



Coordinating European Council



The European Fuels and Lubricants Performance Test Development Organisation

CEC is an Industry-based organisation for the development of new Test Procedures for the performance testing of Automotive Engine Oil, Fuels (using gasoline & diesel engines) & Transmission Fluids. In addition, it covers Marine & Large Engine Oils, Two-stroke Engine Oils, Associated Bench Tests and Industrial & Hydraulic Fluids.

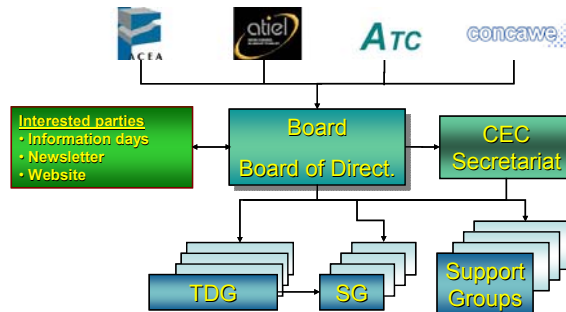
It maintains existing tests on an ongoing basis, concentrating on quality assurance and maintaining confidentiality amongst Stakeholders. It also manages the provision of Reference Fluids (lubricants and fuels) for its tests.

CEC forms part of EELQMS - European Engine Lubricants Quality Management System.

CEC is based in Brussels and maintains a Secretariat in Leicestershire UK.

Stakeholders and Members of CEC are:

- **ATC** (Association of European Additive Manufacturers)
- **ATIEL** (Association of European Lubricant Manufacturers)
- **ACEA** (Association of European Vehicle Manufacturers)
- **CONCAWE** (European Refining EH&S organisation)



In order to be effective, efficient and flexible a lean organisational structure has been established consisting of the following:

The **Management Board** runs the organisation and consists of 2 delegates from each member organisation and a chairman. It oversees Test Development, Surveillance and Support Groups and manages the organisation, meeting typically every 8 weeks. Individual Board members are responsible for dedicated activities.

The **Secretariat** publishes and sells all CEC Test Methods, manages the CEC Website and supports the whole organisation, in particular the Management Board.

Test Development Groups (TDGs) are responsible for new test development and define the test protocol. Members include the hardware supplier, contributing sponsor companies and supporting

TEST DEVELOPMENT PROCESS

The main objective of CEC is to develop performance tests and test procedures according to industry needs. The new test development process is a key element of the restructured CEC and aims for short, efficient development. Product sequences are becoming shorter and tests may not last for long periods - another reason for optimised processes to develop new tests.

Key stages of the new test development process are as follows:

1. The need for a new lubricant test is agreed outside of CEC by ACEA, ATIEL, ATC [AAA], or ACEA, ATC, Concawe [AAC] for fuel tests
2. CEC is asked by AAA or AAC to co-ordinate the test development
3. A Tender document is written by a small group of experts describing the major elements of the development and the expected timescale and issued to a broad selection of engine/lubricant/fuel testing laboratories.
4. The CEC Management Board [MB] assesses the tender replies and awards the development contract to a single lead laboratory
5. A request for sponsors is issued by the CEC MB to OEMs, Oil companies, Additive companies and laboratories inviting them to fund and participate in the development
6. The lead laboratory and sponsors work together to develop the test within the scope of the tender document with the aim to reach test-discrimination and repeatability (Phase 1) according to CEC operating guidelines.
7. The Test Development Group has sufficient autonomy to revise the test programme as experience is gained.
8. The CEC MB reviews the work completed in the lead laboratory, decides whether to award the method a formal CEC designation and to expand the development to other laboratories which are part of the TDG to launch Phase 2 (Reproducibility) of the test development process.
9. Secondary laboratories, with support from the lead laboratory, install 'clones' of the prime installation, carry out a series of reference tests to judge their alignment. If this is achieved they are allowed to begin candidate testing.
10. Finally the MB reviews the test development and its results. If targets are achieved the method will be finalised, approved and ready to be released and used. As a result of this the group becomes a Surveillance Group [SG].

Funding of such programs can be by test laboratory(-ies), Association Member(s), OEM's, Industry Association(s) or any combination of these.

TEST DEVELOPMENTS

TDG-L-089 – Fuel Economy Longevity

This test development has been completed. The findings have been published in SAE 2004-01-2023: Fuel Economy Retention in Passenger Car Diesel Engines, a Review of the First Test Development Undertaken by New CEC.

TDG-T-091 - Torque Converter Clutch Test

The test development has been completed and the test method published. The test evaluates fluid or friction plate material in torque converter clutch with regard to friction characteristic in a test rig under variable conditions. The ZF GK 1 test rig with a semi torque converter adapter system is used.

TDG-F-092 – Non-Start Problems Relating to CCD Flaking (BMW M52B20)

This test development has been completed and a Code of Practice has been produced.

TDG-L-093 - Oil Dispersion at Medium Temperature for Passenger Car DI Diesel Engines (PSA DV4)

A test method has been developed and published. This method allows the evaluation of combustion soot effect on engine oil viscosity increase and piston cleanliness. The test is included in the ACEA 2004 and 2008 Oil Sequences. It uses the PSA DV4 diesel engine.

TDG-L-094 – Determination of Asphaltene content of In-service Lubricants in Large Marine Engines

The group has developed a test method which is being evaluated with calibration heavy fuel oils. A round robin will be run to enable the statistical evaluation of the test. The purpose of the test is to quantify the amount of asphaltenes in an oil sample and to establish the source of the asphaltenes, eg. from raw fuel dilution or through blow-by.

TDG-L-095 - Determination of Insolubles in Used Engine Oil

The group has looked into available test methods and will evaluate a standard procedure for Gravimetric Filtration and Microscopic examination. The purpose is to quantify and qualify insolubles that are harmful to the engine.

TDG-L-096 - Characterisation of Cylinder Lubricants

This development has been discontinued due to lack of progress.

TDG-L-097 – High Oil Consumption

This group has completed its work and published a report with their findings on liner lacquering.

TDG-F-098 – Direct Injection, Common Rail Diesel Engine Nozzle Coking Test

A test method has been developed using an engine with an injector design representative of anticipated Euro V injector technology to increase the fouling tendency. The presence of injector deposits cause a significant loss of engine power and increased raw emissions, so the injectors need to be free of deposits. It uses the PSA DW10 diesel engine.

TDG-L-099 – The Evaluation of Engine Crankcase Lubricants with Respect to Low Temperature Lubricant Thickening and Wear Under Severe Operating Conditions.

A test method has been developed to allow the performance evaluation of Passenger and Light Duty Engine Oils with respect to wear and cleanliness. The test is included in the ACEA 2008 Oil Sequences. It uses the Mercedes-Benz OM646LA diesel engine.

TDG-L-100 – Examining Turbocharger and Intercooler Deposit Formation and Performance Loss

A test method is being developed to evaluate the performance loss of turbochargers for Heavy Duty and Light Duty Engines.

SG-L-101 – Evaluation of Performance of Heavy Duty Engine Oils

A test method is being developed to evaluate the engine lubricant performance in a Heavy Duty Engine. The test is included in the ACEA 2008 Oil Sequences. It uses the Mercedes-Benz OM510LA diesel engine.

TDG-T-102 - Evaluation of Wet Clutch Systems Using the ZF GK Rig (start clutch)

A test is being developed to evaluate differences in frictional characteristics of fluids.

TDG-L-103 - Biodegradability Test

A need was identified to update the CEC-L-33-A-93 test method for lubricant biodegradability. The group works on a modified test method to avoid using 1,1,2-Trichlorotrifluoroethane.

MAINTENANCE OF TEST METHODS

CEC maintains the following test methods:

- 25 Lubricant performance test methods
- 6 Fuel performance test methods
- 4 Codes of Practice
- 6 General publications and reports
- 4 Unsupported Test Methods, but still available due to small demand

TEST QUALITY

Test quality is seen as key strength of CEC test methods and is controlled by ISO quality specifications, the CEC statistical evaluation of test results, requirements for repeatability and reproducibility and the precision statement as outlined in the CEC guidelines.

CEC uses a test-monitoring framework for tracking the severity and precision of test methods. Engine test data required for compliance with the ACEA Oil Sequences are recorded in the ERC (European Registration Center) database under the auspices of ATC. All other tests are included in the CEC TMS (Test Monitoring System) managed by CEC. Confidentiality of the data is guaranteed.

The TMS gives participating laboratories an immediate insight into their position as a test laboratory versus the industry. Corrective measures – if needed - can be taken swiftly by laboratory without having the need to wait for the round robin test results and evaluation.

CONFIDENTIALITY

CEC is focused on the development of new tests with modern and up-to-date engine hardware, fluids and protocols. Access to up-to-date equipment and information can only be managed with strict rules concerning confidentiality of sensitive information. Such provisions have been laid down in the CEC operational guidelines to protect engine and fluid suppliers as well as the test sponsors. Test-method specific information has to be kept strictly within the working group.

Engine testing becomes more and more complex posing higher requirements for expertise procedures and facilities on the test laboratories. The sponsoring OEM may choose to establish an audit of the test laboratory before deciding on providing their support to this laboratory. The protection of confidential information can be part of this audit.

EUROPE AND THE WORLD

CEC's activities are focused on European needs, in particular with respect to hardware and conditions of use, but CEC is aware of issues that need to be addressed on a worldwide basis and is actively participating in programs for fuel performance testing.

Emphasis is given to the understanding of the real needs of the conditions of use in the various regions and the possibilities to achieve real worldwide consensus.

OUTLOOK

So far all industries involved agree that the process of restructuring CEC into an industry-based organisation with a lean structure has been worthwhile. The success of the recent test developments has demonstrated efficiency and good quality. More work is needed to improve CEC's effectiveness, whilst maintaining confidentiality for the stakeholders. The Management Board has implemented measures accordingly.

CEC's role in the short and medium term future, its change process and the trends in industry and product-globalisation are the subjects of ongoing analysis and consideration.

CONTACTS

Management Board

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Derek Mackney & Ian Field (ATC),
Benoit Engelen & Nigel Elliott (CONCAWE),
Anders Røj & Paul Greening (ACEA),
Hans Thomassen (ATIEL & Chairman)

Secretariat

Lyn Dearling, Barry Dearling & Monique Hickling
(IAS - Interlynk Administrative Services Ltd)



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USEFUL LINKS AND REFERENCES

- **CEC:** www.cectests.org
- **ACEA :** www.acea.be
- **ATC:** www.atc-europe.org
- **ATIEL:** www.atiel.org
- **CONCAWE:** www.concawe.be

ATIEL Code of Practice:

<http://www.atiel.org/codeprac.htm>

ATC Code of Practice:

<http://www.atc-europe.org/publications.asp>