PRECISION + LOWER OPERATION COST + MINIMUM INITIAL INVESTMENT = CID 510

Refineries must analyze their end products frequently and precisely in order to contain the costs associated with adding cetane improving additives, while meeting the specification. Constant Volume Combustion Chamber (CVCC), is an easier and more precise technology developed to substitute the CFR Engine, which is difficult to perform and costly.

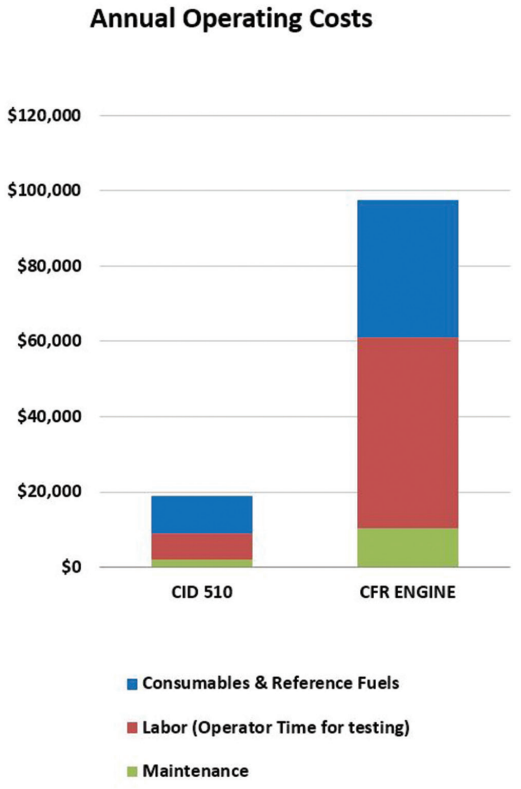
By combining an electronically controlled high pressure injection system with fully automated measuring and calibration procedures, the CVCC technology reached a new level of precision.

CID 510

Herzog by PAC pioneered this new technology in its CID 510 instrument which already has wide acceptance in the global market. With this unique technology, the CID 510 provides excellent precision in the complete DCN range from 15 to 100.

A joint ASTM and Energy Institute Inter-laboratory study with 20 samples including different diesel grades, biodiesel blends, biodiesel (B100) and samples with different cetane improver content was completed in March of 2013. A group of 17 laboratories participated from the United States and Europe to compare the cetane number determined with the CFR Engine and the DCN determined with the CID 510. The highly precise results for the DCN from the CID 510 achieved in this ILS are published by ASTM and CEN TC19 in the ASTM D7668 and EN 16715 test methods.

Test methods ASTM D7668 and EN 16715 for our CID 510 are officially approved as alternative test methods to the ASTM D613 / ISO 5165. Since 2015, ASTM D7668 is listed in the following diesel specifications: ASTM D975, ASTM D6751 and ASTM D7467. The European equivalent test method EN 16715 should be listed in the European Diesel Specification EN 590 by the end of 2016, since CEN TC19 WG 24 has already approved it.



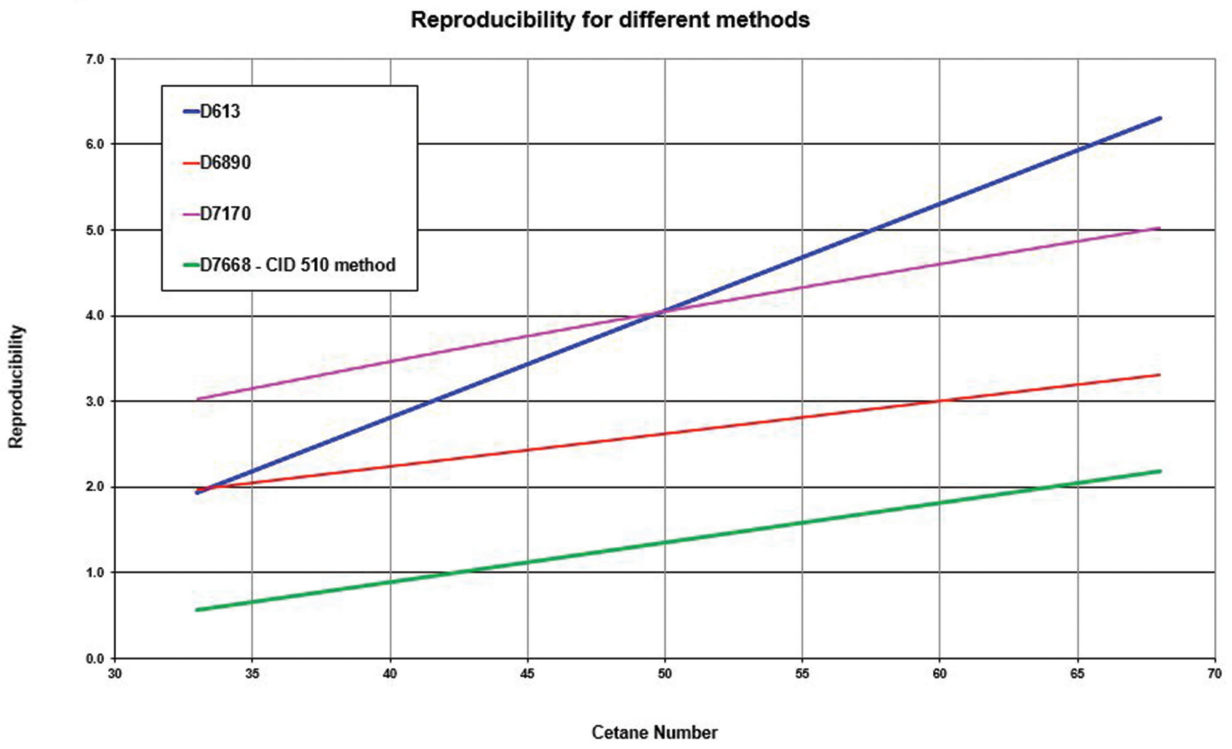
Annual Operating Cost

Besides excellent precision and perfect correlation to the reference methods ASTM D613 and ISO 5165, the CID 510 provides numerous benefits, including:

- **Improved ease of use** – fully automated measurement and calibration
- **High safety standards** –fully enclosed with over-temperature and over-pressure protection. Includes a built-in fire monitoring and extinguishing system.
- **Reduced maintenance** – with soot less combustion, operators do not need to clean the test chamber. Thanks to the high calibration stability operators don't require to do weekly or daily calibration
- **Space saving** – CID 510 is a bench-top model approximately 70% smaller than the CFR Engine

Refineries are constantly trying to contain costs while meeting ever-increasing fuel regulations. With electronically controlled high pressure injection technology and measurement of ID and CD (ASTM D7668) from the Herzog CID 510, the cetane number results are much more precise, which ultimately increases the refinery's profitability.

The Herzog|PAC CID 510's initial investment cost is less than half than the competition. The operational cost for: reference fuels to run the test, operator time for testing, calibration and maintenance costs can be reduced by 80% compared to the CFR engine operational costs. The high level of precision and low operational costs guarantee the CID 510 is the best option in the market.



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