

A Vision for the future in Fuel efficiency

Chris Evans

Engaging drivers in Fuel Efficiency best practice

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Background

5 years of experience in running
fuel management programmes
Common pitfalls identified
Way of working developed for best
fuel efficiency

You can only manage what you can measure

Telematics do not save fuel -designed to collect data

Commonly too focused on managing fuel consumption

Fuel consumption varies unexplainably

Motivation to continue reduces

Let's start by looking at the factors that influence fuel

Factors Influencing Fuel Consumption

The Vehicle and Load

Vehicle Gross Weight
Specification
Configuration;
Aerodynamics
Trailer/Body Height
Cab Gap – 5th wheel
Tyres
Maintenance programme
Axle alignment

Uncontrollable Variables

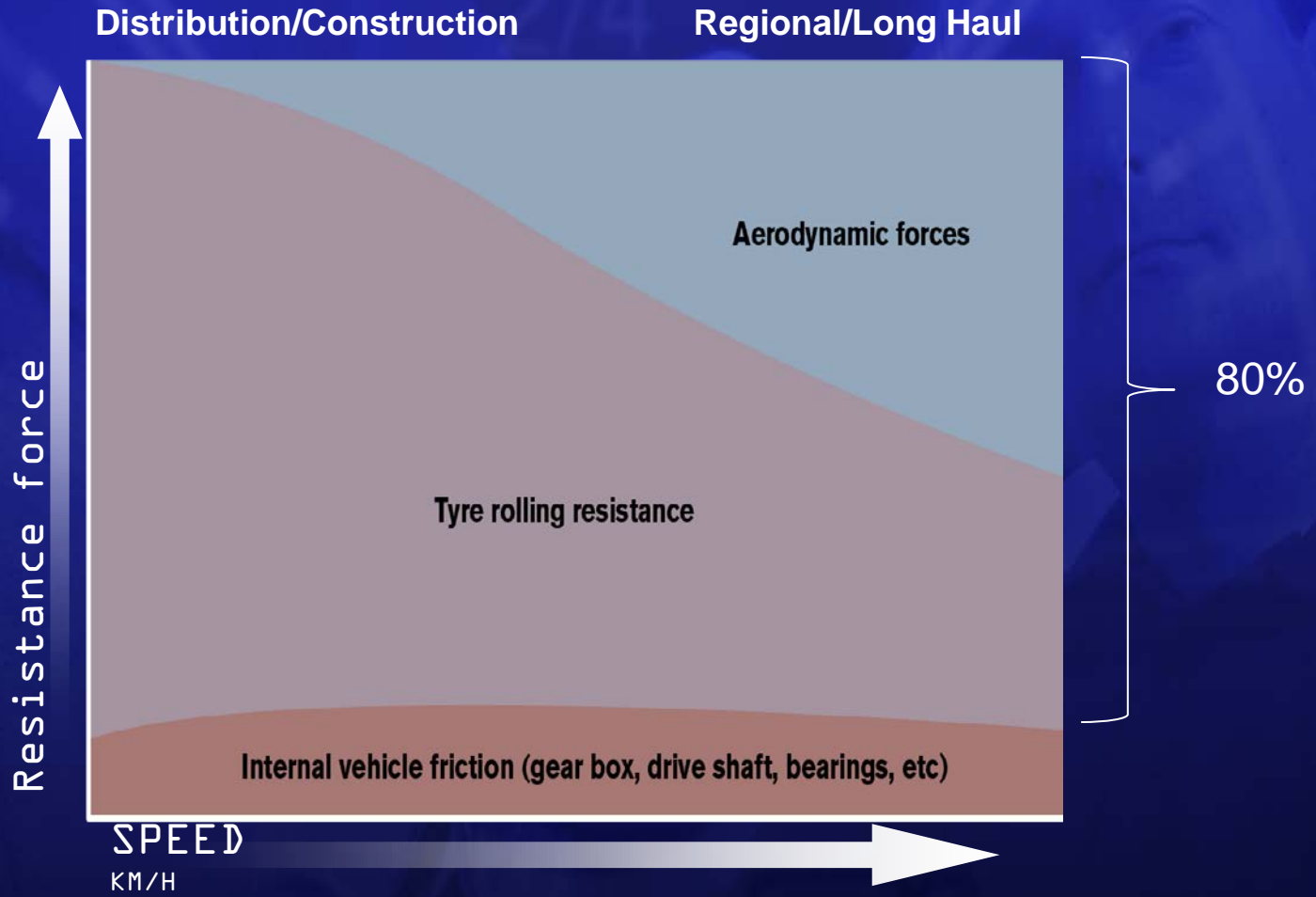
Traffic Conditions
Road type
Weather
Topography
Road surface

Driver Techniques

Driving is a habit
Good techniques can make a difference of 20%
A need to develop a fuel efficient way of driving

But how?

Factors Influencing fuel consumption



Factors Influencing Fuel Consumption

The Vehicle and Load

Vehicle Gross Weight
Specification
Configuration;
Aerodynamics
Trailer/Body Height
Tyres
Maintenance programme
Axle alignment

Uncontrollable Variables

Traffic conditions
Road type
Weather
– winter vs summer
Topography
Road surface

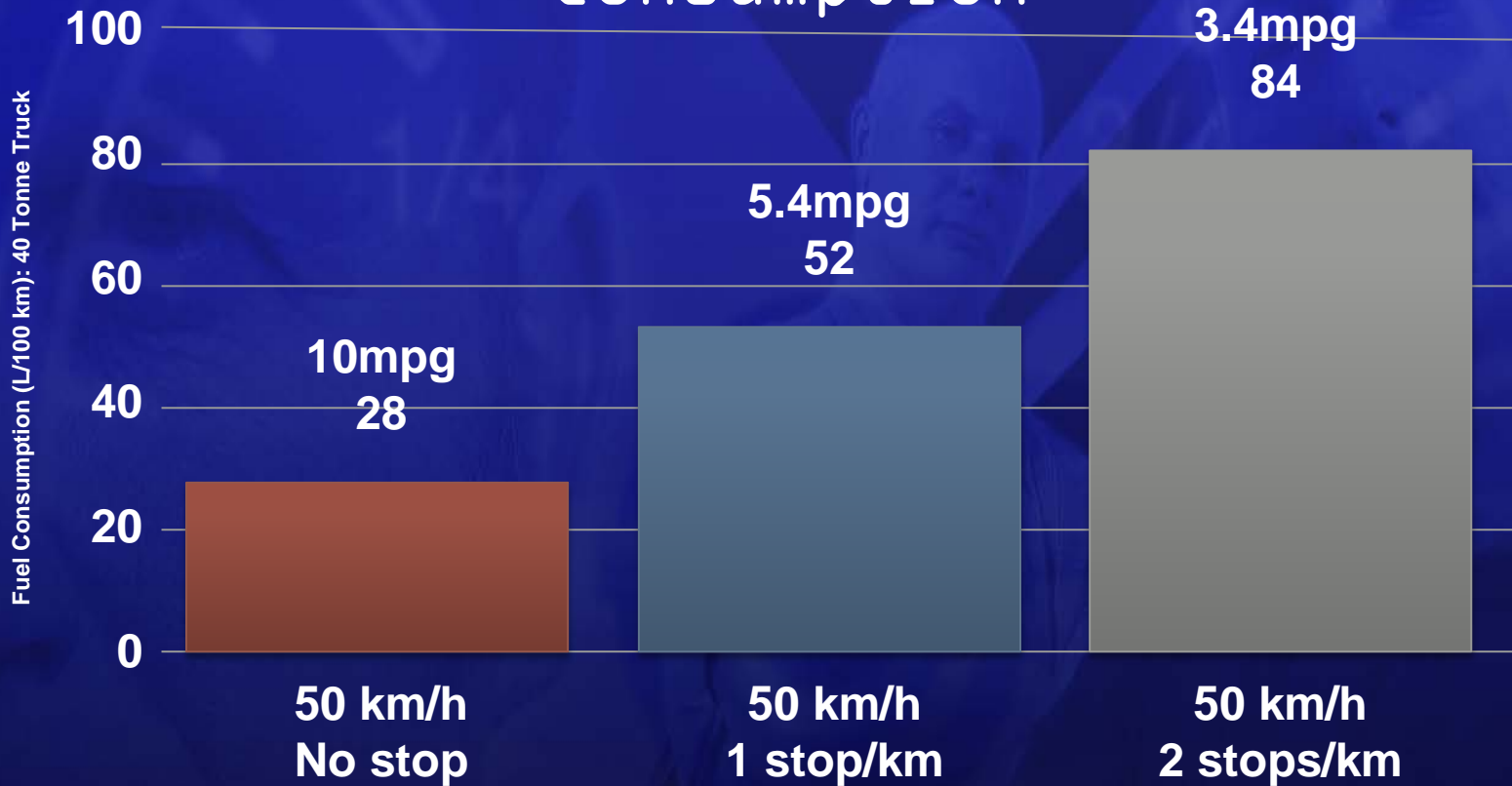
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But how?

Congestion Influences fuel used

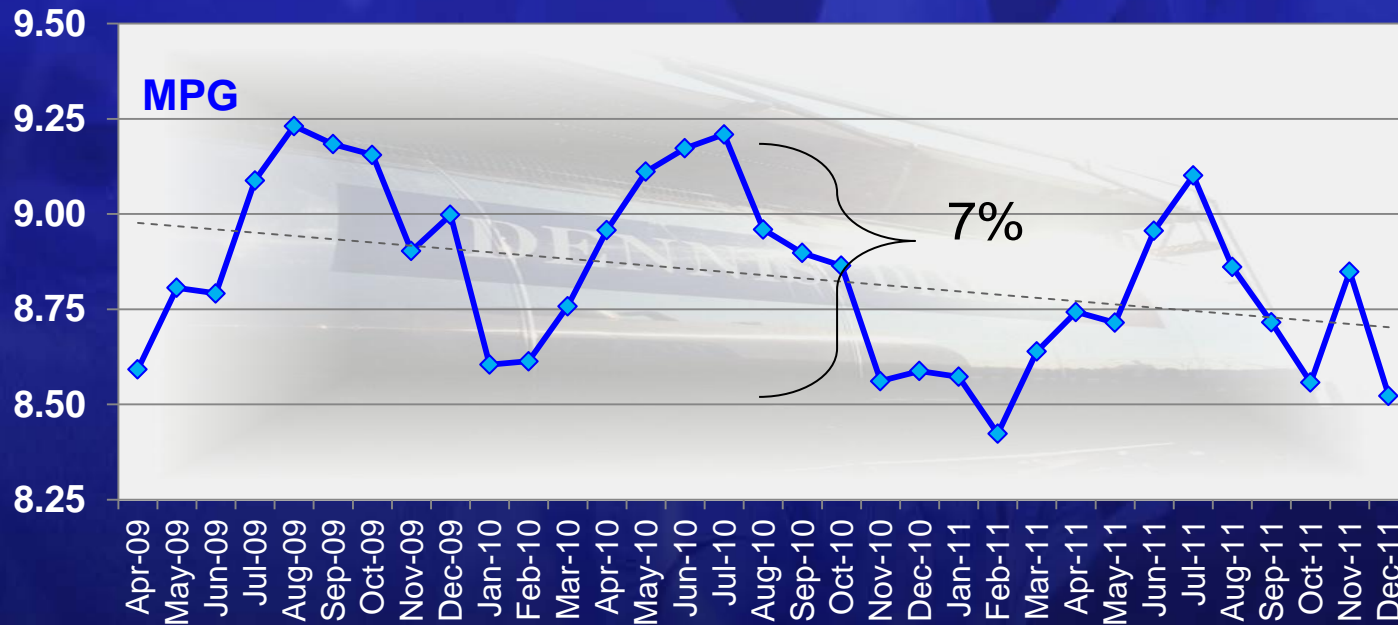
Traffic Congestion increases fuel consumption



Source: Verband der Automobilindustrie (VDA), Germany

Weather Influences fuel used

Winter to Summer Variations



Factors Influencing Fuel Consumption

The Vehicle and Load

Vehicle Gross Weight
Specification
Configuration;
Aerodynamics
Trailer/Body Height
Tyres
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Uncontrollable Variables

Traffic Conditions
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VOLVO TRUCKS DRIVER CHALLENGE



Driver Challenge- 6 tractors, 1 new driver per week

Drivers measured just on driving
techniques - not on mpg

Driver	Idle Time	Within Economy	Above Economy	Coasting	Cruise Control	Vehicle Overspeed	Top Gear	Engine Load	Engine Overrev	Automatic
KW	5	1	3	5	3	5	3	1	1	1
NA	4	3	1	3	2	6	2	3	1	1
OL	1	2	6	2	5	2	5	6	1	3
PL	2	4	5	6	1	1	1	5	1	4
SW	3	6	4	1	4	3	6	2	6	6
SF	6	5	2	4	6	4	4	3	1	5



CHALLENGE TARGETS (long haul Operation)

Behaviour	Target	Group Averages
Idle Time	< 4.00%	5.08%
Within Economy	> 70.00%	71.85%
Above Economy	< 2.00%	0.95%
Coasting	> 10.00%	5.57%
Cruise	> 60.00%	55.62%
Vehicle Overspeed	< 5.00%	34.25%
Top Gear	> 70.00%	62.28%
Engine Load	< 3.00%	6.60%
Engine Overrev	< 0.10%	0.02%

116 drivers results - measured to targets and vs each other

Compare techniques of top 10 with bottom 10

TOP 10

Average Speed	Brake Count	Stop Count	Idle Time	Within Economy	Above Economy	Coasting	Cruise Control	Top Gear	Engine Load	Engine Overrev	Automatic	Manual	Power	Points	Ranking
3	9	3	9	51	22	33	2	1	19	1	1	1	1	173	1
6	17	21	5	14	2	94	3	2	34	1	1	1	1	215	2
21	24	33	21	3	2	112	32	10	9	1	1	1	1	301	3
33	3	11	7	52	70	57	4	3	71	1	1	1	1	332	4
40	7	11	1	61	52	12	9	21	28	85	1	1	1	353	5
12	18	21	40	40	34	84	17	12	69	1	1	1	1	383	6
105	12	46	27	91	13	8	19	47	14	1	1	1	1	390	7
10	16	17	63	34	15	61	8	16	78	1	1	1	1	401	8
46	5	8	3	40	70	104	1	27	17	85	1	1	1	414	9
67	23	46	16	76	78	69	15	46	15	1	1	1	1	458	10

Bottom 10

114	109	112	112	116	34	14	113	114	5	1	92	75	111	1177	107
39	52	54	83	29	113	81	108	64	66	105	115	102	116	1189	108
74	74	100	110	91	83	61	102	95	80	85	56	1	86	1191	109
94	38	17	103	60	105	97	98	105	32	105	96	99	96	1253	110
80	101	105	101	98	85	58	86	94	78	85	82	64	103	1310	111
104	72	84	60	66	116	19	109	108	114	116	82	48	104	1316	112
115	116	116	109	114	95	53	111	116	33	85	74	84	1	1329	113
93	110	74	100	67	97	72	96	106	116	1	93	86	109	1336	114
106	57	100	106	87	105	27	81	109	77	105	106	107	105	1379	115
107	103	109	116	111	97	41	73	111	60	85	104	100	109	1415	116



Compare mpg of top 10 with bottom 10

TOP 10

MPG	Average Speed	Brake Count	Stop Count	Idle Time	Within Economy	Above Economy	Coasting	Cruise Control	Top Gear	Engine Load	Engine Overrev	Automatic	Manual	Power	Points	Ranking
11.31	3	9	3	9	51	22	33	2	1	19	1	1	1	1	173	1
11.45	6	17	21	5	14	2	94	3	2	34	1	1	1	1	215	2
10.45	21	24	33	21	3	2	112	32	10	9	1	1	1	1	301	3
11.31	33	3	11	7	52	70	57	4	3	71	1	1	1	1	332	4
10.81	40	7	11	1	61	52	12	9	21	28	85	1	1	1	353	5
10.33	12	18	21	40	40	34	84	17	12	69	1	1	1	1	383	6
11.98	105	12	46	27	91	13	8	19	47	14	1	1	1	1	390	7
9.08	10	16	17	63	34	15	61	8	16	78	1	1	1	1	401	8
11.87	46	5	8	3	40	70	104	1	27	17	85	1	1	1	414	9
12.23	67	23	46	16	76	78	69	15	46	15	1	1	1	1	458	10

Bottom 10

9.8	114	109	112	112	116	34	14	113	114	5	1	92	75	111	1177	107
9.49	39	52	54	83	29	113	81	108	64	66	105	115	102	116	1189	108
8.50	74	74	100	110	91	83	61	102	95	80	85	56	1	86	1191	109
7.72	94	38	17	103	60	105	97	98	105	32	105	96	99	96	1253	110
8.64	80	101	105	101	98	85	58	86	94	78	85	82	64	103	1310	111
7.27	104	72	84	60	66	116	19	109	108	114	116	82	48	104	1316	112
7.80	115	116	116	109	114	95	53	111	116	33	85	74	84	1	1329	113
6.56	93	110	74	100	67	97	72	96	106	116	1	93	86	109	1336	114
8.10	106	57	100	106	87	105	27	81	109	77	105	106	107	105	1379	115
8.65	107	103	109	116	111	97	41	73	111	60	85	104	100	109	1415	116



RESULTS- worst vs best



+ / - 20%
mpg

Top 10 Drivers Shootout – Galway July 2012

Identical trucks, same weight, same day, same route

	Total fuel (gallons)	Average fuel (mpg)	Average speed driving (mph)	Average stop counter (hits/100miles)	Average brake counter (hits/100miles)	Idling time	Within economy time	Above economy time	Coasting time	Cruise control time	Top gear time	Engine load time
1	10.16	8.35	31	149	9	1.00%	58.80%	1.90%	30.70%	11.80%	29.80%	4.20%
2	10.9	7.79	30.95	102	9	1.30%	52.20%	6.00%	42.70%	37.00%	33.90%	16.20%
3	10.99	7.73	29.62	147	15	1.50%	55.90%	1.20%	16.60%	17.50%	12.80%	4.20%
4	11.6	7.32	32.64	177	15	1.70%	63.60%	1.10%	28.40%	13.70%	33.00%	12.70%
5	11.7	7.27	27.55	270	31	3.30%	64.40%	1.00%	20.40%	11.30%	20.50%	7.70%
6	12.28	7.05	30.38	181	16	2.50%	77.70%	1.90%	9.40%	18.70%	18.00%	7.20%
7	13.05	6.5	27.75	400	58	5.00%	67.30%	0.70%	11.10%	3.00%	16.50%	8.10%
8	13.18	6.44	30.66	328	48	4.50%	61.20%	2.20%	17.60%	31.70%	27.40%	17.80%
9	13.52	6.27	29.99	370	55	2.80%	71.40%	0.50%	10.40%	21.10%	21.10%	15.80%
10	13.59	6.23	30.77	328	58	6.80%	62.00%	1.20%	18.00%	12.40%	25.90%	17.70%

34%

Efficient Driving Techniques - Volvo Driver Training

Avoid Unnecessary Idling

Accelerate Efficiently up to Cruising Speed

Climb Hills Efficiently

Keep an Even Speed: Utilize the Terrain

Roll or Coast Whenever You Can

Brake Only When Necessary - Don't be Aggressive



Effective communication with drivers

Use training language - simple scoring

Plain english, non-technical terms, describing what we do in driver training

Anticipation and Braking

Utilization of Engine and Gearbox

Speed Adaption

Standstill

New simple scoring for driver - Fuel Efficiency Scoring



Effective communication with drivers

A new service = Fuel Advice



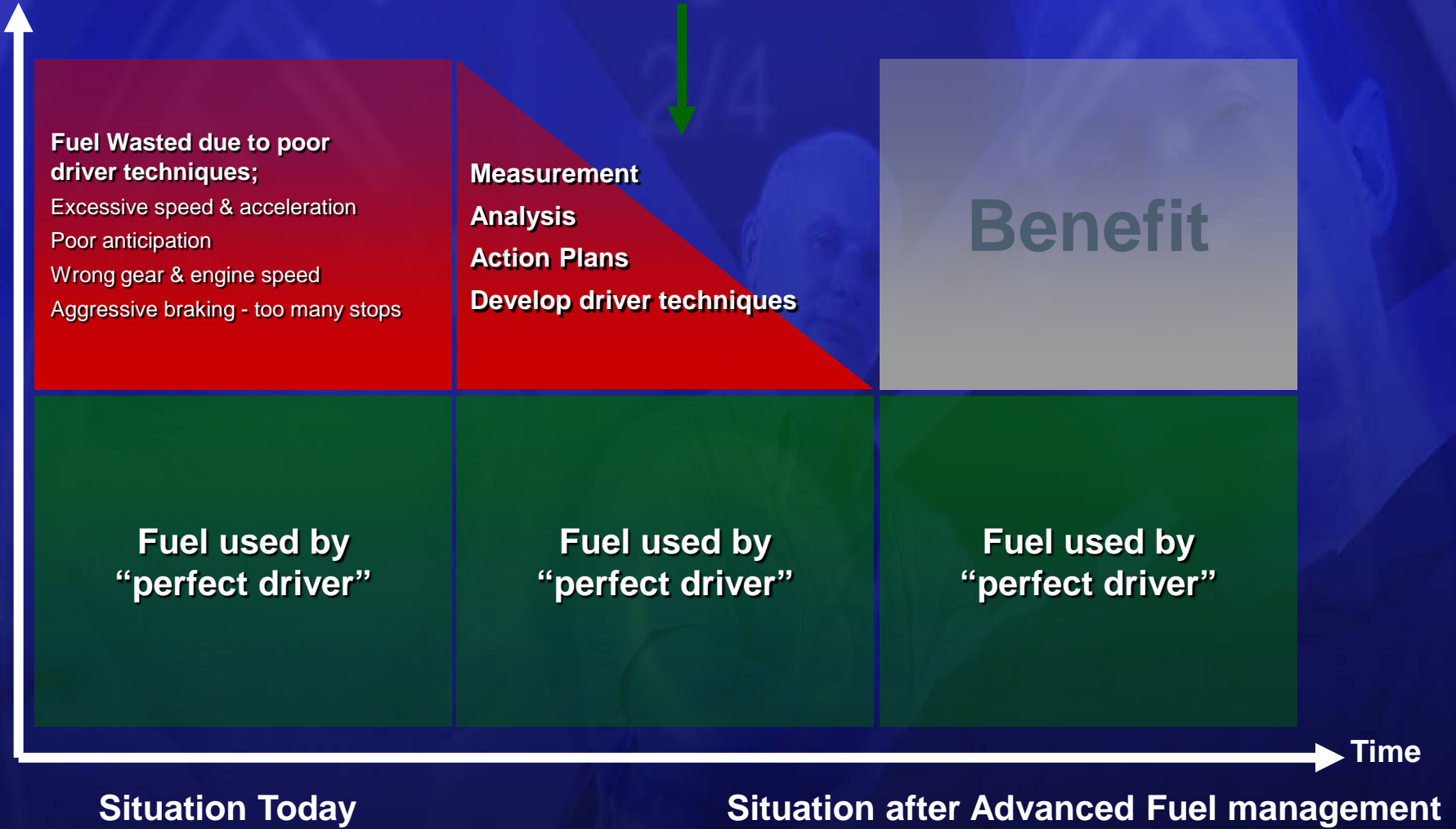
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Simple Scoring Method

Identifies Areas for improvement

Advanced Fuel Management Programme- Fuel Advice

Fuel Used





Drivers View

Jim whitmore
Winner -
Volvo Trucks Driver
challenge 2011



j. Whitmore - Personal Performance

Equates to over 10,000 free miles Out of 61,000 miles

Driver	Total time (h)	Total distance (miles)	Total fuel (gallons)	Average fuel (mpg)	Average speed (mph)	Average brake count (hit/10 miles)	Average stop count (hit/10 miles)	PTO time	Idling time	Within economy time	Above economy time	Coasting time	Cruise control time	Vehicle overspeed (Fleet Limit)	Top gear time	Engine load time	Engine over-rev time	I-Shift mode			Vehicle weight			Coasting time
																		Auto-matic time	Manual time	Power time	Low dist.	Medium dist.	Full dist.	
James Whitmore	1483:26	61,245.74	6,066.60	10.10	42.18	57.00	17.00	0.0%	2.1%	92.4%	0.0%	17.7%	34.4%	4.7%	61.0%	0.4%	0.0%	11.1%	88.9%	0.0%	1.4%	41.4%	57.2%	17.7%
Total	1483:26	61,245.74	6,066.60	10.10	42.18	57.00	17.00	0.0%	2.1%	92.4%	0.0%	17.7%	34.4%	4.7%	61.0%	0.4%	0.0%	11.1%	88.9%	0.0%	1.4%	41.4%	57.2%	17.7%

Idling
2.1%
Fleet Average
4.93%

Within Economy
92.4%
Fleet Average
80.17%

Coasting
17.7%
Fleet Average
6.95%

Engine Load
0.4%
Fleet Average
4.94%

Coasting
17.7%
Fleet Average
6.95%



Hurdles to overcome during programmes

Training may influence techniques for a short time

Drivers often fall back into their old habits

Developing a fuel efficient way of driving and sticking with it is essential

Constant effort is needed to keep drivers focused on the goals

Getting Started with Fuel Efficiency best practice

Don't focus on MPG, understand all variables

Use Dynafleet telematics to get data on driving techniques

Analysis of telematics data based on targets for the type of operation

Involve and motivate drivers, understand good techniques vs bad techniques

Simple explanations communicated regularly, using driver training language

Provide driver coaching based on Volvo driver training

If results are not as expected - Ask for help

Saving Fuel is a JOURNEY, not a DESTINATION

Engaging Drivers in Fuel Efficiency
Best Practice

- Having Competence in Telematics
+ Analysis + Coaching

VOLVO FUEL ADVICE