

CORNELL PUMP COMPANY

RPM² SEEKER

SATELLITE ASSET TRACKER



RPM²
REMOTE

CORNELL'S COMMITMENT TO PROGRESS



Cornell Pump Company's IoT ecosystem is a testament to our unwavering commitment to innovation and customer-centric efficiency improvements. We have seamlessly integrated cutting-edge IoT technologies into our pump systems, creating an interconnected network that redefines how our customers approach pump management. This ecosystem empowers our customers with real-time data insights, predictive maintenance capabilities, and remote monitoring, enabling them to optimize performance, reduce downtime, and maximize energy efficiency.

Our dedication to innovation aligns perfectly with Cornell's overarching goal of enhancing the operational experience for our valued customers. By embracing IoT, we have not only elevated the performance of our pump systems but also revolutionized how our customers interact with and benefit from our products. This ecosystem represents a harmonious blend of our century-long expertise in pumping solutions and the ever-evolving technological landscape.

Through this strategic fusion, we continue to empower our customers with the tools to make informed decisions, minimize disruptions, and drive sustainable growth. As we navigate the dynamic challenges of various industries, our IoT ecosystem ensures that our customers remain at the forefront of efficiency, productivity, and innovation. At Cornell Pump Company, we are creating pumps and shaping the future of pumping technology for a more connected and efficient world.



RPM² Seeker: Satellite Asset Tracker

Remote Product Monitoring and Management (RPM²) from Cornell offers convenient, easy-to-integrate satellite asset tracking options in powered and solar configurations.

Powered by the Globalstar Satellite network and the advanced RPM2 interface, these two components make knowing where a vehicle, piece of equipment, or tool is located and alert operators in case of unauthorized use or movement.

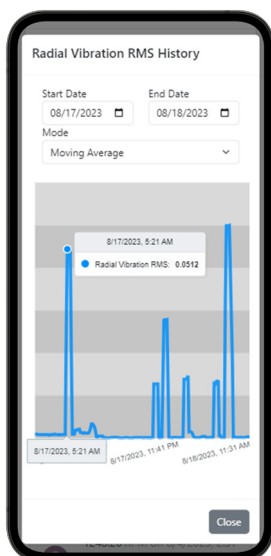
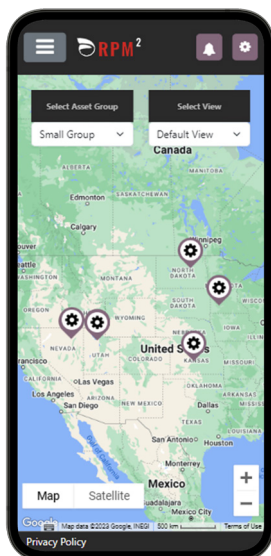
RPM2™ EQUIPMENT MANAGEMENT PLATFORM

What is RPM²

RPM² is a software platform that allows users to track, manage, locate, and perform predictive analysis on equipment with attached Internet of Things (IoT) hardware. The software enables different user level protection so a company can assign access pertinent to roles.

It allows groupings and comparative performance between and among groups and individual equipment, can alert if the equipment is out of condition or moved beyond a specified location, and keeps documentation, such as O&M manuals, operating curves, etc., centralized.

The software also offers a service log for each piece of equipment, allowing users to track the time and details of maintenance.



OPERATIONS

- Run Time
- Engine or motor condition
- Vibration and bearing temperature
- User defined alert conditions: available via email, SMS, or phone call, with timed escalations
- Flow rate
- GPS Location
- Alert if equipment moved beyond a determined area (GeoFencing)
- Asset recovery if stolen
- Location history

CONTROL

- Start and Stop Machinery
- Control Operating Speed
- Configure Automated Operating Parameters

ANALYSIS

- Comparative analysis of individual assets over time (usage, efficiency, etc.) and comparison across a fleet
- Leads to better business intelligence and decision-making

PREDICTIVE MAINTENANCE

- Establish baseline operation for equipment
- Leads to suggestions on when materials may need to be replaced:
 - Grease or oil in the bearing frame, based on run time
 - Engine lubrication/ service
 - Seals, Impellers, and other wear parts, based on performance
 - Flags equipment that is out acting outside of "normal."

RPM² SEEKER: TWO VERSIONS OF SATELLITE ASSET TRACKING

Address Loss Prevention and Asset Management

As part of the RPM² suite of hardware, the Seeker Satellite asset tracker comes in either an onboard-powered version or a solar power unit. By addressing the twin concerns of asset management and loss prevention at both fixed installation and remote mobile worksites, the units offer:

- **Global Transmission:** Employing the Globalstar network, the system works worldwide.*
- **Dependable Coverage:** works for fixed and mobile assets with exceptional uptime.
- **Reliable:** Employing the RPM² platform, the system offers consistent, predictable results.
- **Rugged Build:** Able to withstand the rigors of mobile placement, the RPM² Seeker Units will perform well for many years.
- **Affordable Operation:** RPM² offers top value for service in the mobile monitoring space.
- **Cost Reductions:** Saves the time and hassle of having to check on assets with remote monitoring.
- **Assurance:** Knowledge of what is happening with equipment and logging activity for better predictive maintenance.
- **Auto-Updating:** the system will receive new updates when they become available over transmission.
- **Easy Set-Up:** quick setup of the hardware and software that is intuitive yet powerful.
- **Safety:** The Seeker is ATEX certified and intrinsically safe to operate in harsh and dangerous environments.
- **Data Congruity:** Tracking multiple assets and data in one place, RPM² offers optimal management and visibility into your business operation in one simple yet powerful solution.

**Global Coverage does not include Australia and New Zealand*

POTENTIAL APPLICATIONS



TRANSPORTATION

Monitor & track assets and fleet movements even remotely.



OIL & GAS

Aids in mobilizing & deploying high-value assets in the field.



CONSTRUCTION

Determine if, when & where your valuable equipment is being used.



SECURITY

Keep track of valuable mobile assets such as rail cars, propane tanks, and AgTech.



MARINE

Monitor & track high-value assets, such as boats, barges, and containers, at the dock and off-shore.



OTHER INDUSTRIES

Mining, forestry, government, fisheries, etc.

SEEKER C SATELLITE ASSET TRACKER

RELIABILITY AND DEPENDABILITY MELED IN CONFIGURABLE FORM

Seeker C is a hidden low-power tracking device with a small form factor. Designed for lightweight input and event monitoring, the Seeker C can be line-powered or switched to battery backup in case of a power interruption or intermittent failures. With easy-to-source and replacement AAA batteries, the Seeker C is always vigilant and ready. Utilizing motion sensors, comparative GPS positions, and custom-configured sensors, Seeker C collects and disseminates asset status conditions.

FEATURES

- Low battery message
- No need to purchase expensive proprietary batteries for replacement
- Quick installation
- Track intermediate bulk containers, vehicles, and boats as a solution to improve your asset's operating efficiency and security
- Operates on external line power, regulator cable, or lithium batteries
- Contact closure parameters
- Diagnostic messages
- Automatic alerts if an asset moves outside of the predetermined range
- Operates on 5V external line power, 8-24V regulator cable, or (4) AAA Lithium batteries
- Hardware on/off feature: Allows the unit to initiate GPS re-centering functionality
- Satellite technology: Global LEO Satellite operation using the Globalstar Satellite Network.

Seeker C is an imminently affordable tracker with feature-laden options. Designed for intelligent operation with fixed and mobile assets, Seeker C is a practical solution in a small way-to-mount unit ideal for sending GPS coordinates at long intervals and configurable for various frequency rates.

The Seeker C's asset-ready design allows easy installation and field management without antennas or external power.

SEEKER C SATELLITE ASSET TRACKER

OPERATING SPECIFICATIONS DIMENSIONS



- 2.7 IN (H) x 3.25 IN (W) x 1 IN (D) (with brackets) weight
- 3.6oz/102g (with four batteries and mounting hardware) operating temperature
- -30° to +60° C Note: The unit shall remain operational over the -40° to +85°C range, though it may experience battery life and RF signal degradation line power
- 5v DC or 8-24V Input Cable with regulator battery type
- (4) AAA Energizer Ultimate Lithium (L92) Included 1.5V lithium
- Provides 1.5+ years of battery life
- Removes the need to purchase expensive proprietary batteries for replacement certifications
- FCC, ISED, CE, UKCA, ACMA, ANATEL, ENACOM, NOM, MTC, ARECOM, NCC, ICASA, TELEC, KCC, NTC, ITU (GMPCS) standards SAE J1455 MIL-STD 810NEMA 4X / IP68RoHS Compliant satellite technology
- Global LEO Satellite operation using the Globalstar Satellite Network. See the Globalstar website for Coverage Map.

ACCESSORIES

- USB Configuration Cable (Sold Separately)
- Combined Serial, 5v LP, I/O Cable (Sold Separately)
- Combined Serial, 8-24V Dry Contact Input Cable, I/O Cable (Sold Separately) Feature Set standard messaging
- Wake, GPS locate, transmit location, resume sleep
- 12 programmable sleep time-of-wake settings integrated accelerometer
- Message on start and stop
- Engage interval to override on a motion for a set time or while in motion alternative reporting
- Supervisory reporting schedule triggered by alarm or motion
- Transmits GPS location at intervals for programmed time or while the alarm remains active change of location
- Theft alert reporting based on distance moved
- Reduced messaging mode serial communication capability
- User-defined messages
- Serial (TTL) I/O capability to interface with remote passive and smart sensors and deliver user-defined messages

SEEKER SOLAR ASSET TRACKER

SOLAR-POWERED ASSET TRACKER CERTIFIED INTRINSICALLY SAFE TO ATEX ZONE 0 AND HERO

Solar-powered and designed for demanding environments, this industrial IoT asset-tracking device is intrinsically safe and maintenance-free for tracking, monitoring, and data collection.

Seeker Solar's integrated solar panel and battery capabilities deliver up to 10 years of life with minimal maintenance. This asset GPS tracking device easily mounts to any fixed or mobile asset for intelligent tracking, and monitoring. Seeker Solar has unparalleled safety/device certifications such as ATEX, IECEx, and North America, IP68/69K, HERO certifications, and others to meet the needs of every application.



KEY FEATURES

- Solar-powered with up to 10 years of battery life
- Intrinsically Safe IoT asset tracking solutions
- Bluetooth interface for configuration and firmware updating
- Two dry contact or wetted-voltage inputs available to manage engine run time, tank level, or various alarm inputs
- Quick and easy installation requires no harnesses, external power, or external antennas

WIDE RANGE OF REPORTING CAPABILITIES

- Geofencing with the configurable range setting
- Low battery message
- Contact closure parameters
- Diagnostic messages

BENEFITS

- A maintenance-free device as the power of the sun recharges its batteries, providing up to 10 years of usable service
- Delivers reliable location reporting for assets deployed worldwide – providing security and improved efficiency for your business
- Easy to install as simple packaging requires no harnesses, external power, or external antennas
- Two dry contact or wetted-voltage inputs available to manage engine run time, tank level, or various alarm inputs

RPM² SEEKER SPECS

DIMENSIONS

3.25 IN (H) X 7 IN (W) X 1.125 IN (D)
8.26 CM (H) X 17.78 CM (W) X 2.86 CM (D)

WEIGHT

13.5 oz/385 g
With optional mounting bracket 40.57 oz. (1150 g)

OPERATING TEMPERATURE*

-40° C to +65° C (-40° F to 149° F)
NOTE: The unit is certified intrinsically safe for hazardous environments over the temperature range of -40° C to +65° C (-40° F to 149° F).

INPUT VOLTAGE

10 TO 48 VDC
NOTE: The device is not intrinsically safe when any cable is connected.

BATTERY TYPE

Built-in rechargeable NiMH batteries (non-replaceable)

CERTIFICATIONS & STANDARDS

FCC, ISSED, CE, AUS/NZ, ANATEL, INMETRO CERTIFICATE – LMP 19.0127 X, JQA(JAPAN), IFT, ARECOM, ENACOM, KCC, NCC, ASEP, AND ICASA

ATEX/IECEx II 1 G, Ex ia IIC T4 Ga For international Zone 0 applications, HERO

North America cETLus:

- Class I, Division 1, Groups A-D, T4
- Class I, Zone 0, AEx ia IIC T4 Ga
 - WEEE Compliant
 - GMPCS-MoU
 - IP68/69K
 - MIL-STD-810G for:
 - Immersion
 - Impact resistance
 - Salt Fog
 - Acidic Atmosphere
 - Humidity
 - Vibration

RPM² Seeker Solar operates on one of the world's most modern and fastest satellite networks and is powered by the sun. This IoT device provides excellent remote monitoring and tracking capabilities. Seeker Solar's NiMH rechargeable batteries deliver up to 10 years of usable service, drastically reducing maintenance time, labor, and parts costs. It lets users intelligently configure reporting times and intervals for custom information delivery. The Seeker Solar has unparalleled safety/device certifications such as ATEX, IECEx, North America, IP68/69K, HERO certifications, and others to meet the needs of every application.

CORNELL PULSE™



CORNELL
 Pulse™

An innovative technology that makes monitoring your pump easier than ever.



MONITOR PUMP
HEALTH ONSITE



LOG REPORTS TO REVIEW
AND COMPARE



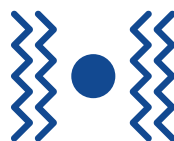
ACCESS INFORMATION VIA
AN EASY-TO-USE MOBILE APP



GAUGE BEARING FRAME
TEMPERATURE



USE ONBOARD POWER FOR UP TO
THREE YEARS FOR CONSISTENT,
ACCURATE READINGS



MEASURE PUMP VIBRATION
SEVERITY



DISTINGUISH/RENAME PUMPS
FOR GREATER CLARITY IN
MULTIPLE PUMP INSTALLATIONS

LEADING-EDGE REAL TIME SNAPSHOT

Cornell Pulse is an innovative technology that allows a user to measure a pump's vibration severity and temperature in real time. Pulse is a compact (approx. 1.5"/4CM diameter) pump-mounted wireless device that captures pump data when queried by the end user. Helpful pump measurements, such as temperature and vibration, are viewed by logging into a mobile app for phones and tablets. When coupled with our Remote Pump Maintenance and Monitoring (RPM2®) system, Pulses report data to the cloud and track pump and other rotating equipment conditions. RPM2® can also record the GPS location from where the scan took place. The detection of common pump problems is vital to increasing the lifespan of a pump and its efficiency.

As the name implies, the Pulse allows a user to check a pump's health quickly. The Pulse is a robust wash-down duty unit that can last around three years with daily measurements (more frequent measurements use battery power and reduce service life.)



CORNELL CO-PILOT™



Connect via Cell Network



5 Sensor Inputs



Remote Control



CORNELL Co·Pilot™

THE POWER OF IOT

Cornell Co-Pilot is a telematics monitoring system that mounts on your pump and is externally powered by 12-24 VDC via battery or wired connection. Co-Pilot harnesses the power of IoT (Internet of Things) by delivering you the control and data you need to maximize your pump's efficiency, compare data across multiple pumps, and manage maintenance all from your phone, tablet, or PC. We at Cornell pride ourselves in providing quality, user-friendly pump monitoring solutions that reflect our dedication to cutting-edge design and meeting customer needs.

USE THE CO-PILOT TO:

- Plan maintenance
- Check operation with real-time pump data, and monitor performance degradation and critical conditions.
- Get alerts from out-of-condition operation
- Reduce manual inspections
- Reduce warranty claims
- Improve efficiency
- Compare data across multiple pumps
- Better asset management
- Cloud monitor single and multiple pumps

MONITORING AT YOUR FINGER TIPS

Easily monitor your pump's performance and get remote control through your PC and mobile apps available for iOS and Android. Receive alerts for out-of-condition parameters and view the GPS location of the pump(s). Set up user accounts for employees and end users in one convenient platform.

CORNELL CO-PILOT ALLOWS YOU TO:

- GPS location and history
- Flow rate & accumulation with compatible flow meter
- Suction & discharge pressure
- Radial & axial vibration
- Temperature
- Remote start/stop and adjust RPM
- Engine/Motor data
- Operation hours
- Fluid levels

*Requires external sensors; contact Cornell for details.

PART OF RPM² ASSET
MANAGEMENT SYSTEM



CORNELL PUMP COMPANY MARKET & PRODUCT LINE



AGRICULTURE



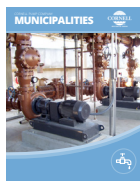
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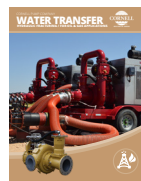
INDUSTRIAL



MINING



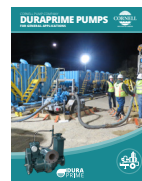
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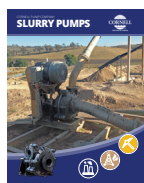
WATER
TRANSFER



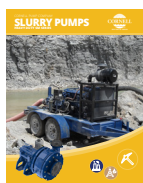
REFRIGERATION



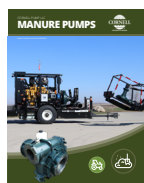
CONSTRUCTION



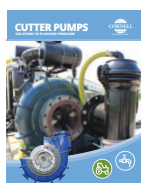
SLURRY



SLURRY SM



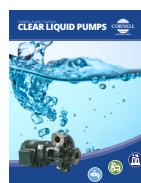
MANURE



CUTTERS



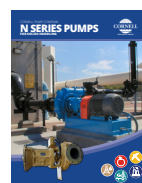
SELF PRIMING



CLEAR LIQUIDS



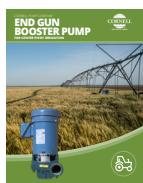
MX SERIES



N SERIES



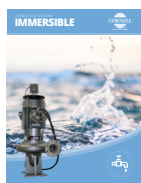
Z-SERIES



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; 6,104,949; 12,270,421 B2

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