CetaneNumber

Powered by icon

All icon products are…

Easy to use: with an armoured glass wipe-clean touch-screen and intuitive multi-lingual graphic user interface.

Certified to global standards: ATEX, IECEx, and ETL approved to give absolute confidence and peace of mind in hazardous areas and manufactured under an ISO9001:2008 certified Quality Management System.

Robust and fully explosion proof: no air or inert gas purging required for safe operation in explosion hazard areas.

Safety assured: with an alarm for internal sample leakage.

Highly efficient: with low sample consumption and sample & coolant flow monitors.

Flexible: with standard 4-20mA and alarm contact outputs, and Modbus RTU over RS485 or Ethernet (TCP/IP).

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What does it do?

The icon scientific Cetane Number Analyser (Cn) provides the refinery with a quick and accurate Cetane number measurement without drawbacks of the traditional CFR Engine or the issues associated with model based chemometrics used in FTIR and Raman spectrometers. The analyser works well with Diesel and Biodiesel products. The measurement includes the effects of Cetane improvers thus enabling real time control of a diesel blending plant. The analyser Correlates to ASTM D7668.

The Icon Cetane Number Analyser is designed to replace the traditional Engine based method, it's cheaper, faster and a lot less maintenance. It is also designed to be complimentary to lab based Cetane Number measuring instruments thus making bias management more straightforward.

How does it work?

The icon scientific Cetane Number analyser delivers fast and accurate results thus increasing the profitability of the blending process. The diesel blend is introduced via a fuel injector into a chamber that is heated to 600°C. The time taken from injection to ignition and combustion are measured and the cetane number is calculated from these time delays.

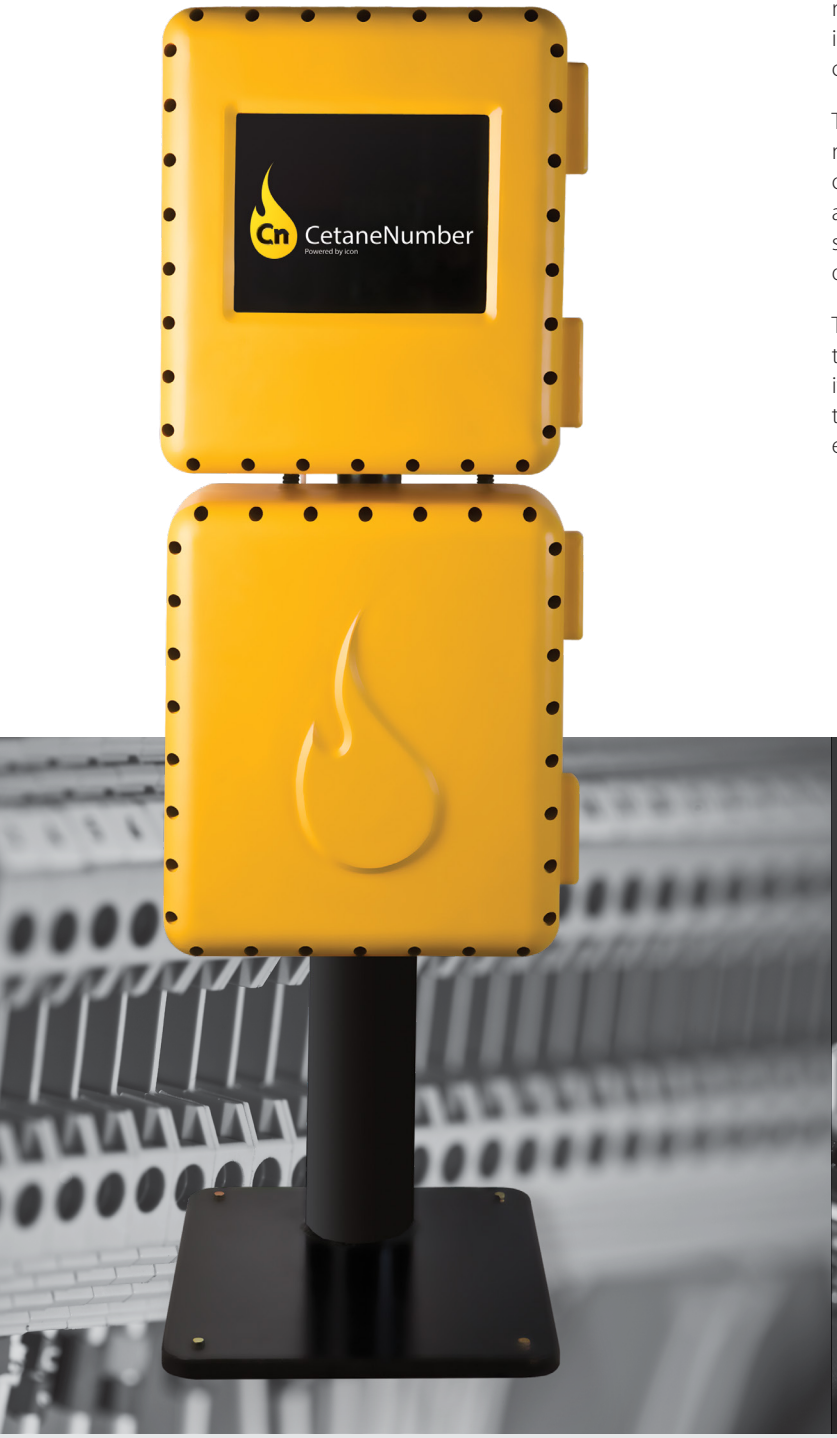
Why choose the icon scientific Cetane Number Analyser?

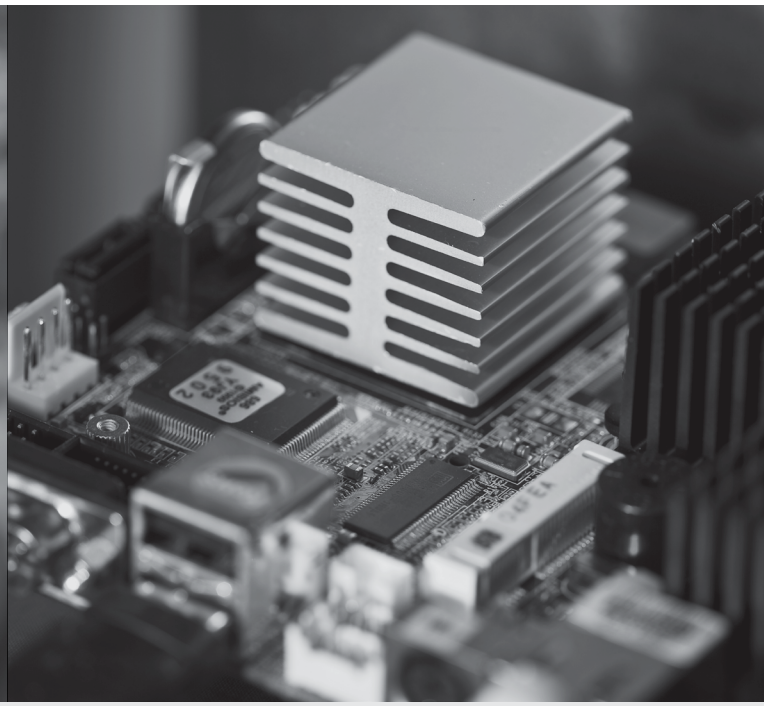
Excellent repeatability: with advanced fast detection, the icon Cetane Number analyser delivers real time measurements for process control purposes.

Sample utilities: the analyser has been specifically designed for the process environment and has the option of a pressure multiplier/scrubber to clean and boost the pressure of plant instrument air for making the measurement. Synthetic air from cylinders is required if this option is not utilised.

This is the first process analyser to address the cost and maintenance issues associated with the use of the CFR Engine or technologies like IQT. As it is relatively simple to operate and maintain, costs are greatly reduced when compared to spectroscopic methods as there is no need for complex model development and maintenance.

The Cetane Number analyser is fitted with the ground-breaking touch screen interface as seen in the other Icon instruments, its designed for ease of operation whilst giving the operator or technician access to vast amounts of useful information in an easily digestible format.





Sample Requirements

Sample Filtration	Free from non-dissolved water and filtered to 10 microns.
Sample Inlet Temperature	10-50 °C
Sample Inlet Pressure	3-5 barg
Sample Outlet Pressure	Atmospheric, with continuous fall to sample return point.
Sample Consumption	Typically 10-30 L/hour

Utility Requirements

Synthetic Air	From cylinders: 25-30 barg Consumption: approx. 1 cylinder per 24 hours of continuous operation.
Coolant	Maximum 10 barg, at 30-60 L/hr and 10-40 °C. Filtered to 10 microns.
Power	230VAC 50-60Hz, Max 1000VA

Installation Requirements

Location	Unit must be located out of direct wind sun and rain.
Ambient Temperature	+5 to +40 °C
Ambient Humidity	0-95% RH, non-condensing.

Control System

Control System	Based on fan-less industrial PC with solid state hard drive.
Graphical User Interface (GUI)	17" armoured glass touch-screen. The GUI is used to program the unit and display current and historical analyser results and alarm status.
Language	User-selectable multilingual display.

Certification

Hazardous Area Certification	The Cetane Number analyser is Exd certified to ATEX & IECEx standards, suitable for zone 1 or zone 2 use in gas groups IIA, IIB, or IIB+H2, with a variable T-rating depending upon application. It is also ETL listed for the USA and Canada Class 1, Div 1, groups B,C,D.
IP Ratings	Tested and certified to IP66.

Specification

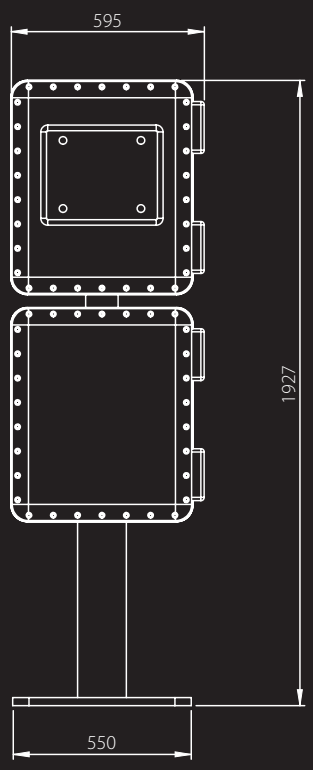
Measuring Range	35 to 75 Cetane Number
Repeatability	≤0.38 (CN40) ≤0.59 (CN51)
Cycle Time	<2 minutes per cycle. Typically uses 5 to 8 cycles to give results from averaged combustion curves.

Inputs/Outputs

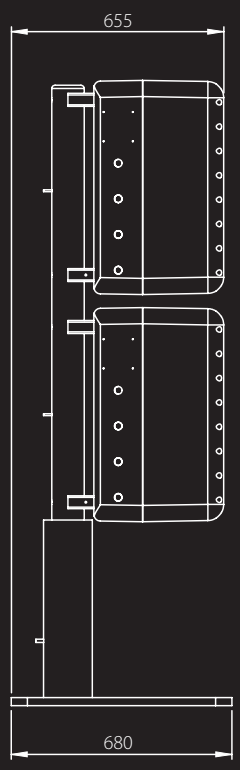
Analog Outputs	3 x 4-20mA (active) isolated outputs provided as standard for ignition delay (ID), combustion delay (CD), and cetane number.
Digital (Contact) Inputs	Run / Standby: reads a customer supplied latching switch to toggle between run and standby modes. Remote Val: reads a customer supplied momentary switch to remotely initiate a validation cycle.
General Fault Alarms	Alarm limits can be configured for monitored conditions, and set to be Fatal, Warning, or Inactive. Active alarms are notified on screen and stored in the alarm history table.
Digital (Contact) Outputs	Fatal Alarm (NC): this general fault alarm will cause the analyser to suspend its operation when triggered. Warning Alarm (NC): this general fault alarm is for notification only. New Result (NO): a 10 second monostable contact to notify that a new analyser result is available. Data Valid (NO): this contact will indicate that the analyser is running, and that data is valid. As opposed to when a calibration or validation is in progress, or when the analyser is in standby. Validation (NO): this contact will indicate that the analyser is in validation mode. Spill Alarm (NC): this alarm contact will trigger if a leak is detected in theanalyser enclosure. All contact ratings are 24VDC 0.5A, 230VAC 1A
Analog Inputs (optional)	The analyser can optionally read up to four 0-10V or 4-20mA active signals. These inputs may be displayed, and the values can each have an alarm level associated with them.
Digital (Contact) Inputs (optional)	The analyser can optionally monitor up to four volt-free external contacts. These contacts may be included in the alarm table.
Communications	Modbus RTU or OPC over RS485 or Ethernet (TCP/IP), with optional fiber optics. Optional OPC server software.

Dimensions & Weights

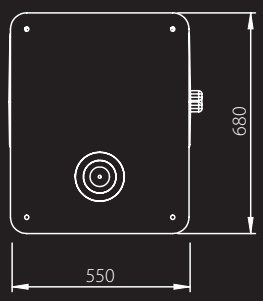
Front view



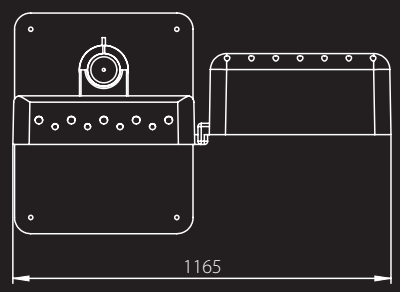
Side view



Bottom view with door closed



Top view with door open



Notes:

All dimensions in mm

Unpacked weight approx. 420kg
Packed weight approx. 527kg

Setting the Standard for Automation™