Engine Angel User's Guide

Aug 2014

Introduction

Engine Angel is an application that helps fleets manage their operations. Although we have great plans for expansion in the future, we currently are focused on the improved operation of your equipment engines.

Our approach is to collect data already available to you and provide methods for some additional data inputs to keep the cost, error-rate, and time required down. We then harmonize that data (put it in consistent units of measurement and formats) and synchronize it (line it up in the sequence of events, no matter the time-zone).

Engine Angle is designed for many businesses that use internal combustion engines. Some fleets use semis with tractors and trailers; others use trucks with cargo on the same frame; buses with passengers; ships and yachts; tug-boats might pull barges; farm tractors pull a variety of machines; and even stationary generators and pumps can be managed as fleets of engines that don't move, but output product besides moved cargo.

We use the term, **vehicle**, to represent a unit that is self-propelled and may be pulling another cargo carrying vessel (**trailer**); in the case of stationary engines, engines are placed in certain **facilities**. Engines might be primarily for propulsion (typical case) or might be providing energy for refrigeration, air conditioning, or other 'pony' role.

Like many other products, Engine Angel provides a family of reports showing how the equipment has been performing in the past. In addition, Engine Angel focuses on the future using **forecasting** (trend analysis projecting one operational parameter into the future using its past) or, more powerful, using **prediction** where we calculate future risks from models that include many factors.

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Background

Your business is quite complex and so there are many elements to making it run better. Whether you are an Owner-Operator or a several thousand power-unit operation, you have highly technical and expensive equipment (vehicles and trailers), specialized employees (drivers, mechanics, dispatchers, etc.), many expense items, and regulations. And all of these are changing over time.

So you know it takes a lot of data to keep track of these things, and 'big data' to cover the things that change what your fleet is responsible for. In the following document, we describe the process by which it becomes feasible to collect this data, harmonize and synchronize it, to give you a clear view of what has been happening and what is likely to happen in the near future to allow you time to prevent, or prepare for those eventualities before they become crises.

Engine Angel is designed so that you can start with a piece of your operations and receive a benefit; then, as time goes on, you can add more detail to get additional benefits in the future. We start with your vehicles and engines and some of your employees.

In this document, we will describe the kinds of data we need about your company, fleets, people, equipment, and the capabilities you want Engine Angel to provide. We have screens to allow your people to maintain the master data about each of the categories listed, but for initial load it might be much more efficient to use spreadsheets from your existing systems to setup (onboard) your master data. We discuss this approach in more detail in the **Onboarding** section later in this document.

To get information from your engines, we use SenX FirstLook® sensors and the ECM data from your engine computers (DDEC for now, but we plan to expand to others, prioritized by you, our customers). This does mean that you would have to establish regular tasks for your people to collect this data. Engine Angel has some tools to simplify this data collection and transmit it to Engine Angel error-free and timely. You will want to communicate your plans to any 3rd parties that you use for maintenance and repairs so they might begin to get prepared for some training on some new procedures.

Getting Started

There are several steps to 'getting started'. It begins with the Engine Angel web-site, www.engineangel.com.

First you will want to review the Terms & Conditions and Privacy Policy. You are probably familiar with the website, assuming that you have downloaded this copy of the User's Guide from it.

If you have not yet established an account for your fleet, click on the 'Request one' on the upper right of the display. Here you will be asked for some basic information about your company. This information will be used by the Engine Angel staff to be alerted to your interest so they can prepare to help you.
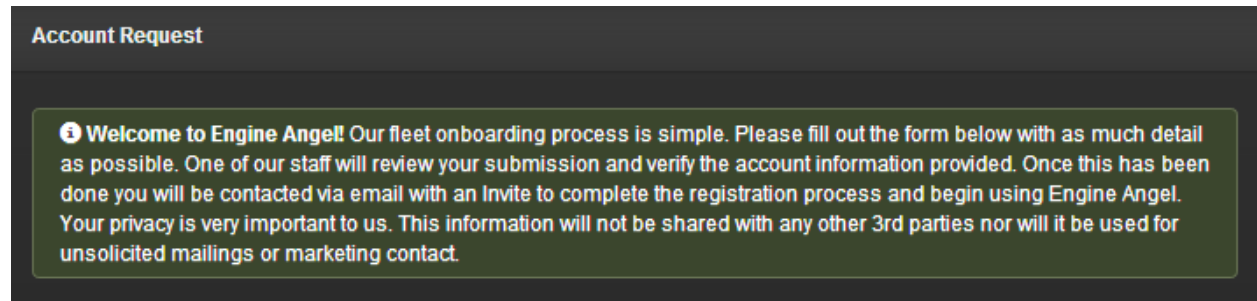
You might notice that the date and time are Universal Time Coordinated, which is the time zone for transactions so that events can be synchronized no matter the time zone.

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The paragraph welcoming you is more readable on a computer screen:

Account Request

ⓘ **Welcome to Engine Angel!** Our fleet onboarding process is simple. Please fill out the form below with as much detail as possible. One of our staff will review your submission and verify the account information provided. Once this has been done you will be contacted via email with an Invite to complete the registration process and begin using Engine Angel. Your privacy is very important to us. This information will not be shared with any other 3rd parties nor will it be used for unsolicited mailings or marketing contact.

Although you might later add other specialized fleets to your company, the information requested here is for the fleet that you intend to load first into Engine Angel. Some of this data will be used to harmonize data: Is your company 'metric'? ; What currency do you keep in your bank accounts? , What are your USDOT number and EIN number? Then you are asked to identify yourself as an Account Admin and provide contact information in case of future questions and responses.

Account Request Confirmation

Thank you for your request
Your account request has been sent to the Engine Angel Staff. We will email you at the email address you listed with further steps.
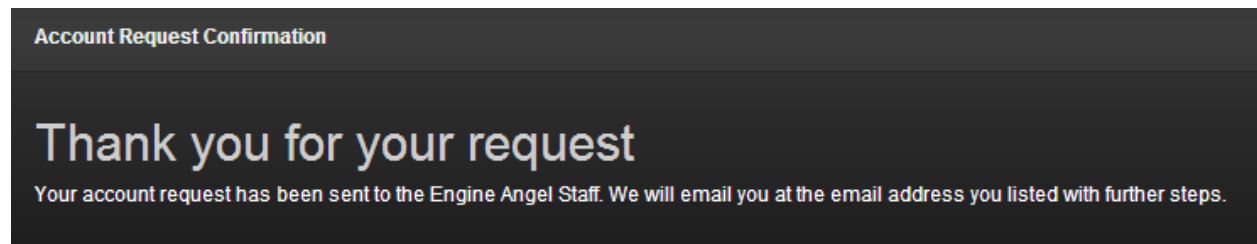
Response by Engine Angel is an email from info@engineangel.com :

Welcome to Engine Angel!

You can continue your account creation: **Create Account**
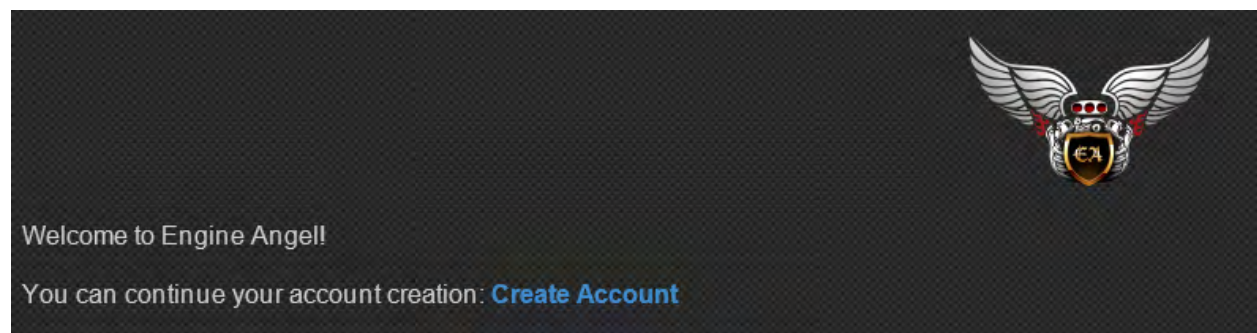
Create Account

The email response to your request is a link, Create Account.

Your organization's account is administered by a single user. This account will have administrative access to all fleet and account details including financials, purchases, and employee information.

Provide the Username and Password that you wish to use, and verify it. The Password must be at least 8 characters long and must contain at least one number, one lower case letter and one upper case letter. New passwords should not be a repeat of any of your previous passwords for this site.

Next, tell us who to contact in your organization. This is the person who will verify or authorize any interactions with the Engine Angel system and be the primary point of contact. It is usually the person who established the account.

Enter the Fleet Name and DOT Number for your first fleet. Once your account is fully configured we can begin the process of adding all of your fleet assets. For now, let's just setup the fleet name and USDOT number.

Next identify who is to be the Fleet (Employee) Manager. (This person may be the Account Admin identified earlier.) The employee Manager has access to create new users for the Fleet and manage Operations and Cockpit areas. This person will facilitate the remainder of the onboarding process.

Next, click on the Create Account button.

You're done!
Create your account, login, and begin configuring your fleet(s).

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Sign In to the Managers' Cockpit

Now that you have the Account setup, you can sign-in using the Sign-In button on the original screen: www.engineangel.com. If at any time you need to logoff, click on the "On/Off" symbol [image] in the upper right corner.
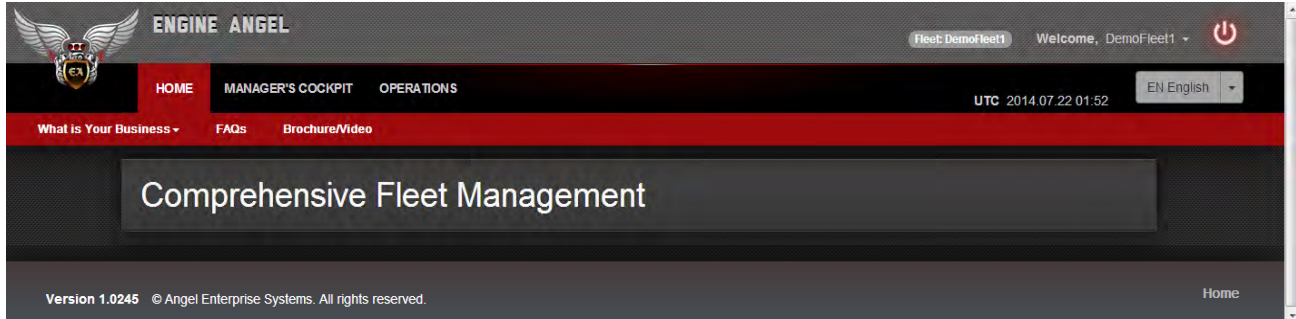
Click on the Manager's Cockpit:
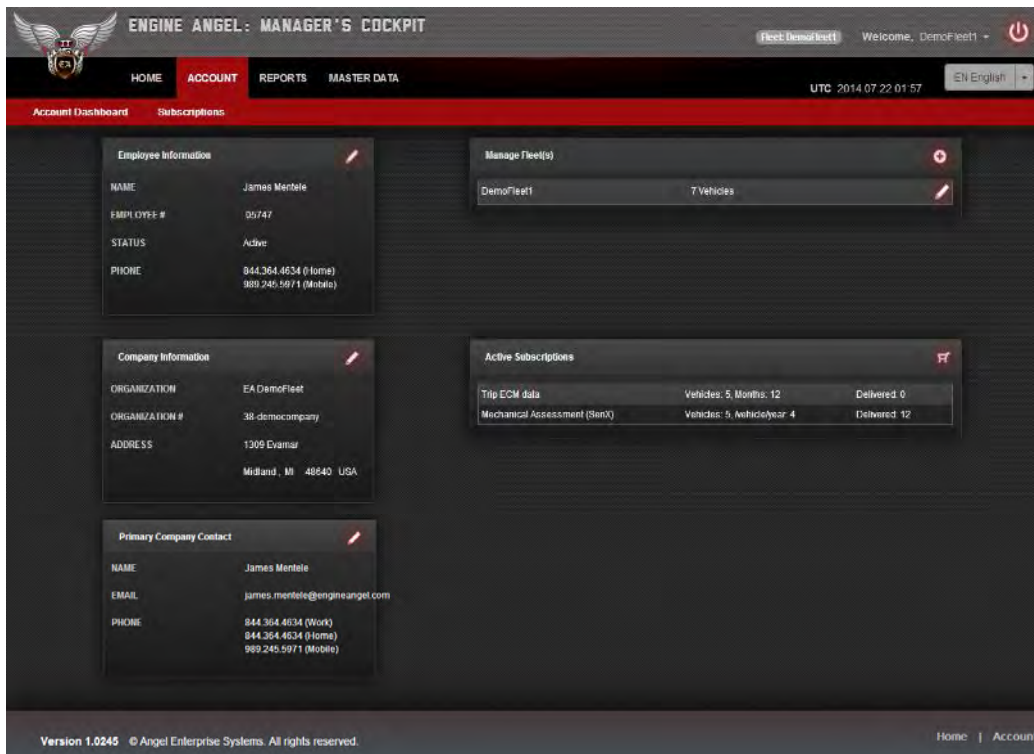
Under the ACCOUNT menu is the Account Dashboard where you canupdate your information in the **Employee Information** box, the **Company Information**, and the **Primary Company Contact** Information.

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Fleet Information

The next step is to verify what has already been input for the Fleet and define the Fleet in more detail with **Manage Fleet**(s).

The Fleet Name must be unique in the Engine Angel system; the Comments and Security Code are free text fields.

The 'Seven Day Operations' indicator is checked if your fleet schedules vehicles to travel 7 days per week. This is important in interpreting some FMCSA rules.

Currency, Language, Time Zone and 'Is Metric' will apply to all inputs and outputs of the system for people assigned to this fleet. If 'Is Metric' is not checked, the displays will show measurement values in US English units.

The 'Last Number' set is used to help integrate legacy internal systems with Engine Angel.

> Some fleets have existing systems that are based on assigning a sequence number to key objects/documents. You might keep track of tire pressure, tread depth, distance covered, warranty distance/time left, where installed, etc. by assigning a tire number; if you want Engine Angel to continuing to issue new sequence numbers for future tires starting with your last assignment in your current system, enter the last number on this screen.

> Likewise, your dispatch function might keep track of trips as they get planned and dispatched with a sequence number. If so, and if you want to continue that practice, set your last assigned number here.

> And your Equipment Manager might issue work orders with a sequence number such that you want to continue the practice. If so, set 'Last Work Order Number' here.

> WARNING: If you are still using the legacy system for generating these numbers, allow sufficient leeway (50 or 100 higher) so you will not encounter duplicate numbers from the new starting point specified here and your legacy system last entry. If you are cutting over to production now, you may enter the next number in sequence.

The Minimum Trip Distance (for) Analysis is used to filter (screen) short trip distances from your fleet performance analyses. (In this way, you can remove movement of vehicles around your facility for maintenance from providing mis-leading fuel economy data to the Analytics modules.

Fleet Type is a FMCSA category of commercial carrier companies that determines licensing requirements and audit expectations. Select your Fleet authorization from the list provided.

Press **Save** when you have verified your inputs.

Subscriptions

The next element, Subscriptions, in the Account Dashboard is to manage your purchases of capability and analysis from Engine Angel. You can get there by clicking on the **Subscriptions** menu tab, or by clicking on the **Market Basket**. The menu shows categories of data that you want Engine Angel to collect, store, harmonize and synchronize for you and to produce reports, analyses, and predictions relevant to your operations. Two groups available now are:

1. SenX signatures from FirstLook® sensors and uploaded using the SenX History Manager (SHM), www.senxhistorymanager.com and
2. Electronic Control Module data from your engines' computers. (Currently we support the Detroit Diesel DDEC® systems.)

We recommend that you upload a 'Load' signature from your engines at each oil change. (A "Load" signature simply means the vehicle was running at approximately 1,500 rpm when the signature was taken.) This way, the system will be aware of changes due to wear, inadequate combustion, dirty fuel, materials degradation (e.g., gaskets, injector nozzles), etc. You can put in the number of vehicles in your fleet and the number of times per year that you would estimate getting a 'load' signature (when you change oil). The number of units of capability is then (**Vehicles * (/vehicle/year)**), which is the number of signatures per year. Of course, you might want to pre-pay only for 6 months, in which case you would enter ½ the **(/vehicle/year).**

The unit of ECM data is a vehicle's "months' worth" of the ECM 'extracts' (dumps of data from the computer when a 'trip' has been completed) that get sent to Engine Angel for integration with other data. This is usually when the vehicle returns to the 'home base' between jobs. If the driver identification is provided as part of the trip information, driver behavior from the ECM data can be integrated with the driver history. The unit of subscription is the set of ECM extracts per month for each vehicle. Thus, if you have daily extracts or weekly extracts, the cost is the same.

The system shows the **Current Balance** of 'units' of capability that you have paid for, but not yet 'consumed'. You consume a unit each time that you upload a signature and have an assessment run and the database updated with the results.

The **Delivered** column contains the number of units consumed since your last purchase.

Balance After Purchase is the **Current Balance** plus the new units that have been entered – it will become the **Current Balance** when you do purchase the additional units.

The **Unit Price** (in US Dollars) is the 'base price, before any volume discounts. The **Ext** (Extended) **Price** is the (new units) * (Discounted price).

Any **Volume Discount** will show as soon as the quantity being published reaches a threshold. Discount threshholds are individual for each subscription line.

After you have verified the number of units that you want to buy, click on the **Checkout** button. Upon Checkout you will need to enter your credit card information to process payment for the subscriptions. There is a small monthly fee of $15 for maintenance of the SenX History Manager (www.senxhistorymanager.com) application and a one-time fee of about $ 2,000 for purchase of the SenX Diesel Kit (www.senxtech.com). Those are the only additional costs outside of your subscriptions.

					TOTAL $8,750.00		Checkout
MANAGE SUBSCRIPTIONS						VOLUME DISCOUNT $1,250.00	
Mechanical Engine Reports	Vehicles	/vehicle/year	Current Balance	Delivered	Balance After Purchase	Unit Price (USD)	Ext Price
Mechanical Assessment (SenX)	50	4	20	12	220	$20.00	$3,500.00
Vehicle Specific	Vehicles	Months	Current Balance	Delivered	Balance After Purchase	Unit Price (USD)	Ext Price
Trip ECM data	50	12	60	0	660	$10.00	$5,250.00

When you have prepaid the order, you will get a message with an invoice containing the details.

Onboarding

As discussed earlier, especially for large fleets (more than 10 vehicles) it might be expedient to load Engine Angel databases from spreadsheets with your Master Data. Here we will describe typical formats, but if you have special considerations, let's talk. The typical categories that might be loaded from spreadsheets are people/employees, vehicles, engines, and trailers. Let's take these one at a time.

Below, the underlined column names indicate that they are required; the others are optional.

People/Employees

We need information on people who will perform system tasks in the Engine Angel system on your behalf: data such as

1. The person's Username that they will use when interacting with Engine Angel
2. Contact information for alerts, email follow-up on issues, phone number in case the email attempt fails
3. Role(s) that the person is authorized for data access and change – tightly related to the person's job responsibilities
4. A default password for the person to initially sign-on to Engine Angel (the password will need to be changed at the first sign-on).

Since one person might have more than one role, there are two spreadsheets needed for the onboarding process regarding people:

A. A spreadsheet of the following elements for each person you want added to the Engine Angel system:

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Fleet Id, UserId, Default password, First Name, Last Name, email address, phone number (with area code)   {Each person can provide mailing/location data when he/she sign-in and provides their own password.}

FleetName	UserId	password	FirstName	LastName	email@provider.com	999-444-1111

B. The second spreadsheet contains the Role assignments for each person. This is optional, because it might be easier for an HR person to load the Role assignments using the system screens than to have each relationship (person-role title) typed into a spreadsheet. If this information is to be loaded from a spreadsheet, the file must contain a row for each person – role assignment such that a person who is to be assigned three roles will have 3 rows, one for each role being assigned. Each row must contain:

Fleet Id, UserId, role being assigned – from the list (Dispatch, Driver, HumanResources, AccountAdmin, FleetManager, Procurement, MaintenanceManager, MarketingSales, Shop, Lab)

FleetName	UserId	Role

Vehicles

There are many data elements in Engine Angel for each Vehicle in your Fleet, but not all the data needs to be loaded right away. Some of the specific values need to be aligned with classifications pre-built in Engine Angel for report sequencing and benchmarking comparisons.

There is one row per Vehicle. The **Vehicle Id** (number) is the short identifier or bumper number typically painted on the vehicle. It must be unique within your Fleet – that is, no two vehicles in your Fleet can have the same Vehicle Id.

Each Vehicle row in the Vehicle Onboarding spreadsheet must contain:

Fleet Id, Vehicle Id (number), VIN, Type, Vehicle Manufacturer, Vehicle Model, Vocation, In-Service Date (yyyy-mm-dd), Model Year, Number of batteries, Number of Axles, Number of Tires, and Number of Cargo Bays.

FleetName	VehicleId	VIN	Type	Mfgr	Model	Vocation	yyyy-mm-dd	yyyy	3	3	10	0

Other data can be added later using the system screens under Master Data.

Engines

Likewise, the data about the engines in your vehicles need to be entered and can be loaded with a spreadsheet. The reason the Engine data is loaded separately from the vehicle data is that one vehicle might have the engine replaced. For this reason, we need to capture a date for the install of the engine into the Vehicle (typically the **In-Service** Date of the Vehicle record).

The format of the Engine Onboarding table is:

Fleet Id, Vehicle Id, Engine SerialNumber, Install Date (yyyy-mm-dd), Engine Manufacturer, Engine Model

FleetName	VehicleId	SerialNo	yyyy-mm-dd	engMfgr	engModel

Reports

Going back up one level on the Menu, **Reports** is the next tab. These reports are at the Vehicle/Engine level of detail, showing a history over your requested time interval.

ECM Performance Report

The first reports menu item is ECM Report, basically a Performance report from the ECM data. The first step is to identify which vehicle you wish to analyze. You do this by clicking the **Click for Filters** button.
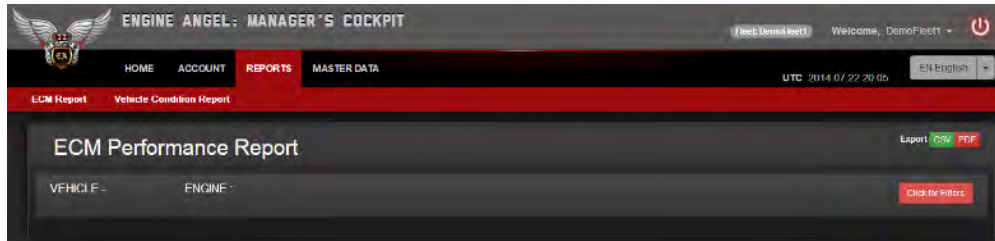
You then get a list of vehicles for which you have ECM trip data. The list shows the Vehicle identification, the Manufacturer, the Model, the VIN number, the engine serial number (a vehicle might have had more than one engine during its 'lifetime'), the most recent end of trip date 'Last Trip' and the number of trips for this Vehicle-Engine in the database.

You may change the number of Vehicles shown per page (Show Rows) and you may use the search box to limit the list to only rows that contain the string that you enter. You may click on the sort buttons to get the list in the sequence that you desire.

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Once you have found the vehicle that you are interested in, click on the row. That will bring up another box to limit (filter) the list to the time interval that you might be interested in and allows you the opportunity to select only trips that have more than the indicated trip odometer distance, **Minimum Trip**. (The Minimum Trip default was set for the Fleet back on the Account → Account Dashboard → Fleet Information screen.) The dates are modified by using the drop-down calendar.

After you have made any adjustments to the filter criteria, click on the Filter button to get your Vehicle report.

The graph shows the average Drive Fuel Economy (Fuel Economy while the Vehicle was moving on the trip). As you move the mouse in the graphics window the average drive fuel economy during that trip is displayed, the beginning or ending odometer reading appears, along with the Trip End Date. Also displayed is the line **None : 0** as a place-holder for your choice of a second trip variable to be displayed.

If you scroll up, you will find that there are options to add information to the display.

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Start Date	End Date	Odometer	Driving Economy	Trip Distance	Trip Fuel	Avg Speed	Avg Drive Load	Driving %	Idle %	Stop Idle %	Cruise %	Speeding A %	Vehicle Utilization	Engine Utilization
2012-08-04 08:41	2012-08-24 09:30	109930.20	8.18	12706.90	1556.63	59.57	41.00	96.68	3.32	0.47	61.30	6.25	44.36	45.89
2012-08-24 09:31	2012-09-18 07:38	122249.40	8.12	12319.10	1520.63	57.77	41.00	95.75	4.25	0.78	58.18	4.77	35.65	37.23

The graph in blue (Series 1) can be changed to plot any of the trip data variables shown on the table below from the pull-down list, but drive fuel economy (Driving Economy) is often the one of most interest. The Series 2 can be selected from the pull-down list to be plotted over the first Series, with its scale placed on the right side of the screen. This can be used to see if there are obvious correlations between the two selected variables. Consider the relationship between **Driving Economy** and **Avg Drive Load**.
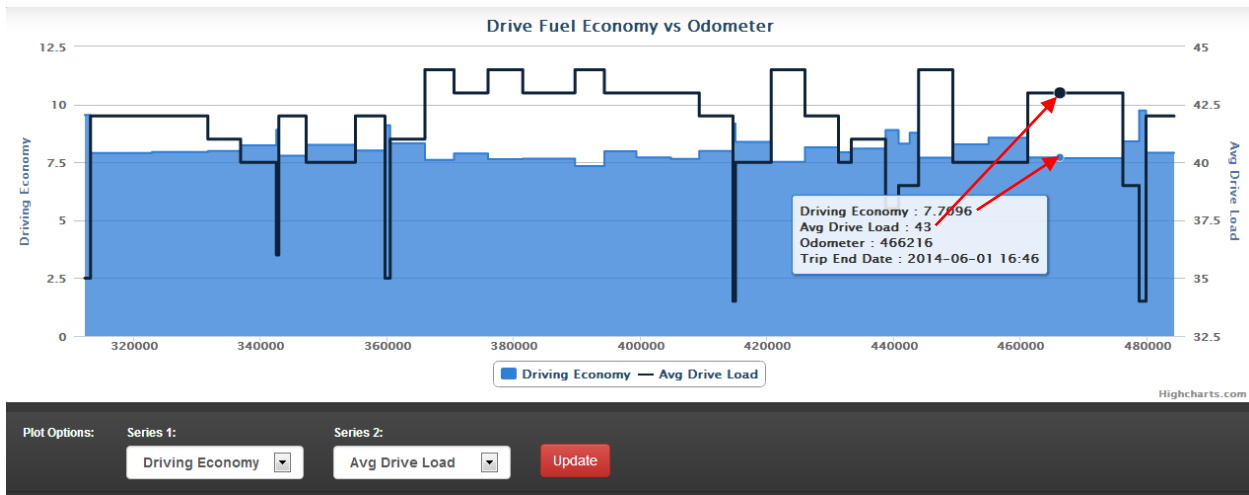
As you can see, when the Drive Load increases, the Driving Economy tends to drop, and vice-versa. Of course, many other things affect the Driving Economy such as elevation change, head-wind, speed, etc. This method helps understand Drive Fuel Economy changes that are not under the control of the driver and highlight others that are (e.g., Speeding A, Avg Speed).

The table below can be sorted by any of the column contents. The rows start in odometer sequence, lowest first. The percentages in the table are based on time intervals, not distances. For example, **Speeding A** refers to a parameter A, speed, and the value is the percentage of time that the vehicle was traveling faster than the speed, A. Speed A is configured in the ECM, usually 66 mph.

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Start Date	End Date	Odometer	Driving Economy	Trip Distance	Trip Fuel	Avg Speed	Avg Drive Load	Driving %	Idle %	Stop Idle %	Cruise %	Speeding A %	Vehicle Utilization	Engine Utilization
2013-01-02 13:08	2013-01-04 17:22	187572.70	8.87	293.80	33.50	50.08	34.00	87.83	12.17	2.01	6.25	0.01	11.23	12.79
2013-01-04 17:22	2013-01-21 12:41	197235.90	7.79	9663.10	1243.38	59.92	44.00	96.39	3.61	0.22	68.71	3.94	39.98	41.48
2013-01-21 12:42	2013-02-07 10:48	208231.40	8.29	10995.50	1329.75	58.82	41.00	96.20	3.80	0.56	63.91	4.25	46.03	47.85
2013-02-07 10:49	2013-02-15 09:16	211831.40	8.02	3599.90	450.25	58.72	42.00	95.17	4.83	0.56	56.79	5.12	32.19	33.83
2013-02-15 09:17	2013-02-28 06:56	218394.90	8.15	6563.50	807.63	58.89	42.00	96.27	3.73	0.28	59.93	4.74	35.99	37.39
2013-02-28 06:57	2013-03-12 09:48	226415.20	8.04	8020.20	999.75	58.64	42.00	95.52	4.48	0.67	65.88	3.93	47.02	49.23
2013-03-19 06:28	2013-03-31 12:55	237092.20	8.56	8556.00	1001.88	57.70	39.00	96.45	3.55	0.59	62.96	3.92	50.36	52.21
2013-03-31 12:56	2013-04-12 10:00	243622.10	7.79	6529.80	840.88	58.66	43.00	95.37	4.63	0.56	54.88	5.42	39.05	40.95
2013-04-12 10:01	2013-04-22 16:39	248480.60	8.12	4858.50	599.38	59.57	42.00	96.89	3.11	0.11	62.81	4.93	33.07	34.13
2013-04-22 16:40	2013-04-29 06:36	253035.70	7.63	4555.10	598.63	59.52	44.00	96.12	3.88	0.47	53.09	4.91	48.46	50.42
2013-04-29 06:37	2013-05-09 08:09	258990.20	7.97	5954.40	749.38	56.72	40.00	94.82	5.18	0.08	53.34	4.59	43.46	45.84
2013-05-09 08:09	2013-05-19 15:34	264299.50	7.89	5309.30	674.75	57.59	42.00	94.62	5.38	0.85	62.11	3.89	37.26	39.38
2013-05-19 15:35	2013-05-30 06:38	269920.80	7.89	5621.20	714.25	58.21	42.00	95.97	4.03	0.10	60.27	3.85	37.86	39.45
2013-05-30 06:39	2013-06-06 11:11	274220.70	7.46	4299.80	577.75	58.15	44.00	95.16	4.84	1.17	55.46	5.19	42.85	45.03
2013-06-06 11:12	2013-06-24 16:18	284148.20	7.66	9927.50	1301.25	57.94	43.00	94.15	5.85	1.87	54.36	4.35	39.20	41.63
2013-06-24 16:19	2013-06-30 08:32	286185.60	7.97	2037.40	256.50	55.66	40.00	94.02	5.98	0.00	46.43	4.69	26.87	28.58
2013-06-30 08:33	2013-07-19 08:54	296412.60	8.11	10226.90	1266.75	58.97	42.00	93.76	6.24	2.99	62.53	3.94	38.00	40.53
2013-07-19 08:55	2013-07-25 15:23	301716.70	8.16	5304.00	651.50	59.14	41.00	96.88	3.12	0.22	58.74	4.90	59.61	61.53
2013-07-25 15:24	2013-08-11 07:29	312215.80	8.16	10499.00	1292.00	57.67	40.00	93.15	6.85	2.74	55.94	4.71	45.50	48.85
2013-08-11 07:33	2013-08-15 11:26	313114.20	9.54	898.40	94.63	55.25	35.00	92.92	7.08	0.00	43.49	0.83	16.28	17.52

The data can be downloaded as a csv file for Excel or as a PDF by clicking the appropriate **Export** button above the graph:

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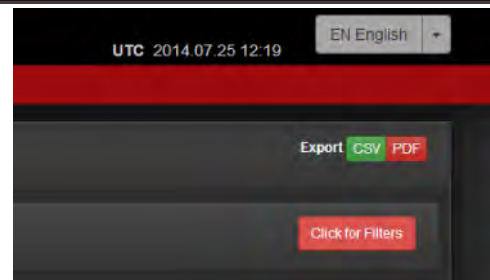
Vehicle Condition Report

This report is based on the SenX Signatures that have been uploaded. As with the ECM report, you first select the Vehicle/Engine of interest by going through filters. The first list of Vehicle/Engines includes each Vehicle/Engine in the database. The search box can be used to show only those Vehicle/Engine rows that contain your input search string (usually a Vehicle identification). The row contains the Vehicle Manufacturer, Model, and VIN number, and the Engine Serial number. Once you have found the Vehicle that you are interested in, click on it to get another filters panel to set the timeframe of interest.

If the Vehicle/Engine has more than one SenX Assessment, there will be a graphic showing the engine scores in chronological sequence. Otherwise the Score graph will not be shown.
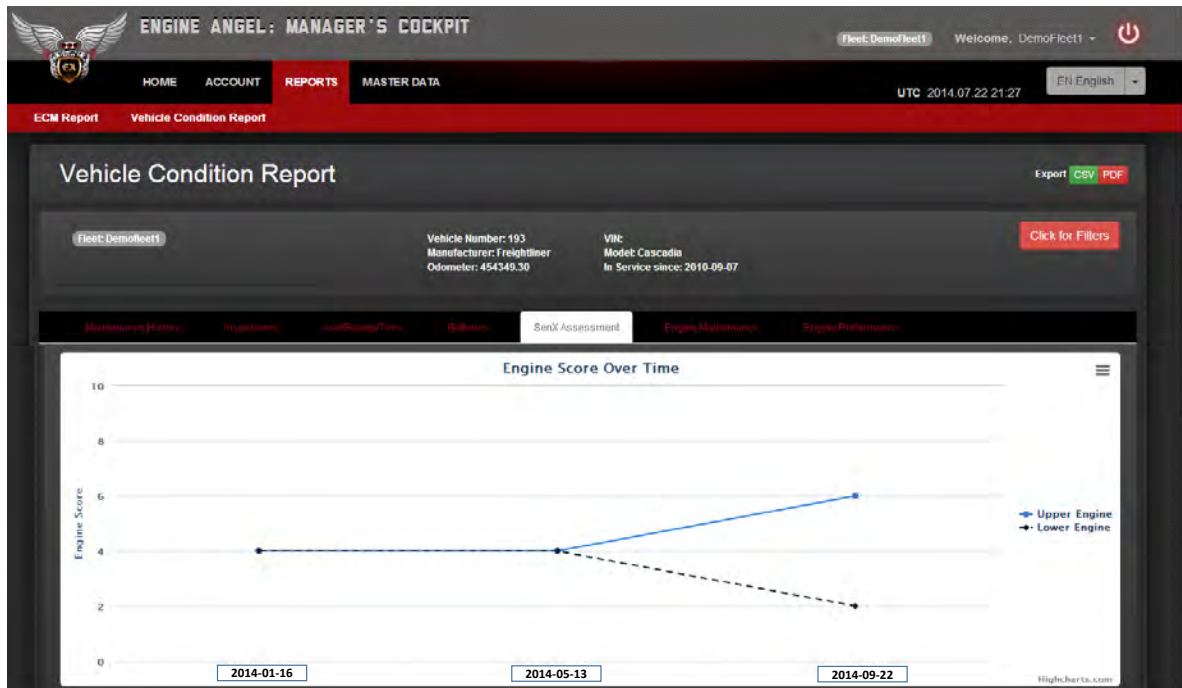
Under the graphic of the Upper and Lower Engine Scores, more detail is provided for each signature:

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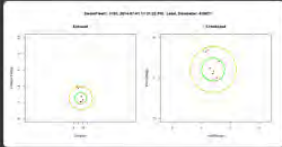
Figure 1 below shows several features from the signature for each cylinder.The cylinders are listed with lower case letters in firing order sequence. Only the 'outliers' are identified. In the Exhaust graph, we see two cylinders with high voltage range (high level of exhaust) and the other 4 cylinders are quite clustered together, each outputting less exhaust. The same cylinder identification is kept for the Crankcase graphic where the peak values come from the power stroke rather than the exhaust stroke. The only 'unusual' Crankcase cylinder is <u>a</u>, and it has the least blow-by recorded.

Figure 1. Cylinder Data

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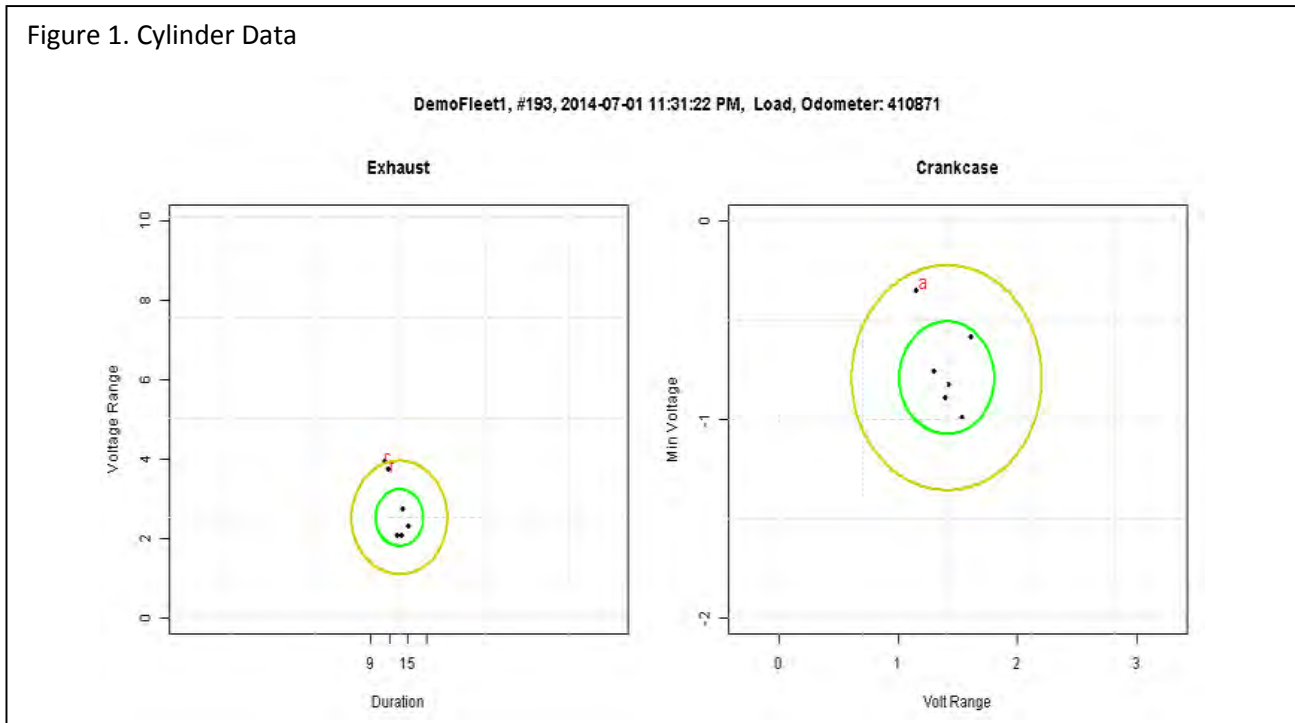
Figure 2. Signature Models

DemoFleet1, #193, 2014-07-01 11:31:22 PM, Load, Odometer: 410871

Figure 3. Profiles

See www.senxhistorymanager.com for details.
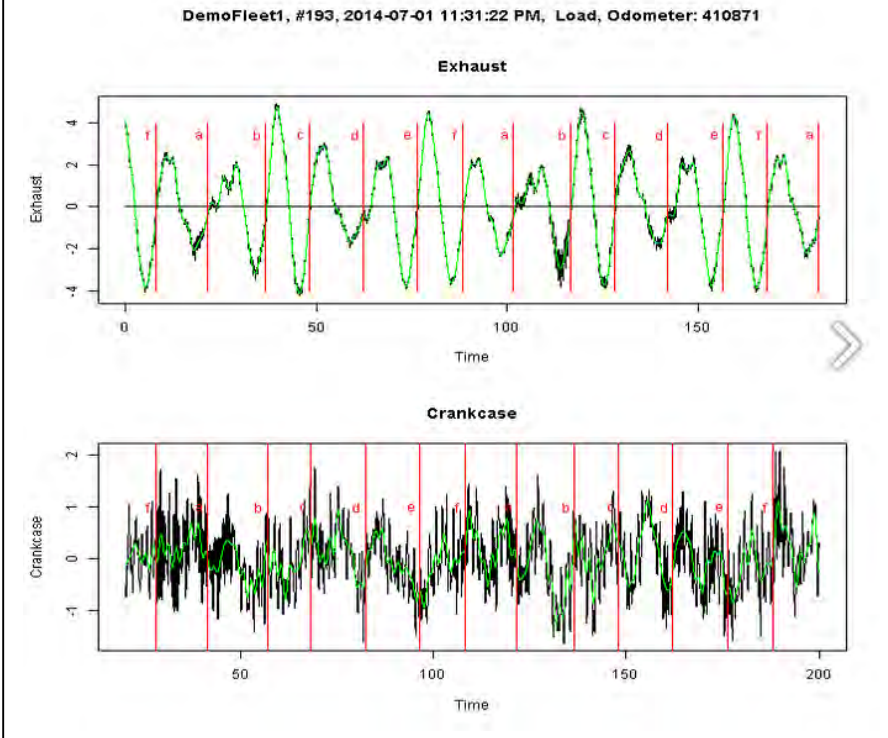
The graphics in Fig. 2 show the voltages as recorded from the SenX sensors.The 'raw data' is shown with black lines and the derived base curve is shown in green. In the top exhaust curve, cylinders c and f show the most range – high gas pulse. Cylinders b and e have unusual peaks with a sawtooth structure, and peaks a and d are 'in between'.

Figure 3 shows the voltage of the pulses from each cylinder over time from the start of that cylinder's stroke. The Exhaust Profile also shows the time of each stroke in milliseconds.
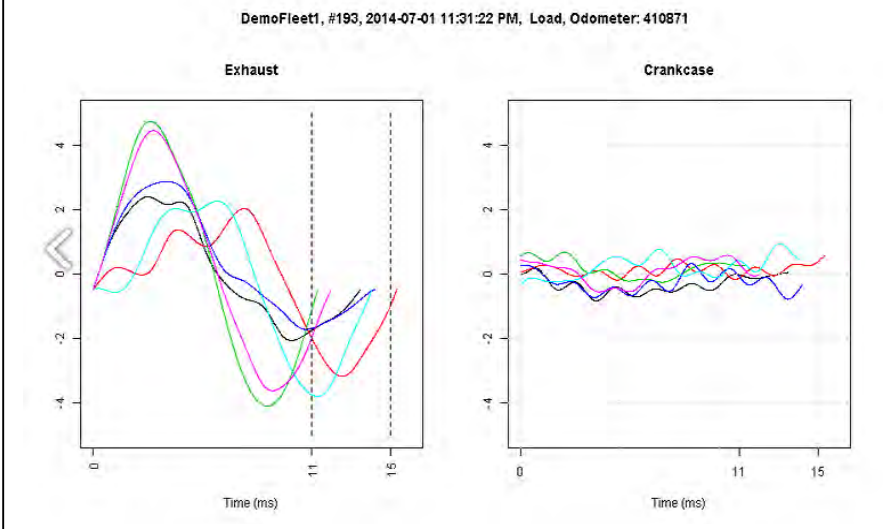
The scores are a result all of these features, emphasizing the variation between the cylinders.

The SenX Signatures are obtained from SenX FirstLook® sensors by people in your shop or in the shop where you have your maintenance done. The data is sent from a PC in the shop to Engine Angel by the SenX History Manager software.

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Master Data

Currently, the Master Data section only handles People and Vehicles; the engine data must be provided currently by a spreadsheet format as described earlier. If the pull-down lists for the entries are incomplete, please let us know at support@engineangel.com.

People

The people who must be identified to Engine Angel are those who need to use the Engine Angel screens in their job. Most might be employees, but you might hire contract employees, some of whom can be independent and so work for multiple companies and fleets.

At this point, your Fleet must contain at least the person who setup the Fleet as **AccountAdmin** (Account Administrator). You can use the list screen as a Fleet phone book, and if you are authorized as **HumanResources** or **AccountAdmin**, you may add new 'Employees', change their status, or other information about them.

Use the red **+** icon on the upper right part of the display to indicate that you want to add a new employee. If you want to change the status or other data about the person, click on the pencil icon on the right side of the field. You then will get a screen like the following:

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Required fields have a green asterisk ✳ at the right side. The screen also allows you to manage the roles assigned to the persons (employees) which controls what data access each has, and what data the person can input, delete, or change. The Roles are check boxes with multiples allowed. The Roles are defined for current capabilities and for planned future functionality. The table below details what each role covers in terms of system access to help you determine which boxes to check for each person you add.

When the screen shows the data as you want it, click on **Save**.

Table of Roles for employees:

Role	Access
Dispatch	Trip Management, Driver Calendars, Request for Driver, Request Route
Driver	Inspections, Driver's own: Calendar, eLog, Health & Testing, Trip Details
HumanResources	Employees, Driver History, Driver Health & Testing, Driver Licenses
AccountAdmin	Subscriptions, Employees
FleetManager	Fleet Data, Report/Alert Distribution, Facilities
Procurement	Choose Mfgrs, Configure Vehicles, Inventories, Assign Vehicle Groups
MaintenanceManager	Release Work Orders, Configure Vehicles, Inventories, Assign Vehicle Groups
MarketingSales	Job (Hauling) requests
Shop	Work Order Status, Measure & Test (tires & brakes, …)
Lab	Upload test results

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Vehicles

Vehicles that have been added to your Fleet show on the Vehicles list screen. **Master Data → Vehicles**.

You may add a new Vehicle by clicking the red **+** icon on the upper right part of the display, or you may modify or delete Vehicles by clicking either icon on the right side of the row identifying the Vehicle you want to view, and possibly modify. The pencil is used to indicate that you want to view or modify some of the data; the red **X** indicates that you wish to delete the record.

The data for Vehicle 223 is displayed by clicking on the pencil of row with Vehicle Number 223:

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All values should be input in the Fleet's specified Units of Measure, currency, language, and time zone.

Data elements such as 'Mileage' (will be changed to 'Odometer') will be maintained by the ECM extracts and GPS in the future. Likewise, the Maintenance records will update the routine maintenance data.

User Account Settings

Each individual can manage the Username's password and contact information. To do this, click on your **Username** after the 'Welcome,' in the upper right part of the screen.

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Click on **Account Settings** to get:

From this screen, you may change your password and/or contact information.

Stay tuned. More will be coming from Engine Angel in the Future!

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