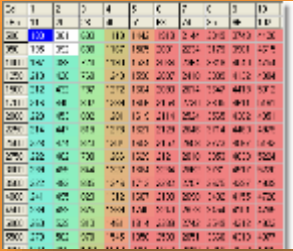
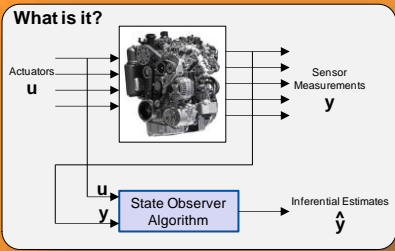





NEW OPPORTUNITIES THROUGH TURBOCHARGER SPEED MEASUREMENT

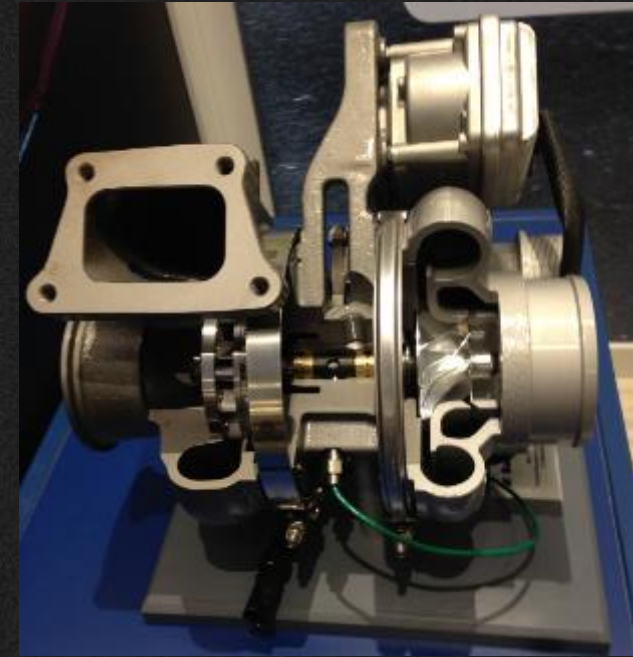


INCREASED PERFORMANCE
IMPROVED RELIABILITY
HIGHER EFFICIENCY

	Look-Up Table Based Estimator	Physics Based Virtual Sensor	Physical Sensor
			
Cost / Engine	\$-\$\$ (inhouse)	\$	\$\$
Development Time	Dyno Mapping (~1 month)	Fitting (~1 week)	Plug & Play
Power Margin	O	+	++
Altitude Margin	O	+	+
Time to Boost	O	+	++
Bi-Turbo Balance	O	+	+
Overspeed Protection	+	++	++
Diagnostics	-	O	++
Installation / Mounting	+	+	O
Reliability	O	O	+
ECU Impact	Table	Model	Customizable
Safety Margin Range	10-20%	5-15%	1-2%

VARIABLE RELUCTANCE (VR)

VARIABLE MAGNETIC RESISTANCE USED ON FERROMAGNETIC TARGETS SUCH AS THE CARTRIDGE SHAFT



PASSIVE/ACTIVE EDDY CURRENT (PEC)

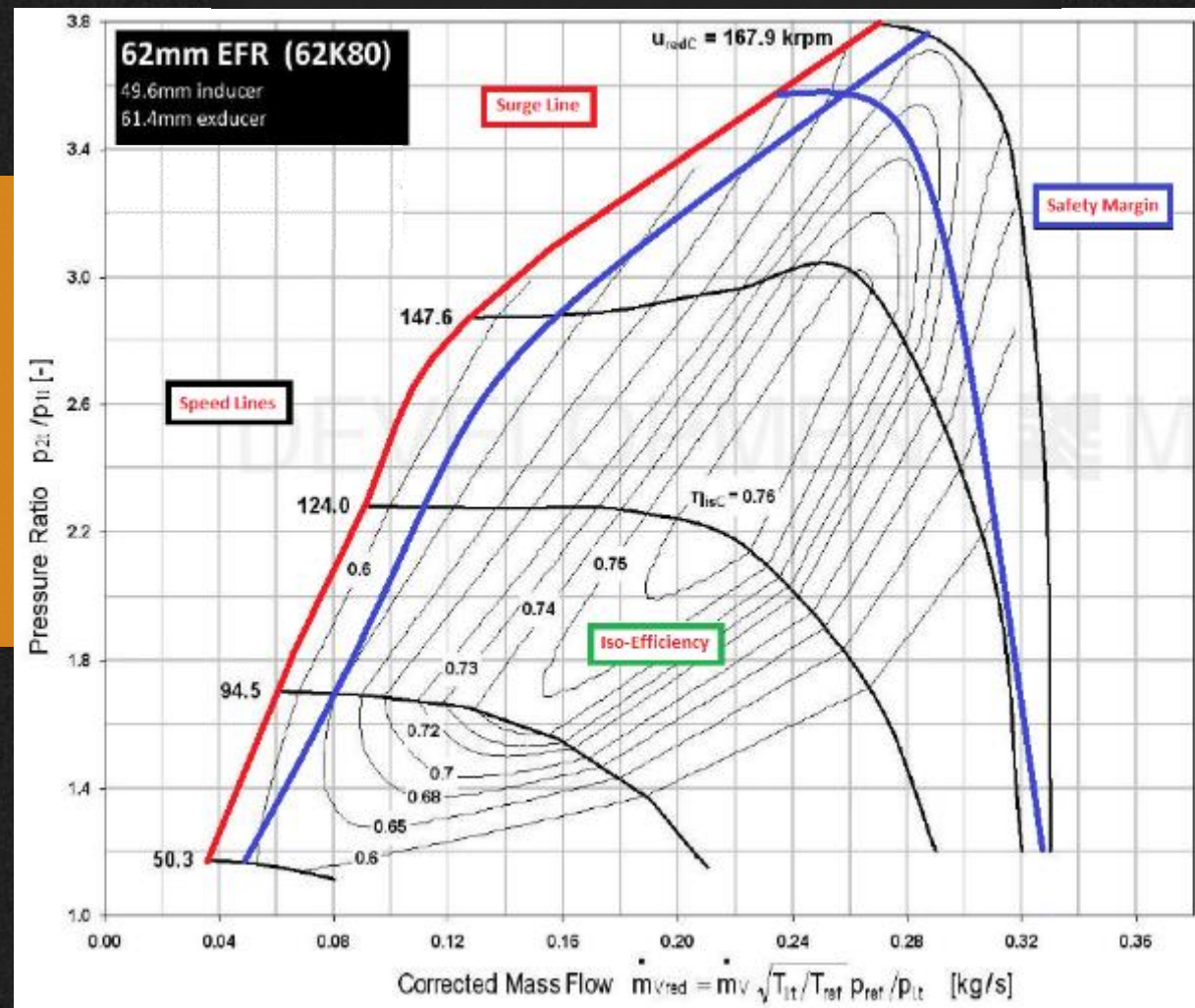
CURRENT INDUCED IN AN ELECTRICAL CONDUCTING TARGET AS THE COMPRESSOR WHEEL





INCREASED PERFORMANCE
IMPROVED RELIABILITY
HIGHER EFFICIENCY

INCREASED PERFORMANCE



INCREASED PERFORMANCE

A large, semi-transparent wireframe graphic of a turbine or compressor is centered in the background. It features a central hub with multiple blades or vanes radiating outwards, and a large circular casing. The wireframe is composed of thin white lines on a dark background.

SAFETY MARGIN
POWER & TORQUE
SYNCHRONIZATION
ALTITUDE

INCREASED PERFORMANCE

CONTROL
MULTI-COMPRESSOR
SYSTEMS

MINIMIZE HARMFUL
OPERATION

ADAPT TO
CHANGING
ALTITUDES

**TURBO-
CHARGER
CONTROL**

MONITOR
COMPRESSOR
EFFICIENCY

INCREASE MAXIMUM
OPERATING SPEED

A white wireframe diagram of a mechanical component, possibly a valve or a pump, is centered within a large orange circle. The component has a complex, multi-part structure with various cylindrical and rectangular sections. An orange horizontal bar is positioned across the middle of the circle, partially obscuring the component.

INCREASED PERFORMANCE
IMPROVED RELIABILITY
HIGHER EFFICIENCY

IMPROVED RELIABILITY

DIAGNOSE AIRPATH

MONITOR LIFETIME

DIAGNOSTICS

IMPROVE ZERO-FUEL
CALIBRATION

OPTIMIZE
COLD START



DIAGNOSE AIRPATH

LEAKAGE
COLD START
CLOGGED AIR FILTER



ZERO FUEL CALIBRATION

EXHAUST AIR ENTHALPY



INCREASED PERFORMANCE
IMPROVED RELIABILITY
HIGHER EFFICIENCY

HIGHER EFFICIENCY

EXHAUST
GAS PRESSURE

EXHAUST GAS
TEMPERATURE

MODELLED
DATA

AIR MASS
FLOW

INJECTOR
TIMING

HIGHER
EFFICIENCY



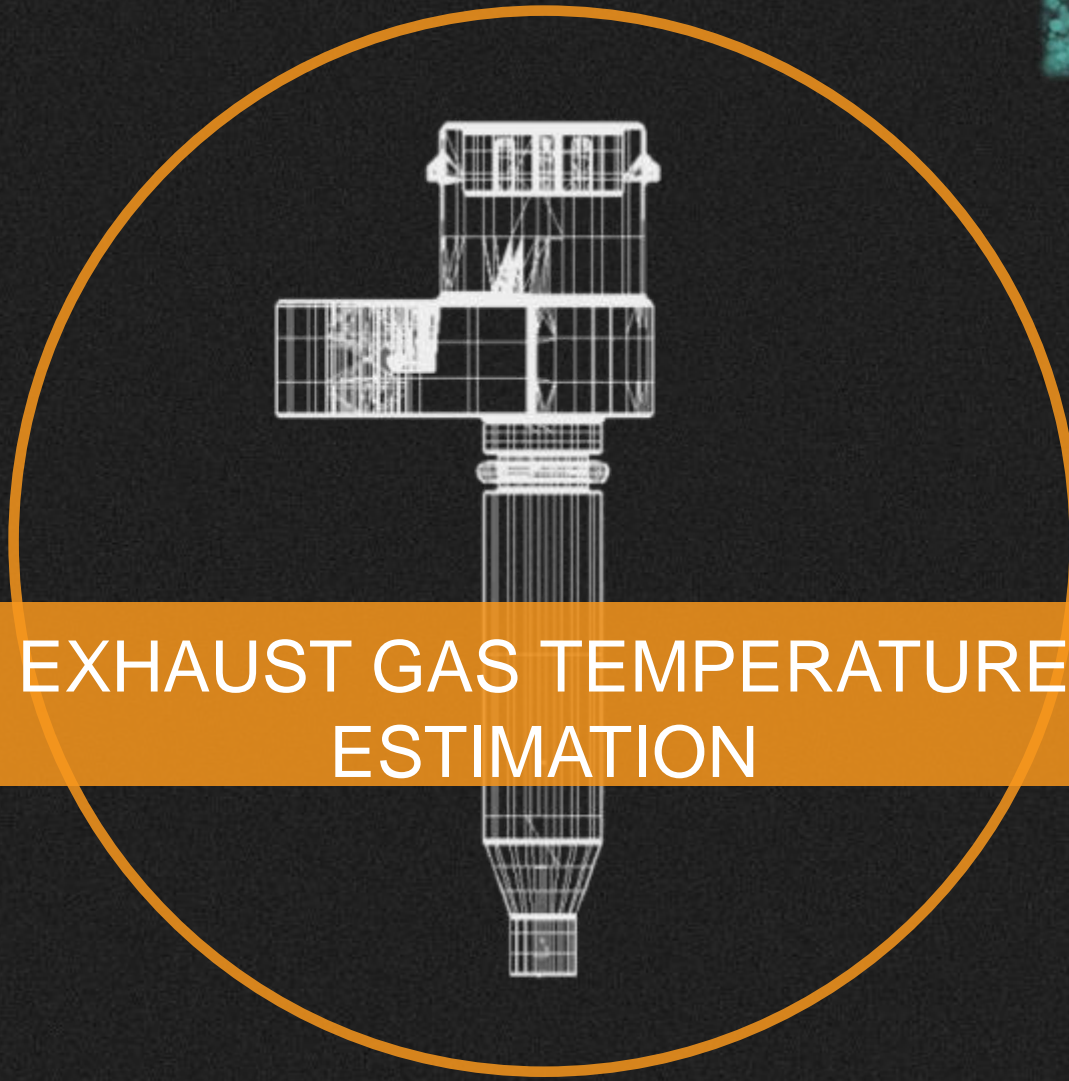
AIR MASS FLOW ESTIMATION



HIGHER
EFFICIENCY

STRENGTHEN THE MAF
ROBUST AND RELIABLE
NO CALIBRATION
NO DELAY
COST SAVINGS

HIGHER
EFFICIENCY



EXHAUST GAS TEMPERATURE ESTIMATION

A wireframe model of a turbine, showing its complex internal and external structures, including the compressor and turbine sections, rendered in a light gray color against a dark background.

HIGHER
EFFICIENCY

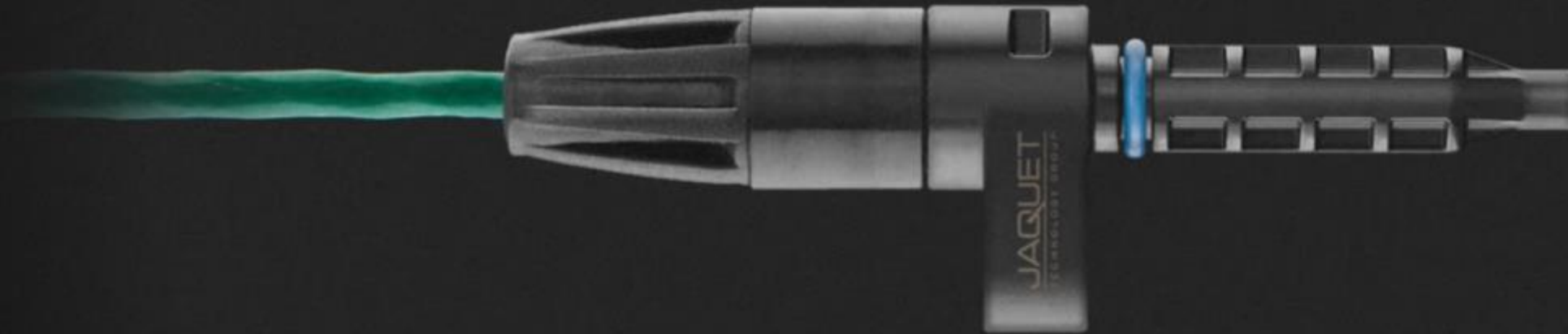
STRENGTHEN THE T4

REAL TIME

FASTER CONTROL ON COMBUSTION PROCESS

IMPROVED EMISSIONS CONTROL

LESS IS MORE



APOLLO

ONE SENSOR
TWELVE OPPORTUNITIES

SERVING ALL MAJOR
MANUFACTURERS

LEADER IN
TURBOCHARGER
SPEED SENSING

OVER 10 MILLION TURBO
SPEED SENSORS IN TRAFFIC

JACQUET
TECHNOLOGY GROUP

FIVE
TECHNOLOGY
PLATFORMS

116 PROGRAM
LAUNCHES

95% MARKET SHARE

TE
connectivity



Jonathan Tigelaar, MSc.
Jonathan.tigelaar@jaquet.com
0041-79-527-71-39

JAQUET Technology Group AG
Thannerstrasse 15 | CH-4009 Basel | SWITZERLAND
www.jaquet.com