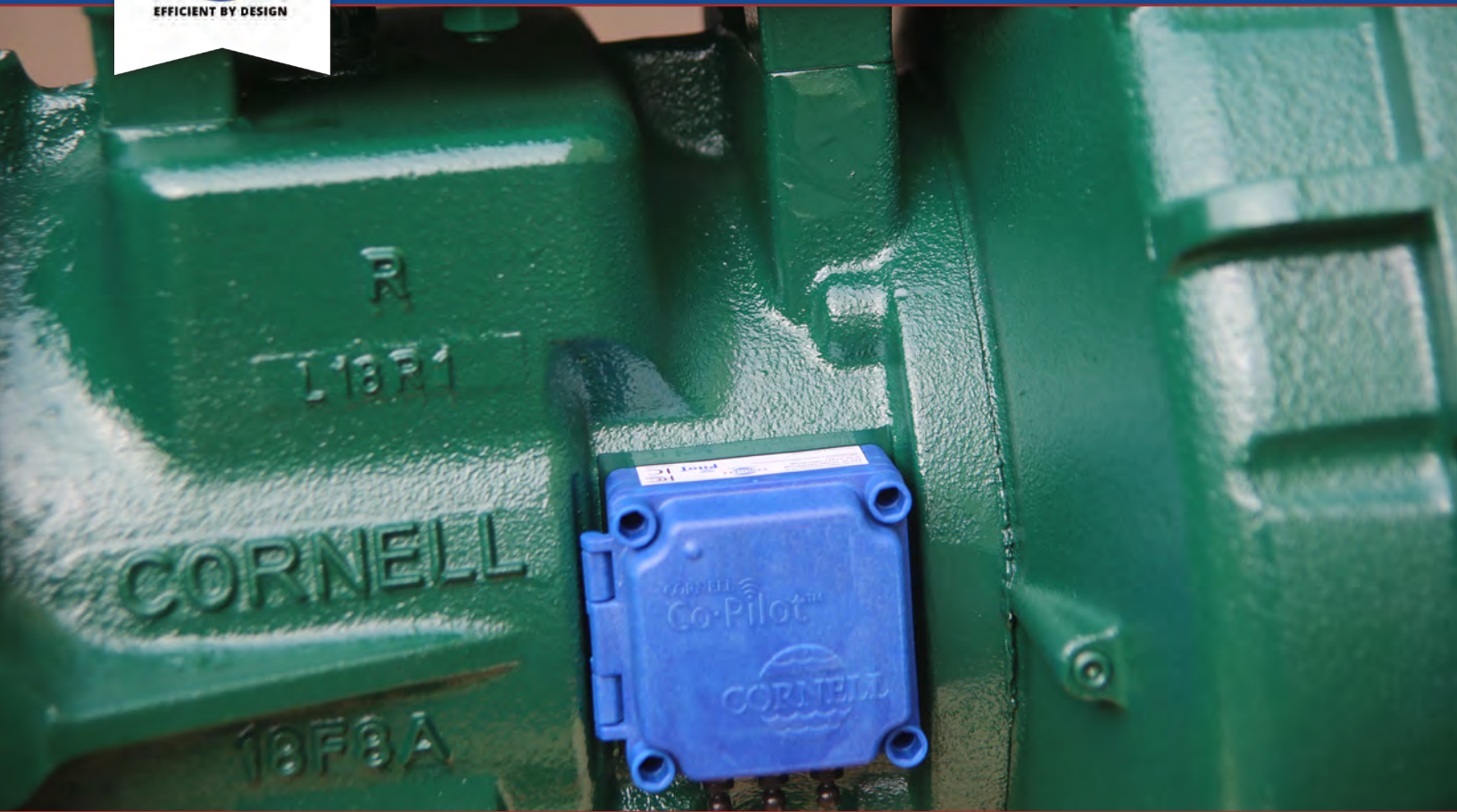




CORNELL PUMP COMPANY

CO-PILOT

INDUSTRIAL INTERNET OF THINGS PUMP MONITOR



CORNELL  Co·Pilot™



EFFICIENT BY DESIGN



CO-PILOT SYSTEM



Connect via Cell

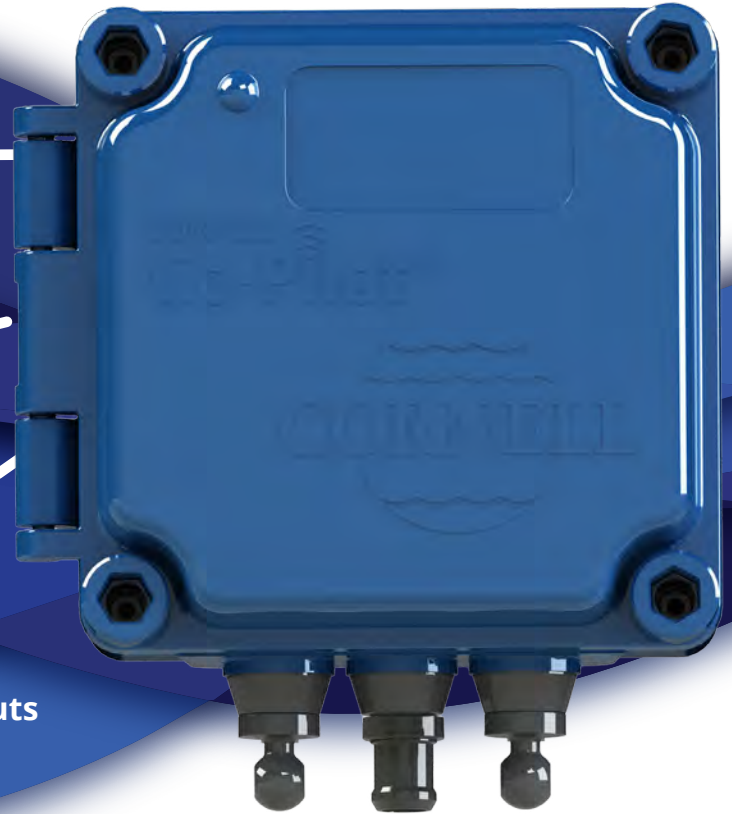


Bluetooth® Enabled



5 Sensor Inputs

CORNELL
Co-Pilot™



THE POWER OF IIOT

Cornell Co-Pilot connects to your pump to monitor temperature, vibration, and location via battery! Co-Pilot also works with continuous power to track additional parameters and interface with control systems such as SCADA. The Co-Pilot brand stands for Pumps Industrial Internet of Things and represents our commitment to innovative design and customer satisfaction.

USE THE CO-PILOT TO:

- Plan maintenance
- Check operation
- Reduce manual inspections
- Track pump location
- Demonstrate run conditions to customers on warranty claims
- Improve run time through maintenance program

MONITORING AT YOUR FINGER TIPS

Monitor via desktop, iOS or Android apps to see pump performance, receive alarms for out of condition operation, and see last GPS location of pump. Makes it easy to see your pump's performance.

CORNELL CO-PILOT ALLOWS YOU TO:

- Cloud monitor single and multiple pumps via IIOT
- With battery power, monitor temperature, vibration, and GPS location
- Through external power, additionally monitor pressure, flow, start/stop operations and more*
- Track data over time via web-based and mobile apps
- Real-time pump data for maintenance, monitoring performance degradation, and critical conditions
- Receive alerts for preset running conditions

*Requires external sensors; contact Cornell for details.



CO-PILOT SYSTEM



RENTAL



ENGINE MONITORING VIA MODBUS

- Cloud monitoring of relevant engine data (Oil Pressure, Fuel Level, Engine Temp, etc.)
- SMS alerts available on engine parameters
- Monitor and be notified when engine diagnostic codes are present
- Remote Start/Stop Functions available with throttle control

Asset Tracking

- Track asset location via GPS
- Track utilization and operating hours

Sensor Monitoring

- Health Monitoring via Vibration & Temperature
- Pressure Transducers
- Flow Monitoring when connected to flow meter
- Monitor liquid levels when level transducer connected

Pressure/Flow Sensor Data

| | | |
|-----------------------|--------|---------|
| Suction Pressure | -10.89 | PSI |
| Discharge Pressure | -0.94 | PSI |
| Differential Pressure | 9.95 | PSI |
| Flow Rate | 0 | GPM |
| Flow Accumulation | 0 | Gallons |

Sample Sensors/Modbus

- Suction Sensor Status: ■
- Discharge Sensor Status: ■

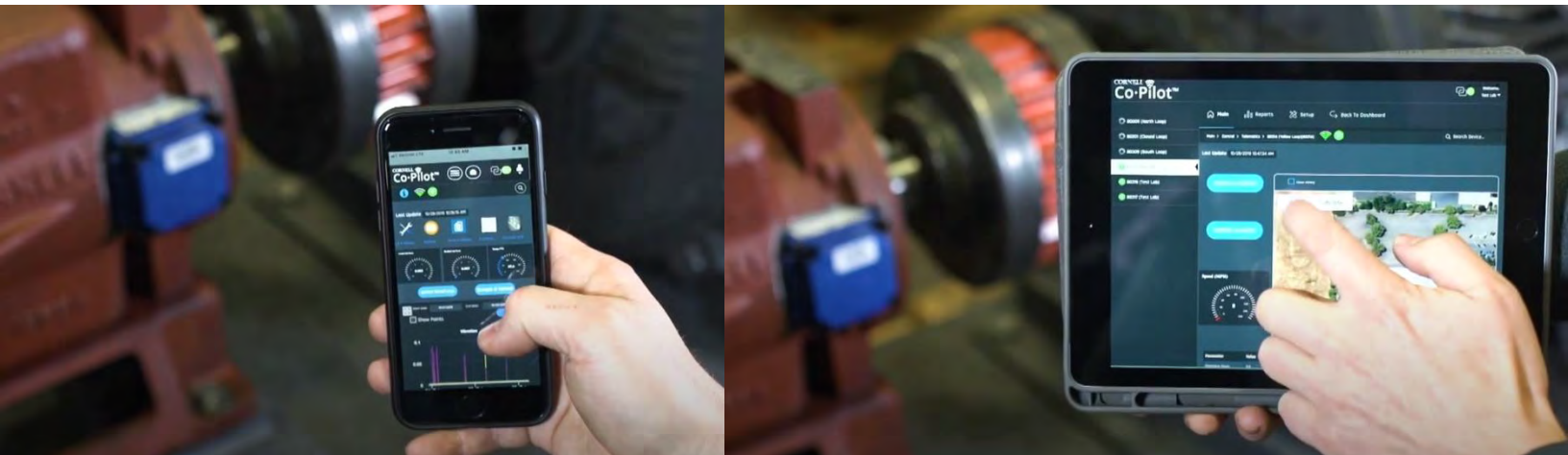
Engine Controller Data

| | |
|-------------------------|--------------------------------------|
| Prestart Warning/Fault | ■ |
| Remote Ctrl. Enabled | ■ |
| Engine Running | ■ |
| RPM | 1188.25 |
| Engine Hours | 1493.3 |
| Engine Coolant Temp | 121 °F |
| Engine Oil Pressure | 45.25/178 PSI |
| Fuel Level | 102 % |
| Fuel Consumption Rate | 13.65 Liters/Hour |
| Engine Battery Voltage | 14 VDC |
| Actual Engine Torque | 142 % |
| Scaled Transducer Input | 0 |

Vibration/Temperature Data

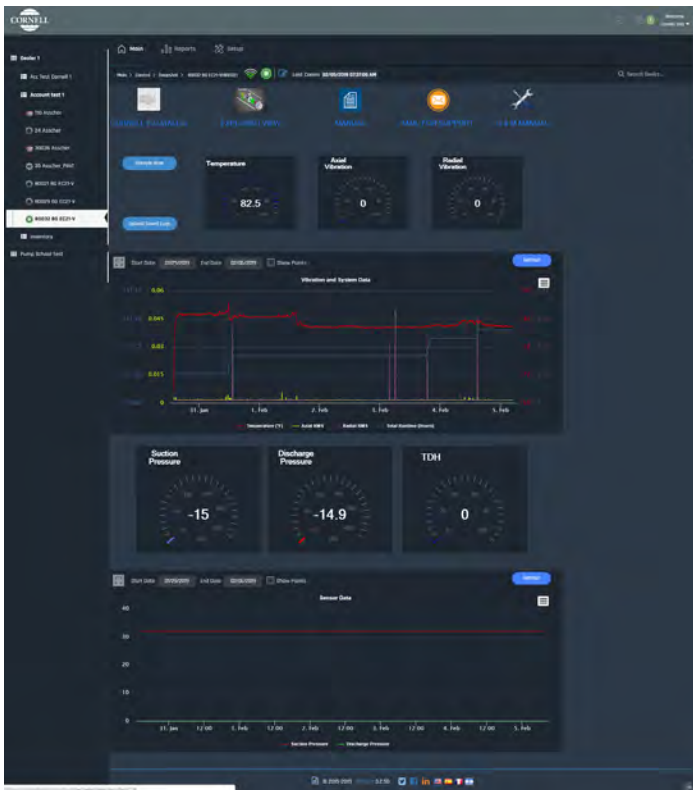
| | |
|------------------|--------------|
| Temperature | 86 °F |
| Axial Vibration | 0.491 In/Sec |
| Radial Vibration | 0.558 In/Sec |
| Operating Hours | 265.81 |

With Co-Pilot you not only know where your equipment is being used, but HOW your equipment is being used





Screenshots from the mobile Co-Pilot app.



Co-Pilot desktop version screenshot.

Get started at
CO-PILOT.CORNELLPUMP.COM

TECHNICAL SPECIFICATIONS

COMMUNICATION

- 4G LTE cellular cloud connectivity
- Monitor all connected pumps from a single app
- GPS Location Information
- Usable in North America currently with planned updates for Europe, Middle East, Asia, Sub-Saharan Africa & Australia

ON -BOARD MONITORING

- 3-axis vibration monitoring [Inch/Sec]
- Temperature $\pm 5^{\circ}\text{F}$ / $\pm 2.7^{\circ}\text{C}$
- Battery voltage [V]
- Up to 5 additional inputs to connect external sensors
- Modbus RS-485 to connect compatible engine controllers and VFD panels

NOTIFICATIONS

- Vibration threshold cross (Axial/Radial RMS)
- Vibration velocity amplitude threshold cross in any of the FFT-selected frequencies
- Operational time threshold cross
- Temperature threshold cross
- Other thresholds set for additional sensors (contact Cornell for information on connecting additional sensors)

DIMENSIONS/ OPERATIONS/STANDARDS

- 3.4" x 3.4" x 1.9" (86mm x 86mm X 48mm)
- Robust insulated enclosure
- IP65 compliant (dust tight and protected against water from a nozzle)
- FCC Part 15 and RoHS compliant
- Temperatures from -22°F / -30°C to 158°F / 70°C

POWER

- Battery operation: 1 yr @ 4 samples/ hour and 2 cloud updates per day
- External DC power: 9-30 VDC; up to 20 samples/ hour and 8 cloud updates per day



MARKET AND PRODUCT LINE



AGRICULTURE



FOOD PROCESS



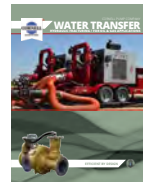
INDUSTRIAL



MINING



MUNICIPAL



WATER TRANSFER



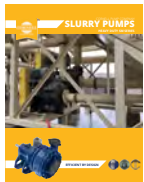
REFRIGERATION



CONSTRUCTION



SLURRY



SLURRY SM



MANURE



CUTTERS



SELF PRIMING



HIGH FLOW



MX SERIES



N SERIES



CYCLONE™



EDGE™



HYDRAULIC SUBS



IMMERSIBLE



CD4MCU



RUN-DRY™



PRIMING SYSTEMS



CYCLOSEAL®

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Cornell pumps and products are the subject of one or more of the following U.S. and foreign patents:
6,074,554; 6,036,434; 6,079,958; 6,309,169.

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