



Total Combustion Technology

TCT FUEL SYSTEM



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A new cost competitive single point metering fuel system which will allow most Phase 2 Small Off Road Engines (SORE) meet EPA Phase 3 legislation without engine improvements or the use of a Catalyst

- 30-40% engine out emissions (HC-NOx) reductions
- Cost competitive
- 10-15% fuel usage reduction
- Eliminates or reduces the amount of after-treatment required
- Compatible with 3-way catalytic after-treatment with lambda 1 operation at all part load mode points
- AFR control. Easy to calibrate- will allow SORE run lean at lighter loads and rich at high loads
- Stable combustion at lambda 1 operation (able to run out to 20 to 1 AFR before any misfires occur)
- Single point metering
- Easy to apply electronic control / feed back control due to single point metering
- Will operate on fuels like: Kerosene (JP8), Alcohol, LPG or NPG

FJÖLBLENDIR'S INNOVATIVE TCT FUEL SYSTEM TECHNOLOGY IN CO-OPERATION WITH ORBITAL



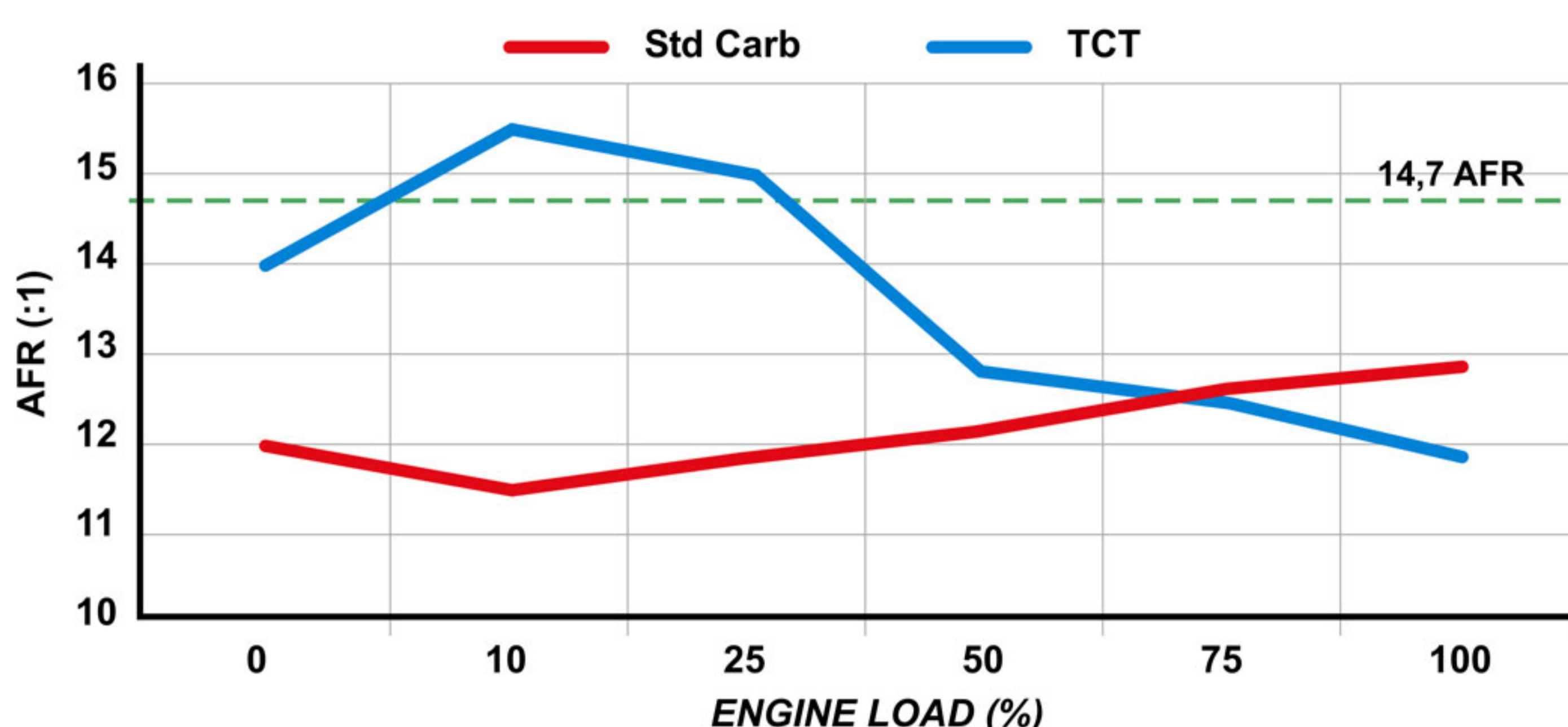
SAE J1088 A cycle results on various Class 1 engines typically show 30 to 40% reduction in HC+Nox

	Engine	Tecumseh Side Valve	GX160 (QUB)	GX160 (Orbital)	Fuji Robin EX210 *	GX200
Baseline (g/kWh)	HC			5,21	13,15	6,19
	Nox			3,80	1,65	2,64
	HC+Nox	22,00	16,60	9,01	14,80	8,83
	CO	450,00	651,13	291,31	432,64	368,13
TCT (g/kWh)	HC			3,27	6,89	3,29
	Nox			2,79	3,09	2,27
	HC+Nox	14,50	11,97	6,05	9,98	5,56
	CO	270,00	453,17	211,00	182,67	224,15
Reduction (g/kWh)	HC			-37%	-48%	-47%
	Nox			-27%	87%	-14%
	HC+Nox	-34%	-28%	-33%	-33%	-37%
	CO	-40%	-30%	-28%	-58%	-39%

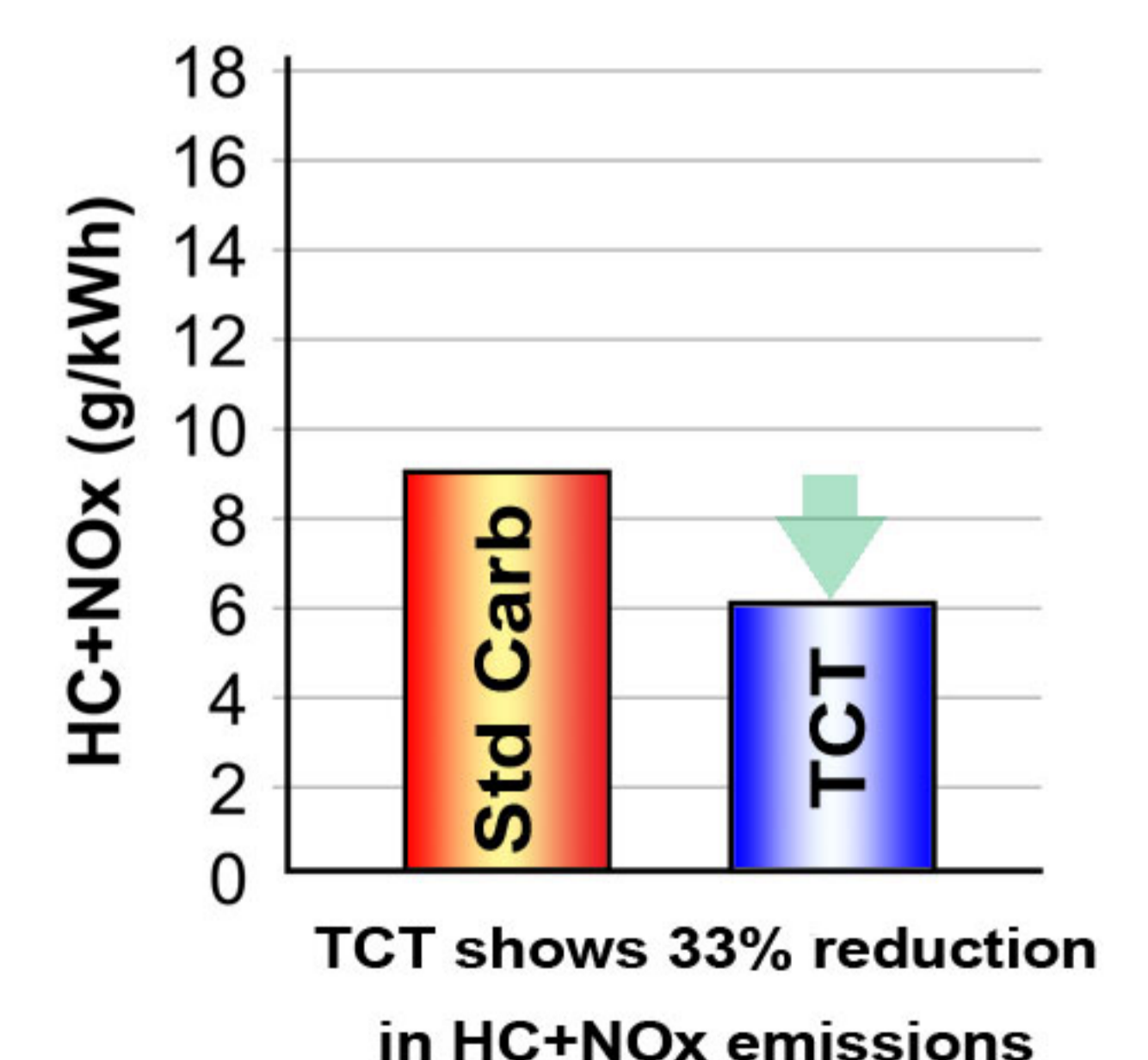
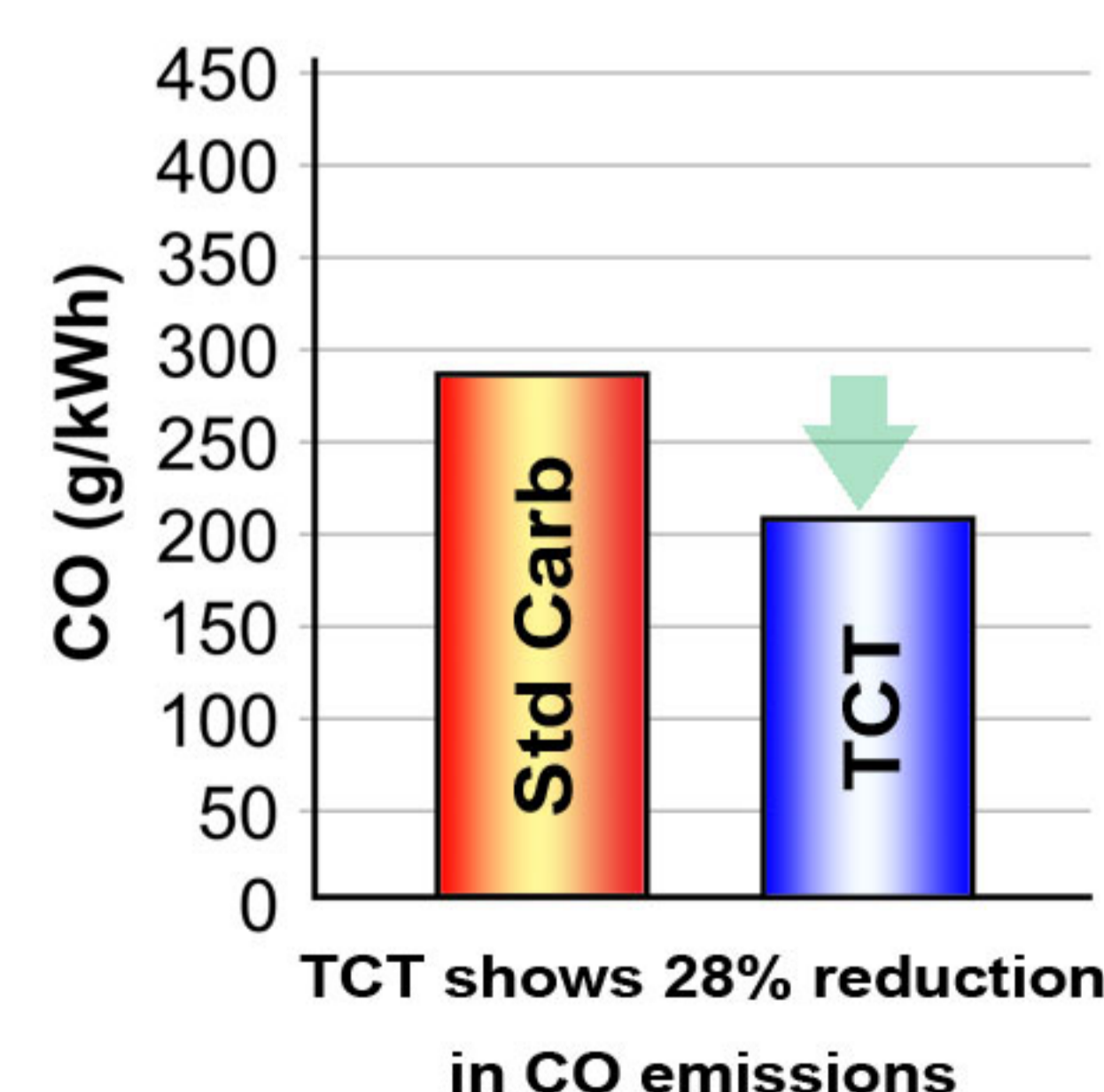
Orbital statements about TCT

- *Orbital have worked with Fjolblendir on the development of the demonstration TCT and genset*
- *Independent testing by Orbital shows that an optimised TCT has the capability to typically deliver HC+NOx emission results of over -30%, as measured on the J1088 test cycle, whilst retaining good operating characteristics. The specific engine family emission improvement capability is linked to the performance of the base engine*
- *The emission improvement offers the OEM potential to meet Phase III (or other) emission requirements without the use of a catalyst or aftertreatment*

TCT can easily be calibrated for any engine platform and any desired AFR curve



Honda GX-160 Engine Out Emissions (No aftertreatment) J1088 Cycle A
TCT AFR profile shows on other graph



Independently tested by:



Managing Director Mr. Halldór Kvaran
Technical Director Dr. Stephen Glover

e-mail halldor@tct.is
e-mail sglover@tct.is

Tel. +(354) 555 6022
Tel +(44) 787 967 1427

www.tct.is