DERIVE

Software Update Proposal

Thursday, September 10, 2015

Legacy Fleet Retrofit

- One of the most challenging issues Fleet Operators face is how to improve the performance of Fleet equipment that is not as effective as new generation equipment, but is going to be in-service for a number of years into the future.
- While there are a number of existing retrofit technologies in the market, they share a number of distinct disadvantages:
  - Retrofits often use technology that lacks adequate successful experience in fleet application that provides owner/operators with confidence in the equipment reliability.
  - Retrofits generally take the equipment out of service for weeks due to moves to existing retrofit service centers, the retrofit process itself and the post retrofit testing to insure the installation of the new equipment was successful.
  - Retrofit suppliers in recent years have been second tier fleet suppliers that are often under-capitalized and subsequently prove to be vulnerable to market instability.
  - In too many cases, the equipment itself is provided to the retrofit packager by another tier of suppliers that in some cases has not had the development time to rigorously test their products in mobile applications routinely exposed to weather extremes.
- Subsequently, any choice in a retrofit technology that is largely software based avoids the challenges common to other retrofit technologies
- Soft wear based retrofits also have the virtue of being a field based retrofit rather that a “service center” retrofit reducing time to complete the changes made and not requiring significant relocation.
- For all of the listed reasons, we have searched for and identified a software based solution provided by

Expense Worksheet

Pilot Improvement	0.08

Engine Type	Count of VIN Engine	Average of MIS 2	Average of Current Odometer	Average of Miles Per Gallon	StdDev of Miles Per Gallon	Miles/Mo	Gallons/Mo
V8, 4.6L	2975	40.2	49,226.3	10.3	2.0	1,225	119
CARGO VAN	2906	39.6	48503	10	2	1225	120
V8, 4.8L	2753	104.8	125,974.0	10.8	2.1	1,202	112
CARGO VAN	2225	101.9	123300	10	2	1210	117
V8, 4.6L (281 CID); SOHC; EFI	1899	112.0	132,065.5	10.7	2.3	1,180	110
CARGO VAN	1597	110.8	131280	10	2	1185	117
V8, 5.4L (330 CID); SOHC 16V; EFI	1386	108.2	114,229.4	9.2	1.9	1,055	114
CARGO VAN	1142	106.5	110507	10	2	1038	109
V10, 6.8L; EFI	1125	69.7	95,301.6	5.4	1.0	1,367	252
AERIAL	1111	69.4	95353	5	1	1373	255
	8981						
Grand Total	18779	79.4	93,084.5	11.3	4.4		
Percent of Population by Engine Category	48%						
Percent of Population Applicable by Age	21%						

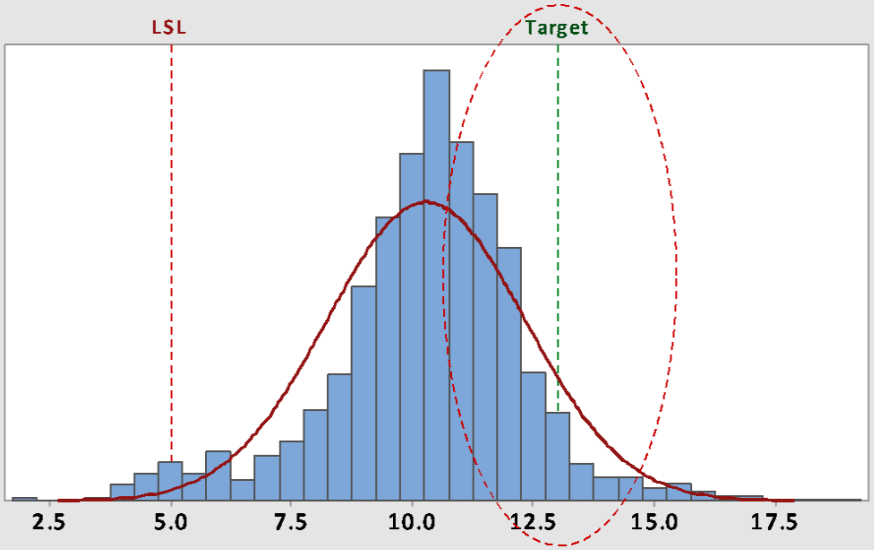
			Cargo Van Target Life in Months	% 0f Life Remaining	Avg. Months Remaining	Forecast Improvement (gallons/month)	Remaining Life Performance Improvement
V8, 4.6L	2906	39.6	84	53%	44.4	8.9	1,148,855
V8, 4.8L	2225	101.9	84	-21%	0		
V8, 4.6L (281 CID); SOHC; EFI	1597	110.8	84	-32%	0		
V8, 5.4L (330 CID); SOHC 16V; EFI	1142	106.5	85	-25%	0		
			Aerial Target Life in Months				
V10, 6.8L; EFI	1111	69.4	108	36%	38.6	8.5	363,023

Summary Gallon Savings over the next 44.4 months			1,511,877
Savings at the current Per Gallon Rate	2.48	$	3,749,455.59

* Data Source: Sept 4, 2015 Active Fleet

Capability for V8, 4.6L Miles Per Ga
Summary Report

Histogram
Are the data above the limit and close to the target?



At the current MPG rate, 21% of our Fleet is actionable to improve MPG

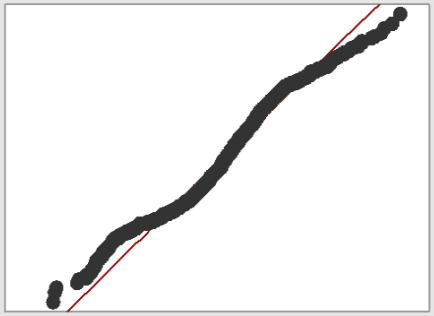
Customer Requirements

Lower Spec	Target	Upper Spec
5	13	*

Process Characterization

Total N	2973
Mean	10.284
Mean off target	Yes
P-value	0.000
Standard deviation	2.0447
Capability statistics	
Pp	*
Ppk	0.86
Z.Bench	2.58
% Out of spec (observed)	2.39
% Out of spec (expected)	0.49
PPM (DPMO) (observed)	23882
PPM (DPMO) (expected)	4878

Normality Plot



Points should be close to line.

Normality Test (Anderson-Darling)

Results	Fail
P-value	0.005

Comments

The capability measures use the overall standard deviation. However, the data collection method used may not capture all sources of variation that may appear over a longer period of time. Therefore, the usual interpretation, that the capability measures represent long-term performance, may not apply.

NYC Pilot Findings

Below is a summary of the key details from your pilot:

- Derive conducted a jointly agreed upon pilot with TWC to determine the overall effectiveness of our solution relative to your fleet, your urban operational environment, and your average driver profile.

  - The Derive/TWC pilot evaluated 19 vans for approximately 10 weeks, where both comprehensive baseline and treatment vs. control data was obtained.

Method	Metric	Stock	Tune	Derive Advantage	Remark
FleetCarma	MPG via 5Hz MAF (real-time & packeted)	Consumed 6.205 MPG	Consumed 6.710 MPG	+8.13%	P <0.05

Idle Findings	TWC fleet vans operate in idle ~62% of the time TWC fleet vans consume ~.5 gallons / hour while idling TWC vans idle in excess of 31 hours / month TWC vans consume ~15.5 gallons/month at idle alone **Derive saved TWC 11% of fuel in idle[1]**
Fuel Quantity Results	TWC's NYC urban fleet fuel consumption: 50.2 gallons / month / vehicle Derive-tuned urban fleet fuel consumption: 46.1gallons / month / vehicle **Each vehicle saves 8.2 gallons / 100 gallons consumed**
Emissions Results	TWC's urban fleet emissions: 15 tons of CO_2 / 10,000 miles Derive-tuned fleet emissions: 13.9 tons of CO_2 / 10,000 miles TWC's urban emission savings: $41.80 / vehicle **EPA-projected damage savings[2]: ~$450,186 per year**
Bottom Line for TWC	National fuel prices currently average $2.41 / gallon TWC will save $19.44 / 100 gallons consumed **TWC saves ~ $3.73M / year at current fuel prices (11,800 vans)[3]**

DERIVE Software Upgrade Proposal

- The opportunity driving this evaluation is rooted in:
  - First, the realization that the vehicles selected for this proposal meet two critical criteria:
    - They will be in service for a number of years into the future at TWC
    - They have, by current standards "poor" fuel economy
  - Second, the vehicles selected for this program will not meet the TWC MPG target over their practical life without some type of modification
  - Third, this group represents 21% of the active Fleet compliment so that this is a measured response to a significant challenge for the legacy Fleet.
- Deployment Plan
  - Deploy 4,017 products in ~ 1,000 vehicle increments
  - Moving from the first deployment to the second only after indications prove the installation successful and the vehicles are producing an improved MPG
  - Each successive deployment will occur in ~ 1,000 product blocks as the previous installation block begins to demonstrate improvement
  - This deployment strategy is designed to allow each successive deployment (after the initial deployment) to be partially funded by the preceding successful deployment
  - Depending on the final negotiated price per product, over time, the program will provide expense relief from fuel cost offsets to fund the program as the deployments are implemented and the products prove effective
  - The central evaluation of whether or not we will proceed will hinge on the final negotiated price per installation.
- PLEASE NOTE: the dollar values used in this case study do not necessarily reflect market price but are supplied for illustrative purposed only.