

ENGINEERING
TOMORROW



Danfoss Telematics Solutions

Using **data** to drive
efficiency and profit

**Plug and
perform**

versus code and compile.

Danfoss Telematics Solutions turn **knowledge** into **profit**

The world today runs on data. It's everywhere, streaming to and from our computers, tablets, smartphones — and increasingly, our cars, trucks, and heavy equipment of all descriptions.

Danfoss Telematics Solutions help you and your customers benefit from that ever-widening data flow by using it to boost efficiency and product lifespan, minimize downtime, report equipment location, use and condition — and more.

**Instant
retrofit**

of existing machines.



Comprehensive telematics capabilities from the leader

With Danfoss Telematics Solutions you get access to more than 30 years of experience in mobile electronics and application know-how. All of this knowledge is now available through an affordable plug-and-perform solution for new machines and existing fleet retrofits.

While other telematics solutions offer bits and pieces of capability, Danfoss brings the comprehensive suite of telematics performance into an all-in-one system.

Get the features customers demand, with plug-and-perform convenience

Telematics has become a megatrend in heavy equipment industries as more companies of every size see profit in having an at-a-glance, 24/7, real-time overview of their entire fleet. As the amount of information telematics can deliver deepens, demand for it will only accelerate.

Now Danfoss Power Solutions provides OEMs with a way to integrate telematics into their product lineup and instantly compete with even the largest industry players.

Danfoss Telematics Solutions can be integrated into your OEM process without the need for specific programming knowledge. What's more, it can also be easily retrofitted to customers' entire fleets without having to change a single line of software code.

This plug-and-perform capability saves you time and money and instantly lets you compete for customers who want telematics capabilities.

The powerful platform that's engineered for the future

Danfoss Telematics Solutions were engineered with the future in mind. The system is a robust, open, and flexible solution that allows you to create custom applications and services to differentiate yourself from the competition.

Danfoss Telematics Solutions integrate seamlessly with the PLUS+1® development and service tools, allowing for real-time remote access to applications. All PLUS+1 service tool features are available for connected machines, allowing for adjustments to PLUS+1 application parameters or updates to PLUS+1 software.

It's also designed with plenty of power and capacity to handle upgrades as the capabilities of telematics grow and expand. Once the system is part of their equipment, it creates an opportunity for OEMs to generate revenue streams by offering customers telematics software and additional services that keep them on the cutting edge.

You get better, faster downloads thanks to HSDPA (High Speed Downlink Packet Access) and HSUPA (High Speed Uplink Packet Access), and even faster speed coming soon.



**One
solution**
for global connectivity.



Networked data and computing power drive efficiency to new heights

Telematics is the combination of machine-integrated technology; satellite and cellular network connectivity; and a customizable, intuitive user interface that gives fleet owners ever-growing visibility of how, when, and where their equipment is used.

Imagine the benefits of knowing at a glance

Data analysis: Instant awareness of when each machine is due for maintenance, and if any machine is showing signs of an impending breakdown days before it fails.

Remote diagnostics: Knowing why a machine broke down without having to send a technician to a jobsite can dramatically reduce downtime, labor and travel costs.

Location and tracking: Know where, when, and how long every machine is used.

Automated reports: Generate customized reports at whatever intervals you choose to save time on fleet administration and work reports.

Machine efficiency: Check the efficiency of operation and detailed system settings and optimize parameter settings of remote machines in real-time.

Frequency and duration use: Knowing how often and for how long each machine on a jobsite is used can help you allocate equipment resources more effectively.

Experience a powerful, intuitive user interface

Having a river of data flowing in doesn't do you much good without a powerful tool to make sense of it. Our Web browser-based access portal, which can be customized with your business's logo, gives customers an easy-to-use tool to get the most out of their data flow.

Danfoss Telematics Solutions provide an interface that is compatible with Mac, PC, and mobile platforms and can be customized to each customer's unique needs to avoid information overload in favor of monitoring key metrics that mean the most to them. Among the many functions:

Customized alarms bring things like breakdowns, impending maintenance needs, and improper use or operation in an unauthorized location to your attention.

Geotracking and geofencing uses GPS, GLONASS and BeiDou to track equipment movement or define the area where it can operate.

A record of use for every piece of equipment let's you see how, when, and where it was used, hour by hour, day by day, if desired. Excellent for everything from efficiency analysis to accident investigation.

Automated job reports let you instantly generate or schedule reports on how much time each piece of equipment was used on a jobsite, or any other criteria you choose. Employees' manual time-logging could become a thing of the past.

Get the data flowing with Danfoss Telematics Solutions

Danfoss Telematics Solutions are engineered for peak performance in all areas of telematics.

Gathering data: Danfoss has data capture systems that can be integrated by OEMs to add value to their products and retrofitted to existing equipment to build or expand the networked fleet. We've done all the research and development, testing, and perfecting for you. And for equipment that already has the PLUS+1® Service Tool, retrofit is as easy as changing a cable.

Transmitting data: Danfoss Telematics Solutions don't lock your customers into a single network provider. They can choose the provider that best fits their needs — prepaid, flat rate, local, global, cellular — the flexibility is virtually unlimited. By using GPS, GLONASS and BeiDou, the system ensures that no matter where you send equipment or where you do business — down the street or around the world — you'll always stay connected.

Interpreting the data: Our solution includes a robust and versatile Web-based interface that can be customized to your OEM brand and offers all the functionality, features, and customization of competing telematics solutions.

Storing data: Danfoss Telematics Solutions allow you to store real-time data for offline analysis of system behavior. This allows you access to historical data so you know exactly what your machine was doing at any point in time.



Our telematics application integrates seamlessly with the industry-proven Danfoss PLUS+1 Service Tool. Retrofitting equipment is as easy as replacing a cable.

Boost your business with telematics

Telematics is creating big efficiencies for companies of all sizes, and the trend will only get bigger as technology evolves and data flowing from equipment becomes increasingly valuable.

What do Danfoss Telematics Solutions do for you?

Immediately and affordably get you into the telematics-enabled machinery market, without the need to develop or create your own proprietary system.

Allow you to offer customers an easy-to-use system that lets them tap into the profit-driving capabilities of telematics.

Create ongoing revenue streams through things like monitoring fees and service contracts, and deepen customer relationships through telematic-enabled service offerings.

Enhance your brand by offering leading-edge features on equipment.

Let you serve customers through proactive maintenance offerings.

While other providers hit original equipment manufacturers (OEMs) for costly upgrades and additional features, Danfoss takes care of life-cycle management for the system, providing flexibility and controlling costs.



Protect your investment

Danfoss Telematics Solutions offers features that can stop thieves in their tracks, including:

Geofencing: Protect your fleet using virtual fences. Individual actions can be defined based on events. Owners can be notified by SMS or email in real-time.

Three-axis accelerometer: Users can define and trigger actions based on G-forces measured on the machine.

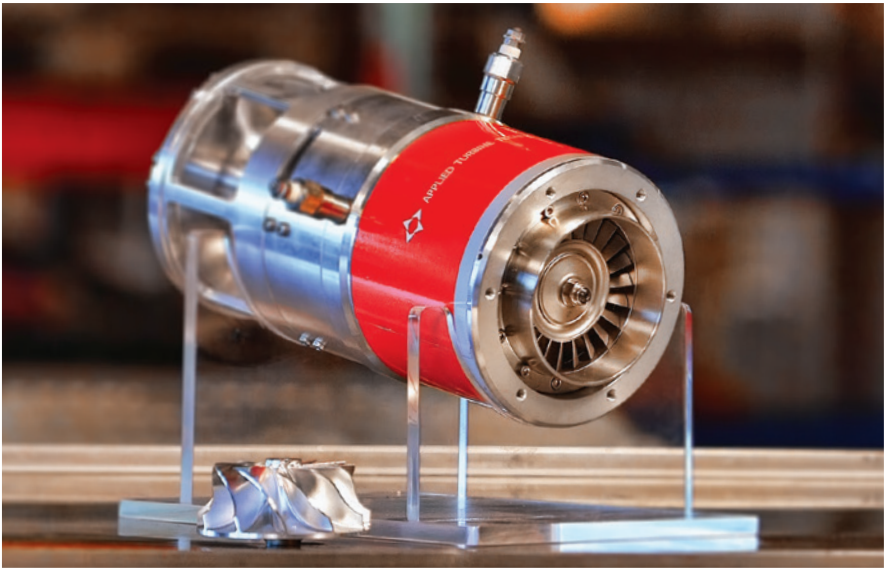


Remote access

to all important vehicle data and service functions.

Danfoss Telematics Solutions enable equipment innovation

The use of road drying equipment is common in Europe. But as more and more European cities ban the use of traditional, open-flame, propane-powered dryers, Applied Turbine Technologies (ATT) sees opportunities to adapt new technology to the task.



Drying streets requires moving heated air rapidly over the pavement. Leaders at Applied Turbine Technologies immediately recognized the potential of diesel-powered micro-turbines, which are about the size of large coffee cans, to provide an alternative to the propane-based driers. Each micro-turbine can create airflow of 50 cubic meters per minute at up to 650 degrees Celsius (1200 degrees Fahrenheit).

On top of their ability to move air and generate heat, micro-turbines' compact size allows road dryers to be small enough for just one person to operate. A traditional, propane-fueled dryer often requires a crew of three and sometimes a large support truck to do the same amount of work.

The maintenance challenge

In contrast to the impressive capabilities that promised cost-saving efficiencies, ATT found one impediment to the adaptation of micro-turbines to road drying use: Micro-turbines are extremely sensitive and require a great deal of preventive maintenance. In fact, the engine box needs to be replaced

within the first 150 hours of operation. A watchful eye is required to keep the machines running at peak efficiency and avoid costly downtime.

The watchful eye of telematics

ATT created their watchful eye by integrating Danfoss Telematics Solutions into their Zirocco micro-turbine-powered road dryer.

"We had some issues on how to get this machine built so that it's more of an industrial machine," said Lars Mellgaard CEO of Applied Turbine Technologies. "We had a connection to Danfoss Power Solutions, which helped us get the right solution for the machine. It's very important that our customers can continue to operate and earn money every day."

ATT integrated the Danfoss DP 250 display, PLUS+1® MC 050, and Danfoss Telematics Solutions into their Zirocco dryers. The combination allows ATT to remotely monitor their customers' road dryers in real time.



"Danfoss Telematics Solutions can tell us when we have reached our 150 hours," said Mellgaard. "We can watch and send an engine box to our customer before the breakdown comes."

Including Danfoss Telematics Solutions in the Zirocco dryers helps most customers see return on investment after just 50 to 60 kilometers of use, Mellgaard said. Danfoss Telematics Solutions also allow companies to easily document and report their road-drying work, which is often required by government agencies, and also enables additional features such as machine tracking and geofencing.

Helping turn ideas into reality

Applied Turbine Technologies credits Danfoss for providing the critical machine health monitoring capabilities needed to transform the concept of micro-turbine-powered dryers into a successful product.

"Regardless of the industry and type of equipment," Mellgaard said, "partnering with Danfoss can help turn a great idea into an executable reality that drives productivity for both equipment manufacturers and end users."

Learn more about Danfoss Telematics Solutions

To learn more about how our solutions can drive profit for both you and your customers, contact your Danfoss distributor today, or go to powersolutions.danfoss.com

About Danfoss Power Solutions

Danfoss Power Solutions is a global manufacturer and supplier of high-quality hydraulic and electronic components. We specialize in providing state-of-the-art technology and solutions that excel in the harsh operating conditions of the mobile off-highway market. Building on our extensive applications expertise, we work closely with you to ensure exceptional performance for a broad range of off-highway vehicles. We help OEMs around the world speed up system development, reduce costs and bring vehicles to market faster.

Danfoss Power Solutions – your strongest partner in mobile hydraulics.

Products we offer:

- Bent Axis Motors
- Closed Circuit Axial Piston Pumps and Motors
- Displays
- Electrohydraulic Power Steering
- Electrohydraulics
- Hydraulic Power Steering
- Integrated Systems
- Joysticks and Control Handles
- Microcontrollers and Software
- Open Circuit Axial Piston Pumps
- Orbital Motors
- PLUS+1® GUIDE
- Proportional Valves
- Sensors
- Steering
- Transit Mixer Drives

Wherever off-highway vehicles are at work, so is Danfoss Power Solutions. We offer you expert worldwide support for ensuring the best possible solutions for outstanding performance. And with an extensive network of Global Service Partners, we also provide you with comprehensive global service for all of our components.

Go to www.powersolutions.danfoss.com for further product information.

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