Excellent Accuracy of Derived Cetane Number for Diesel Fuels

CETANE ID510

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herzog
by PAC

Excellent Accuracy of Derived Cetane Number for Diesel Fuels

- Approved Method ASTM D7668
- Easy to Use, One Button Operation
- Excellent Precision and Perfect Correlation to ASTM D613
- Ideal for Samples with Cetane Improver and all types of Biodiesel and Biodiesel Blends
- High Standards for Safe Operation

CETANE

ID 510

INTRODUCTION

Accurate analysis of Derived Cetane Number (DCN) is an important tool for diesel and biodiesel fuel blenders and refineries to maintain fuel consistency and quality. New fuel regulations for emission reduction and more fuel efficiency demand higher Cetane Numbers. Therefore the use of Cetane improvers in diesel is increasing, leading to a growing demand for Cetane number measurement technologies because Cetane Index calculation is not working for Cetane improved samples and for Biodiesel. Existing technologies such as CFR Engine and CVCC methods do not meet present market requirements with their highinvestment and operational cost, difficult operation and poor system performance.

HERZOG CETANE ID 510 ANALYZER - ASTM D7668

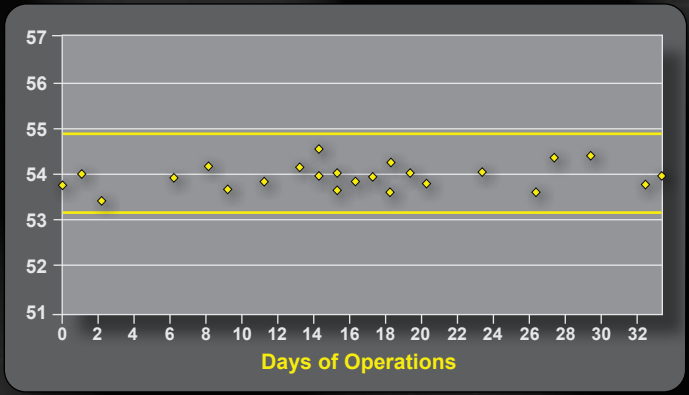
Herzog by PAC developed the Cetane ID (CID) 510, a compact and easy to use analyzer, with fully automated test and calibration sequences, and that offers extremely high precision analysis. It provides perfect correlation to ASTM D613, and is Ideal for biodiesel and biodiesel blends as well as cetane improved samples. The Cetane ID 510 by PAC is approved as standard ASTM D7668, “Standard Test Method for Determination of Derived Cetane Number (DCN) of Diesel Fuel Oils – Ignition Delay and Combustion Delay Using a Constant Volume Combustion Chamber Method.” The CID 510 offers significant cost benefits: low investment cost (2x cheaper than traditional systems), minimal operation cost, and it requires much less valuable bench space and no separate room. The fast analysis throughput contributes to high labproductivity and the CID’s long-term stability and automated calibration minimizes risks on down-time.

ADVANCED AND UNIQUE DESIGN

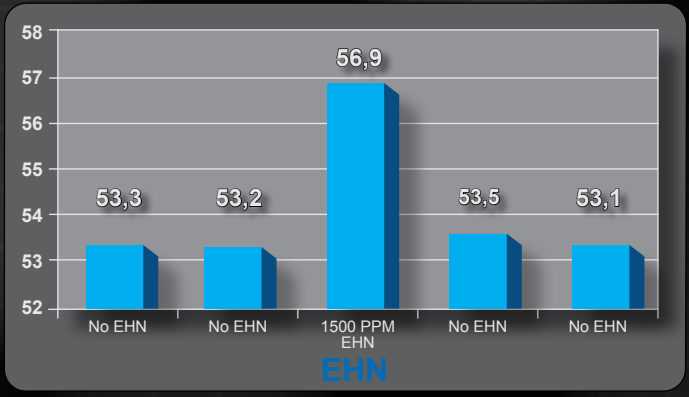
The fuel injection system is a modern high pressure common rail injection system which is electronically actuated offering ultimate precision. The common rail injector allows for much higher injection pressures (up to 1500 bar) yielding a completely volatilized test sample and therefore better, soot-free combustion than other Constant Volume Combustion Chamber (CVCC) instruments. The faster evaporation makes the pre-flame reactions observable. The pre-flame clearly shows the affects of cetane improvers such as 2-ethylhyxylnitrate on the combustion process. Finally, the electronically controlled injector guarantees high precision in fuel injection volume making the results more repeatable.

FEATURES AND BENEFITS

- Fast and precise analysis of derived cetane number for diesel fuels
- Easy to use, one-button operation allow a fully automated test and allow high lab productivity
- Highly accurate performanc exceeds results of CFR Engine and other CVCC methods
- Excellent correlation to ASTM D613
- No carry-over effect from previous samples
- Long-term stability and automated calibration minimizes risk on down-time
- Various advanced features contribute to high safety standards



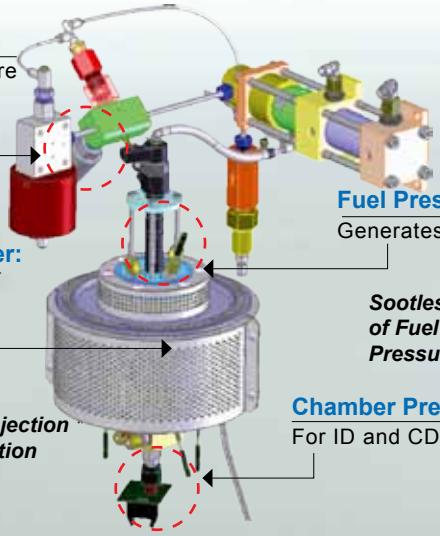
Long-term stability



No carry-over effect

Electronically Controlled Fuel Injection System:
Simulates real world Diesel engine systems •
Multiple nozzles •
Generates very fine droplet size •
Provides accurate injection volume •

Injection Pressure Sensor:
Constant Fuel Injection Pressure



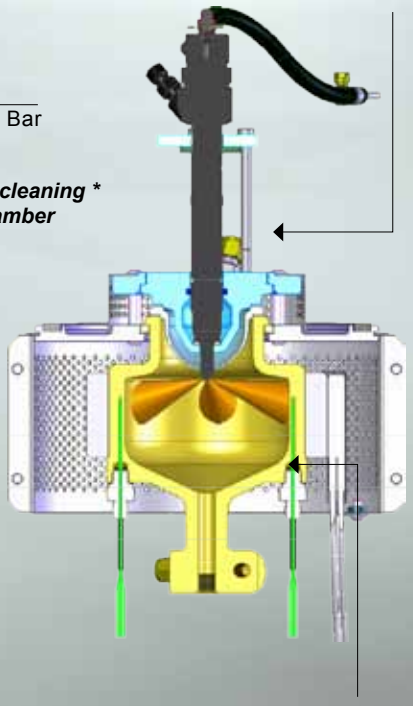
Fuel Pressure Multiplier:
Generates Injection Pressure: 1000 Bar

Uniform Heated Test Chamber:
Accurate Chamber Temperature

Sootless combustion eliminates cleaning * of Fuel Injection System and Chamber Pressure Sensor

Advanced CID 510 Fuel Injection Design for better combustion

Chamber Pressure Sensor:
For ID and CD Detection



Heated Combustion Chamber:
Uniform fuel distribution •
Faster fuel evaporation •
Efficient mixing with air •
Sootless combustion •

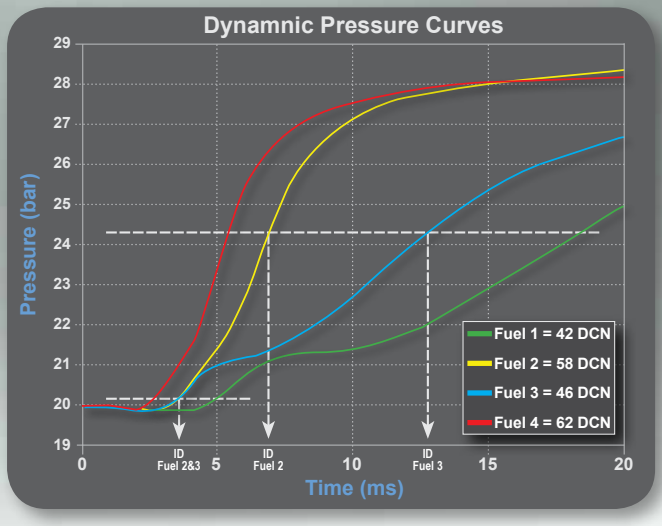
SYSTEM DESCRIPTION

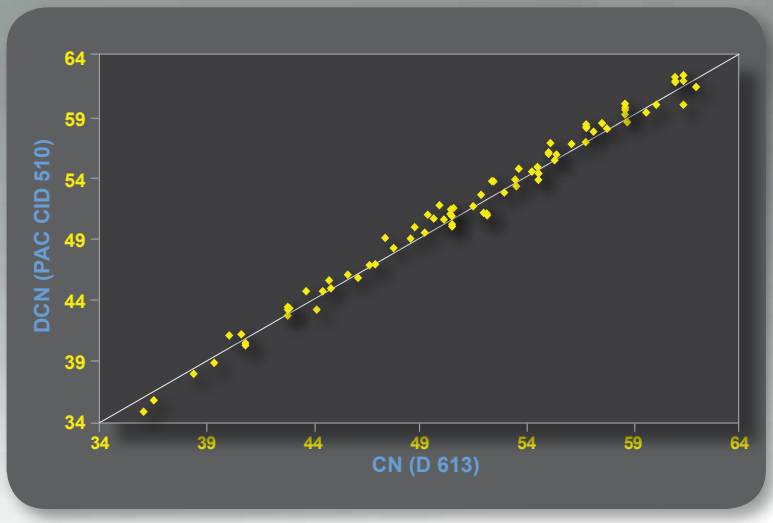
The CID 510 system with 'one-button operation' for simple and ease of use, includes the following features:

- Bench top unit requiring minimal small bench space
- Advanced electronically controlled fuel injection design for high accuracy of fuel injection volume
- Unique combustion chamber with standard high pressure multi nozzle injector for sootless combustion
- Built-in fuel filter with automatic replacement message
- Automated diagnostic functions, e.g. automated leak test for combustion chamber
- Built in printer with flexible report formats
- Data export to LIMS and Excel
- Stand-alone instrument - no PC required

EXCELLENT PRECISION AND PERFECT CORRELATION TO ASTM D613

Only the Herzog by PAC CID 510 system includes ignition delay (ID) and combustion delay (CD) measurement to predict the correct derived cetane number compared to ASTM D613 for fuel 2 and fuel 3:





A preliminary Round Robin confirms better correlation to CFR Engine ASTM D613 for cetane improved diesel, biodiesel and biodiesel blends. Furthermore the CID 510 shows long-term calibration stability, and has no carry-over effect from previous samples.

HIGH SAFETY STANDARDS

The CID 510 incorporates various features for a secure operation:

- Built in fire monitoring and suppression system
- Over pressure protection for combustion chamber and injection system
- Over temperature switch and coolant flow rate sensor protect injector and pressure sensor
- Fuel level sensor avoids the injection system from running dry

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SPECIFICATIONS

Operation	
Combustion Chamber	Stainless Steel
Sample Introduction	Poured into sample vessel, then automatically pressurized by externally connected nitrogen supply
Sample Volume	At least 160 ml for test, for cleaning another approximately 160 ml is required
Test Duration	30 minutes
Unit Warm Up	40 minutes
Range for Measured Derived Cetane Number	35 - 65 DCN
Cleansing	Using the following sample
Measurement Reports	
Operators	Up to 10 names of operators
Verification of test Conditions	Set-point and measurement conditions values stored in the instrument memory
Diagnostics and Calibration	Automatic Calibration Sequence. Error message and instrument test functions for easy unit diagnostics
Documentation	Detailed report of test results with the date and time of the measurement, database for storing results of the last 100 tests, result printed on built-in printer
External Connections	
Combustion Air	Compressed Synthetic Air, 20.0% O2 ±1.0%; balance is N2 <0.003 Vol.% hydrocarbons and <0.025 vol.% water; Delivery Pressure 22 to 25 bar; Fitting 1/4A Swagelok for tube ID 6.4mm
Nitrogen	Compressed Nitrogen, 99.9% purity; Delivery Pressure 8 to 10 bar; Fitting 1/4A Swagelok for tube ID 6.4mm
External Cooling System	No-flow monitor locks the instrument if cooling system is not on.
Other Specifications	
Electrical Connection	115 or 230V, 50/60Hz with automatic switching over, input power of max. 3kW
Operating Requirements	Conditions Operating temperature: 10° to 35°C, recommended 15° to 25°C 80% relative humidity at 35°C
Size	WxHxD: 600mm x 660mm x 660mm (23.6'x 26.0"x 26.0")
Weight	Weight 80kg (177lbs)

Continuing research and development may result in specifications or appearance changes at any time

HERZOG BY PAC

Herzog, originally established in 1937, is a long-established comprehensive line of laboratory instruments for testing distillation, flash point, vapor pressure, bitumen testing, cold flow properties, viscosity and other physical properties of materials.