workflow:** Technicians could easily initiate and stop data collection for each tube test using dedicated buttons.



- **Progress Tracking:** The displays provided overall maintenance progress tracking.
- **Data Logging and Reporting:** All collected data was automatically labeled and saved for later analysis.

RESULTS:

The data logger system significantly reduced the time needed for leak detection, leading to:





- **Reduced Downtime**: Maintenance sessions were completed in half the time compared to manual testing.
- **Cost Savings:** Minimized downtime translated to thousands of dollars saved in lost production.
- **Improved Efficiency:** Technicians could quickly identify and address leaks with real-time data and clear tube identification.

CONCLUSION:

By implementing the dataTaker DT80 data loggers, the refinery achieved faster leak detection, improved maintenance efficiency, and reduced downtime, resulting in substantial cost savings.

For more information on <u>dataTaker data loggers</u>, or to find the ideal solution for your application-specific needs, contact a CAS DataLogger Application Specialist at **(800) 956-4437** or <u>www.DataLoggerInc.com</u>.