

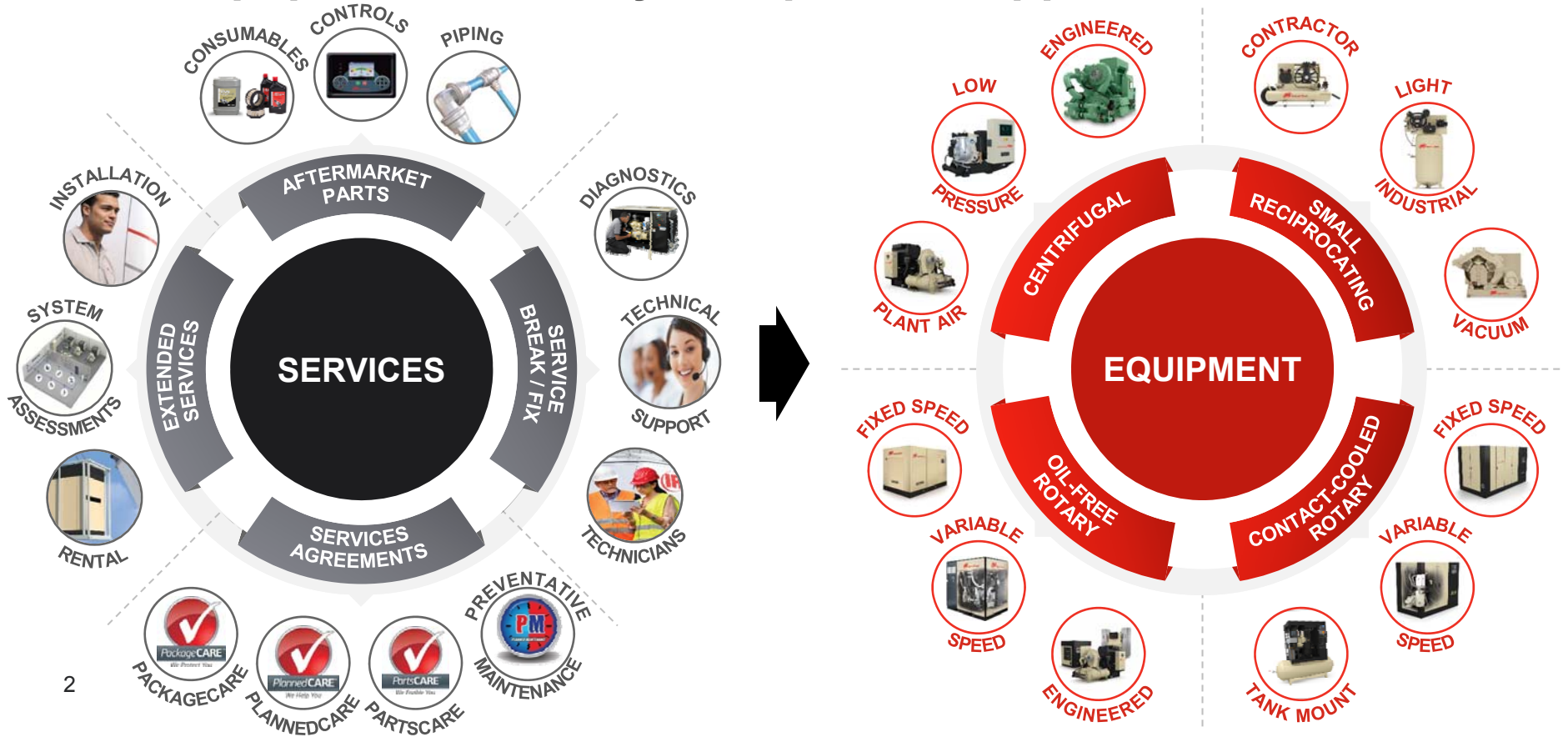


# **Helix™ Connected Platform**

## **Smart Connected Compressors**



# We Provide a Complete Offering of Services and Equipment for Every Compressor Application



# Our Global Service Experts Ensure Your Facilities Are Efficient and Reliable

## Our Mission

Stay Connected to 100% of Our Customers for Life

## CARE Service Programs

Compressed Air Systems maintenance plans... to keep your system running.

Choose The Right Maintenance Strategy For You	
Maintenance Need	Ingersoll Rand Solution
<p><i>"I want someone else to be responsible."</i></p>	<b>We Protect You</b> By taking on all maintenance responsibilities and operational risk.  PackageCARE™ We Protect You
<p><i>"I need a good provider for routine maintenance."</i></p>	<b>We Help You</b> With all planned maintenance, leveraging diagnostics for predictability and uptime.  PlannedCARE™ We Help You
<p><i>"I need quality parts for maintenance with on-call labor assistance."</i></p>	<b>We Enable You</b> With genuine OEM parts for planned maintenance, along with availability for diagnostic and repair services.  PartsCARE™ We Enable You





# Introducing Helix

Helix Connected Platform will be responsible for connecting, monitoring and providing insights to our customers, to prevent costly downtime and enhance our ability to serve you better.

The four primary Helix features include:

- Real-time remote monitoring
- Customer access to dashboards
- Service alerts, notifications and reminders
- Application and asset insights



# Digital Initiative programs

## PackageCARE Remote Monitoring

- Remote monitoring is being added to all PackageCARE assets globally and monitored by a 24/7 anomaly detection team

### Customer Value

- Significant reduction in mean time to repair with increases in zero or first-time trip resolution
- Introducing predictive maintenance to prevent some downtime events of occurring.






## Factory Shipping Remote Monitoring

- Remote monitoring will be added to compressors as a factory-standard feature

### Customer Value

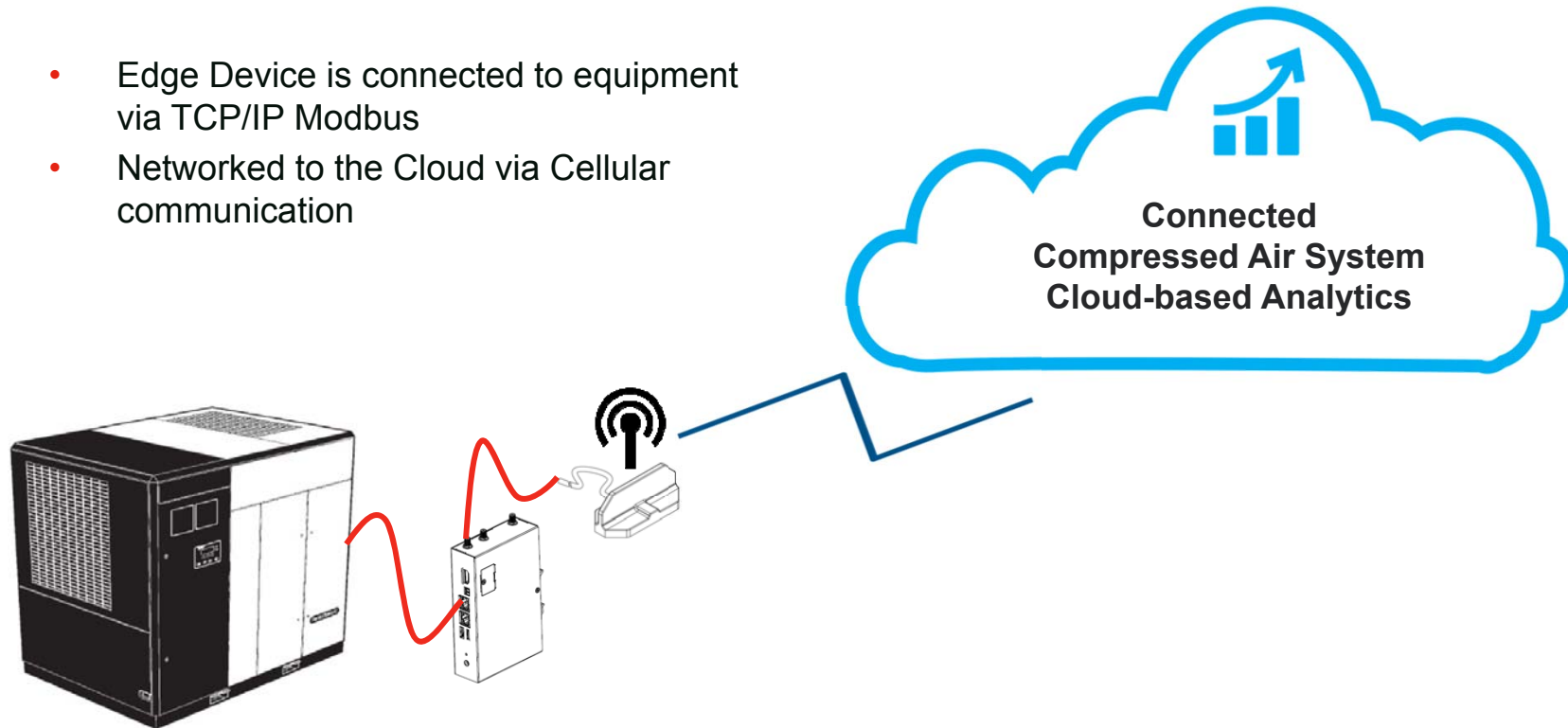
- Real-time data of your compressors can be accessed via the new customer portal.
- Ingersoll Rand can provide application-specific recommendations such as suggest parts recommendations.

# How does Helix work?

	Embedded inside all new compressors as a factory-installed standard feature and integrated into PackageCARE™ assets.
	Remotely monitors your assets using a cellular signal and collects real-time data into our new customer portal.
	Service alerts, notifications and reminders are based on your specific use of your asset.
	Uses machine learning and analytics capabilities to deliver insights based specifically on your applications.
	Integrates with customer portal to provide asset information and real-time notifications to the asset's manager.

# Physical Component architecture

- Edge Device is connected to equipment via TCP/IP Modbus
- Networked to the Cloud via Cellular communication



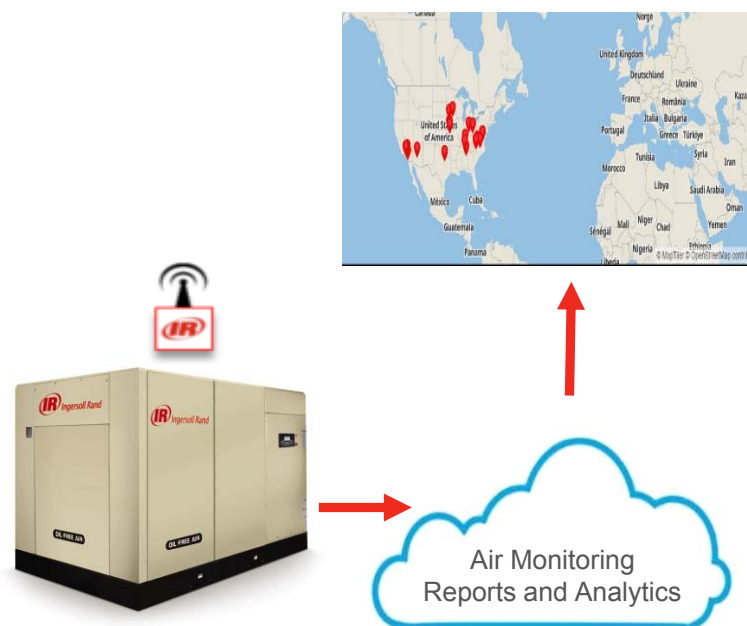
# PackageCARE™ Helix Enabled

## Full-Risk Transfer Service Agreement

- **PackageCARE™** represents the greatest value for asset management by transferring operational risk to Ingersoll Rand
- We are responsible for scheduled maintenance as well as resolve any unexpected interruptions in your production

## How do our digital capabilities add new value

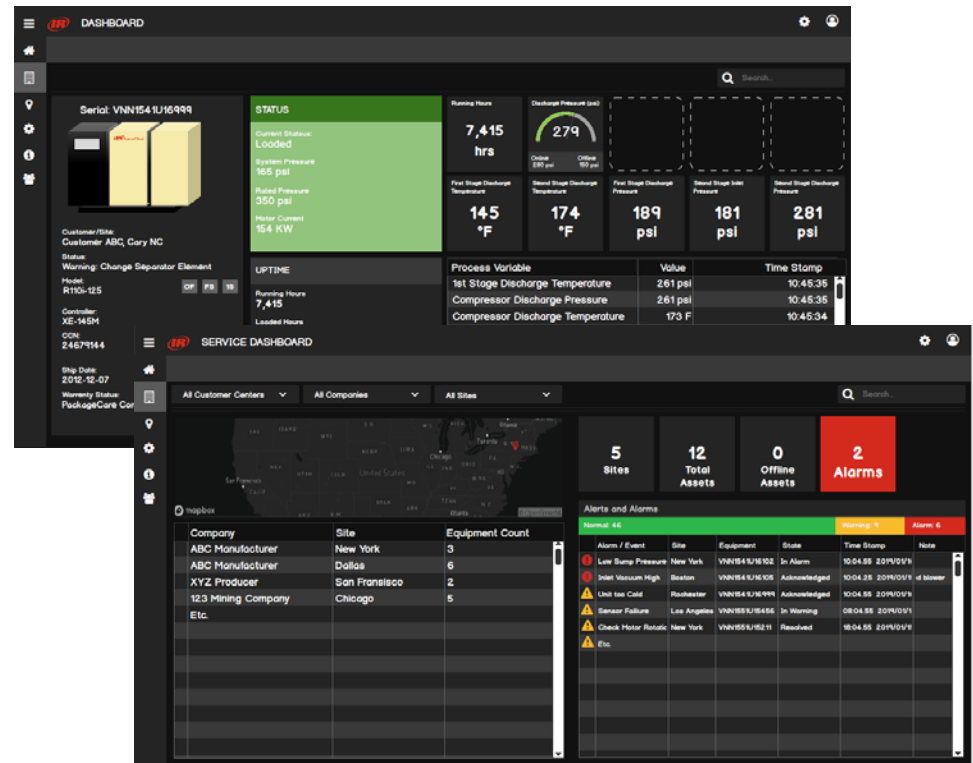
- **Anomaly Detection**- Experts perform real time monitoring of your asset, 24 hours a day to create an immediate link from our technicians to the right information
- **First Time Resolution** - Significant reduction in mean time to repair with increases in remote resolution and first-time technician resolutions
- **Predictive Analytics** – Identify problems before they occur and dispatch a technician before the machine trips or shuts down
- **Preventative Maintenance** - perform maintenance based on conditions and run hours, not the calendar. Our insight determines the right time to service the machine to reduce unnecessary maintenance and unplanned downtime





# Service Support

- Service Portal
  - Dashboards
  - Reports
  - Notifications
  - Trending / Root Cause analysis



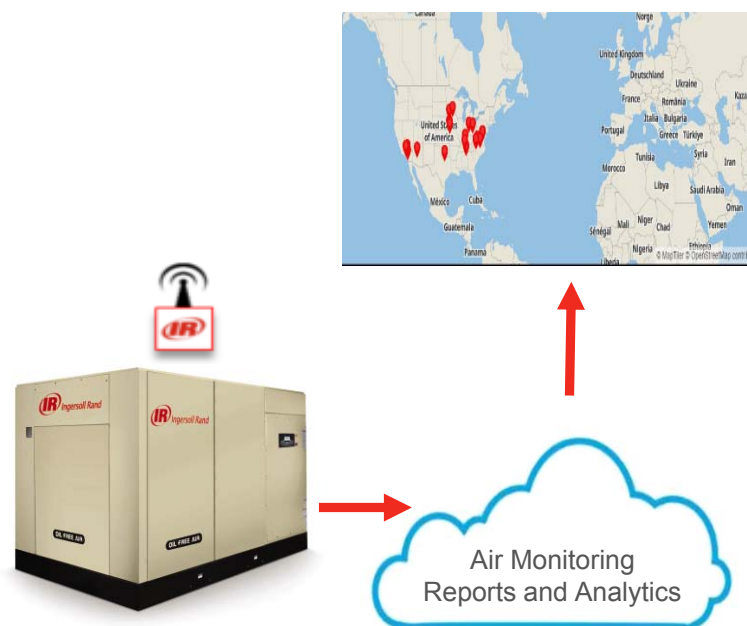
# Factory Installed Helix Capability

## What are we doing?

- Remote monitoring installed on compressors shipped from our factories

## Value to customers

- Real-time remote monitoring allows you to see exactly what is happening with your assets.
- Customer dashboards and reports that you can access anywhere and anytime.
- Service alerts, notifications and reminders enable prompt responses to problems.
- Application and asset insights to maintain optimal asset performance.



# Example Customer Portal Dashboard

- Ability to access information about your compressors
  - Dashboards
  - Reports
  - Notifications

The screenshot displays the Ingersoll Rand Customer Portal Dashboard. The top navigation bar includes 'HOME', 'COMPRESSED AIR EQUIPMENT', 'ACCESS MANAGEMENT', and 'REAL-TIME DATA'. The main content area is titled 'Customer ABC, Cary NC' and shows a list of compressors. One compressor is highlighted with a 'Warning' status.

**Compressor Details:**

- Serial: VNN1541U16999
- Customer/Site: Customer ABC, Cary NC
- Running Hours: 4519
- System Pressure: 165 psi
- Motor Current: 154 KW
- Compressor Discharge Pressure: 110 psi
- Compressor Discharge Temperature: 169 Fahrenheit
- Oil Filter Pressure: 135 psi
- Inlet Vacuum: 39 psi
- Current Status: Trip

**Compressor Overview (VNN1541U16999):**

- Running Hours: 7,415 hrs
- Discharge Pressure (psi): 279
- System Pressure: 165 psi
- Rated Pressure: 350 psi
- Motor Current: 154 KW
- Final Stage Discharge Temperature: 134 °F
- Wet Sump Pressure: 108 psi
- Cooling Air Inlet Temperature (ambient): 78 °F
- Oil Filter Pressure Drop: 21 psi
- Oil Filter Outlet Temperature (injected): 158 °F

**Uptime Summary:**

- Running Hours: 7,415
- Loaded Hours: 3,703
- Unloaded Hours: 1,283
- Total Uptime: 95.2%

**Process Variable Log:**

Process Variable	Value	Time Stamp
1st Stage Discharge Temperature	261 psi	10:45:35
Compressor Discharge Pressure	261 psi	10:45:35
Compressor Discharge Temperature	173 F	10:45:34
Injected Coolant Temperature	65 F	10:45:35
Inlet Vacuum	29 psi	10:45:35
Oil Filter Inlet Pressure	261 psi	10:45:35
Running Time	261 psi	10:45:35
VSD Motor Power	150 kW	10:45:35
VSD Motor Speed	2400 rpm	10:45:35
Wet Sump Pressure	13C psi	10:45:35

Additional information includes Customer/Site (Customer ABC, Cary NC), Customer Center (US South Central), Status (Warning: Change Separator Element), Model (R110i-125), Controller (XE-145M), CCN (24679144), Ship Date (2012-12-07), and Warranty Status (PackageCare Contract: 2022-04-27).

# Discussions and Questions



