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*Your Guide to*  
**GREATER EFFICIENCY**  
*and* **REDUCED RISK**

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**ENGINE ANGEL®**

# A Groundbreaking Concept

Engine Angel® (patent pending) is a groundbreaking concept in fleet management incorporating all of your fleet and external data into one system. Using state-of-the-art sensors and advanced analytical software, Engine Angel brings predictive capabilities to fleet owners, mechanics and maintenance shops.

- **Risk reduction** – Engine Angel proactively identifies high-risk situations for better risk management
  - **Lower costs** – Fix it in-house, not on the road, before it breaks
  - **Regulations compliance** – Improve federal compliance, safety and accountability, resulting in lower CSA scores
  - **Improved fuel economy** – Sophisticated analysis of *all* factors impacting fuel economy, not just a few
  - **Streamlined maintenance** – Quickly, easily and accurately identify engine mechanical problems
- **Comprehensive** – No other fleet management software captures as much data about your fleet as Engine Angel – and no other software takes a predictive approach to managing your fleet, turning all of that data into useful information

**Put the innovative new Engine Angel to work for your fleet and shift gears from “reactive” to “proactive.”**



## Get Ahead of Your Fleet with Engine Angel®

- Predictive failure analysis
- Integrate all of your data in one place
- Sophisticated reports and information from fleet data
- Technology unlike any other fleet management system available today

# For Fleets of Any Size

Whether your fleet has eight or 800 trucks, Engine Angel® can provide the information needed to make the best decisions for all of them. Engine Angel integrates proactive alerts, driver and vehicle performance data, and a wealth of other useful information to improve fleet safety, efficiency and compliance.

No more deliveries on a wing and a prayer. And there is a lot more coming from Engine Angel down the road, as we enhance the features and predictive capabilities.



## **Peak Reliability**

Advanced, affordable, mechanical integrity analysis has arrived with the Engine Angel® assessment (patent pending).

- Simple to use
- No tools
- No engine modifications
- No power source
- No calibration
- Fast and accurate

# Keep Your Motor Running



## Engine Assessment and Analysis Find Problems Fast

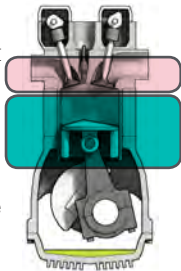
Engine Angel® uses state-of-the-art sensors and advanced analytical software to provide an accurate assessment of an engine's mechanical integrity. No special tools or modifications to the engine are required. And with the fuel injector fuse removed, a cold-crank compression test can be completed in about five minutes.

No other device or system on the market allows such easy, fast and accurate detection of:

- Weak fuel injectors
- Poor compression
- Damaged head gaskets
- Valve lash and seating problems
- Variability between cylinders
- Blow-by (ring and piston problems)

SenX  
TECHNOLOGY

Exhaust



Crankcase

## Engine Angel® SenX Engine Assessment

Engine manufacturer/model: Detroit Diesel S60

Strokes per cycle: 4

Number of cylinders: 6

Straight (I) or V: I

Odometer: 567,639

Cold crank (C), Idle (I), Load (L): L

Engine rpm: 1,511

Engine temperature: 60°F

## Assessment

Exhaust: 8 out of 10 (1 is best)

Crankcase: 2 out of 10 (1 is best)

Valve lash adjustment: 4

Valve seating: 2

Engine cold so valve seating is unreliable

Message: Analysis completed and displayed

Confidence: 1



## How It Works

SenX FirstLook® sensors detect high-frequency pulses from the engine exhaust through the exhaust pipe (or stack) and crankcase through the oil dipstick tube. When connected to a computer system with the appropriate software, the system displays valuable information about the physical condition of rings, pistons, cylinder walls, valves, gaskets and the ignition system.

The patterns are predictable for each engine, and any change or irregularity can be an indication of a physical problem with the engine. The pulse wave also can be affected by unburned fuel in the exhaust, which is also detected and displayed.

When connected to a laptop equipped with a PC oscilloscope and with Engine Angel® software, the results are converted from analog to digital, then

uploaded to secure on-line storage. From there, Engine Angel analyzes the data and provides reports customized for each fleet manager's needs.

## Predictive Failure Benefits

By storing SenX signatures at each oil change, Engine Angel can detect gradual degradation to predict "mean time to failure," either in miles or hours of operation. With this information, fleets can achieve:

- Fewer breakdowns on the road
- Fewer disappointed customers
- Less scrapped cargo
- Lower towing and (overtime) repair costs
- Fewer wasted driver hours
- Lower dynamometer and compression test costs

# Additional Engine Angel Benefits

## **Informative**

Engine Angel® provides fleet managers the data and tools to support better decisions by collecting, storing and analyzing a broad and expanding array of fleet data.

## **Low Cost**

Engine Angel is priced “à la carte,” so you purchase only what you need from a menu of reports and analysis features.

## **Easy Sign-Up**

Engine Angel support staff will assist you with the process of enrolling your fleet, bringing in data from all of your separate systems, spreadsheets, paper files or however you currently store data. Training videos, user manuals and technical support are available to ensure smooth enrollment.

## **Fast Support**

Support is an email or phone call away. As our subscriber base grows, 24/7 global support will be provided.

## **Secure Data Storage**

Security is a high priority for Engine Angel. We secure all data using standard methods such as encryption and SSL certificates, in addition to segregating data by customer so no subscriber can access another subscriber's information.

**Stop chasing your fleet and switch gears from “reactive” to “proactive” with Engine Angel.**





# Get On Board

Have an angel watch over your fleet – subscribe to Engine Angel® and see your fleet in a whole new way.

Learn more at [www.engineangel.com](http://www.engineangel.com) or contact us at [info@engineangel.com](mailto:info@engineangel.com) or 1-844-ENGINE-4 (364-4634).