

WELCOME

Enhancing compliance with European automotive engine lubricant quality standards

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Speaker introduction



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- Member ATIEL BOI/VGRA, Industry Liaison and Quality Management Systems Committees
- 17-year career in the lubricants industry

Today's session - what we will cover

- Introduction to ATIEL
- European lubricants business environment
- About ACEA and European specifications
- The European Engine Lubricants Quality Management System (EELQMS)
- Business response: quality compliance and monitoring
- Business response: improving efficiency
- Summary and questions

The background of the slide is a light gray with a large, stylized splash of water on the left side. The water is depicted in shades of light blue and white, with droplets and ripples. The splash originates from the left edge and curves upwards and to the right. The text 'ABOUT ATIEL' is centered in the upper half of the slide.

ABOUT ATIEL

Introduction to ATIEL

- The technical association of the European lubricants industry.
- Industry body that represents European lubricant manufacturers and marketers.
- Provides expert advice to regulators, industry partners and end-consumers.
- Seeks to enhance the reputation of the lubricants industry by promoting superior standards of lubricant technology and performance.



ATIEL members



ATIEL activities

ATIEL contributes to development of best practices and standards that promote superior quality products in the market:

- Through its Code of Practice sets clear and consistent technical guidelines for lubricant development.
- Monitors current and future technical trends and regulatory programmes
- Acts as a focal point for technical issues relating to the performance and environmental demands of engine oils.
- Carries out quality surveys to assess levels of quality compliance in the marketplace.



The background of the slide is a light gray. On the left side, there is a faint, artistic illustration of a white bottle pouring a golden liquid. The liquid is captured in mid-pour, creating a dynamic splash and several small droplets. The top of the slide features a decorative header with overlapping orange and yellow circles and a black diagonal shape on the right.

EUROPEAN BUSINESS ENVIRONMENT

Environmental and Regulatory drivers

Environmental drivers:

- CO₂ emissions
- Air Quality
- Fuel type & quality

Regulatory drivers:

- Compliance
- Resource security
- Competitiveness

A background image showing a stream of golden-yellow oil being poured from a white plastic container on the left. The oil flows downwards and to the right, creating a dynamic splash with visible droplets and ripples. The background is a light gray gradient.

ACEA EUROPEAN OIL SEQUENCES

About ACEA



European
Automobile
Manufacturers
Association

- ACEA (European Automobile Manufacturers Association) represents the interests of major European car, truck and bus manufacturers.
- Membership comprises the major international automobile companies.
- Sets performance specifications for engine lubricants through its European Oil Sequences.



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IVECO



**GROUPE
RENAULT**

TOYOTA

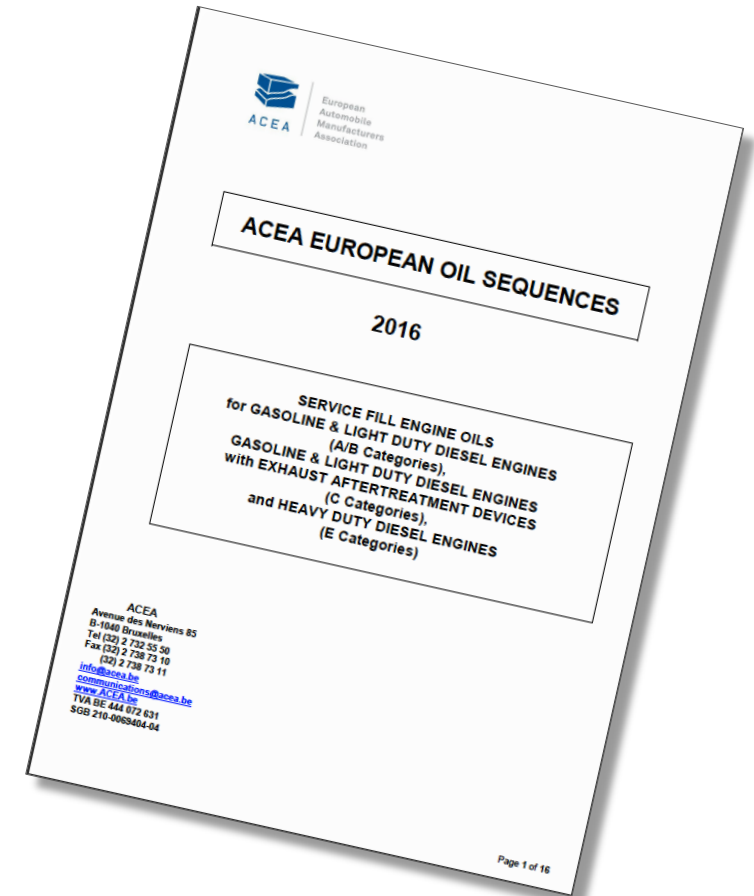
VOLKSWAGEN
AKTIENGESELLSCHAFT



VOLVO

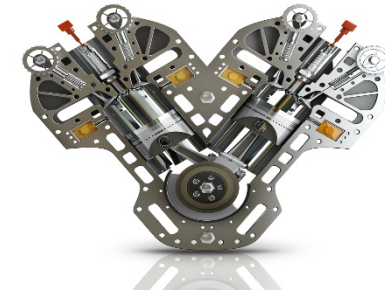
ACEA European Oil Sequences

- ACEA European Oil Sequences cover light duty passenger cars & heavy duty trucks.
- The ACEA Oil Sequences are updated regularly to address:
 - Changes in European legislation
 - Changes in engine technology
 - Changes in fuel composition
- The current issue of the Oil Sequences is ACEA 2016, released 1 December 2016.
- After 1 December 2018, all ACEA claims must be to the 2016 Sequences and the 2012 and all other previous ACEA Sequences will be obsolete.



ACEA 2016 drivers

- Increasing use of direct injection engines
Higher temperatures, more fuel dilution
- Increasing use of bio fuels
Oxidation and engine cleanliness issues
- Push for fuel efficiency/fuel economy
 - Higher M111 FE test targets
 - Allowance for 0W-20/5W-20 viscosity grades with C5
- New seal materials
Updated elastomer materials to address EU's REACH regulation



ACEA performance claims

- All lubricant **marketers** are responsible for all aspects of product liability when making ACEA claims!
- Lubricant marketers claiming ACEA performance can include claims for specific engine categories on their product labelling.
- For these claims to be valid ACEA **requires** these engine lubricants to be developed in accordance with the European Engine Lubricant Quality Management System (EELQMS).



A background image showing a white plastic jug pouring a golden-yellow liquid, likely engine oil, into a clear glass. The liquid is captured in motion, creating a dynamic splash and ripples. The scene is set against a light gray background.

THE EELQMS

(European Engine Lubricants Quality Management System)

About the EELQMS

- Voluntary quality management system for automotive engine lubricants - but ACEA requires marketers making claims to comply with EELQMS.
- Developed by industry stakeholders to promote development of improved, fit-for-purpose engine lubricants that meet increasing technical requirements.
- Designed to assist lubricant marketers in assuring the quality of their lubricants and performance claims made for them in the marketplace.
- Visit: www.eelqms.eu



EELQMS stakeholders and inputs



Summary of EELQMS guidelines

Lubricant marketers developing engine lubricants in compliance with ACEA Oil Sequences shall carry out formulation development, blending and marketing in accordance with the guidelines in the ATIEL Code of Practice and ATC Code of Practice:

- Incorporating EELQMS guidelines in a quality management system (eg ISO 9001, or ISO TS 16949).
- Ensuring an independent audit of the lubricant development process.
- Having Code of Practice checklists signed off by an authorized company representative.
- Blending products according to requirements of ATIEL Code of Practice, including accreditation to an auditable QMS.
- Signing a Marketers' Letter of Conformance and submitting the Letter and quality certificates to the EELQMS administrators, SAIL.



The background of the slide is a light gray with a subtle, artistic illustration of a white plastic bottle on the left side, tilted and pouring a golden-yellow liquid. The liquid is captured in motion, with splashes and droplets visible as it falls. The top of the slide has a decorative header with overlapping orange and yellow circular shapes, resembling light flares or bubbles.

BUSINESS RESPONSE: COMPLIANCE AND MONITORING

Differences between API and ACEA systems



Engine Oil Licensing & Certification System (EOLCS)

- One organisation (API) representing OEMs, Oil and Additives industries
- API develops and owns lubricant classifications
- Enabled development of licensing system
- Logo and policing system
- Fee-based licensing
- Licensing ('Donut') still voluntary



Voluntary code

- Different organisations representing OEMs, Oil and Additives industries
- ACEA owns Oil Sequences, but chooses not to license
- Not legally possible for ATIEL to license/police against the Oil Sequences
- Voluntary code, with signatory system (Letter of Conformance) - required by ACEA to make performance claims

Incentives to sign the LoC

- Enables lubricant companies to comply with EELQMS and the ACEA Oil Sequences.
- Signature is required by ACEA for lubricant marketers to make valid performance claims.
- Signatories have exclusive right to use EELQMS quality logo on product documentation and labelling.
- Quality of products claiming ACEA compliance are validated through quality survey programme covering all LoC signatories.
- Access to ATIEL training events and materials.
- Updates on the EELQMS and its stakeholders, such as publication of new ACEA Sequences.



ATIEL Compliance Policy

- Launched to support LoC signatory marketers who make valid ACEA performance claims.
- Encourages greater compliance across the industry through:
 - continuous monitoring of lubricant quality in the market
 - exchange of information and technical data that supports education of lubricant marketers.
- Provides framework for supporting marketers in taking corrective action to address non-compliance issues.
- Sets out procedures for ATIEL to give feedback and advice to marketers, or to take action against them, depending on the severity of non-compliance.
- Available on the ATIEL website: www.atiel.org/code-of-practice/compliance-policy.



ATIEL quality surveys

- Enhance the overall robustness of quality management.
- One of the most effective ways to measure levels of compliance with EELQMS.
- Has become an ongoing activity and a core part of ATIEL's Quality Management Committee's initiatives.
- Conducted and administered on behalf of ATIEL by independent bodies.



Quality survey methodology

- All samples sourced independently, coded and 'blind' tested.
- Tested against most appropriate ACEA European Oil Sequences and parameters including:
 - Viscosity (high and low temp)
 - Noack volatility
 - SAPS (Sulphated Ash, Phosphorous & Sulphur)
 - TBN (Total Base Number)
- Testing and statistical analysis conducted by independent expert laboratory.
- Individual results shared only with respective marketer.
- Appropriate follow-up actions and sanctions in case of serious breaches of compliance.



2017 quality survey

- 184 samples from ATIEL members, LoCs & OEMs tested over the year.
- Countries tested included Germany, UK, Russia, Poland, Belgium/Netherlands, Norway, Turkey, Spain/Portugal, Sweden and Italy
- Monthly review of data by ATIEL QMS Committee.
- Most failures due to incompatible combined claims e.g. A3/B4, C3.
Sulphated ash and TBN will fail for one of the specs.
- Other failures included TBN, Sulphated ash, NOACK, HTHS, Phosphorus, MRV and CCS.
- But number of failing oils is small.



Incompatible combined category ACEA claims

ACEA 2016 combined claims



	A3/B3	A3/B4	A5/B5	C1	C2	C3	C4	C5	E4	E6	E7	E9
A3/B3			HTHS, M111FE	SA	SA	SA	SA	SA, HTHS	TBN	SA		SA
A3/B4			HTHS, M111FE	SA	SA	SA	SA	SA, HTHS	TBN	SA		SA
A5/B5	HTHS, M111FE	HTHS, M111FE		SA, TBN	SA, TBN	HTHS, TBN	HTHS, TBN	HTHS	HTHS, M111FE, TBN	HTHS, M111FE	HTHS, M111FE	HTHS, M111FE
C1	SA	SA	SA, TBN		Phos	Phos	HTHS, M111FE, NV	HTHS, Phos	HTHS, M111FE, SA, TBN	HTHS, M111FE, SA, TBN	HTHS, M111FE, SA, TBN	HTHS, M111FE, SA, TBN
C2	SA	SA	SA, TBN	Phos		HTHS, M111FE	HTHS, M111FE	HTHS	HTHS, M111FE, SA, TBN	HTHS, M111FE, SA, TBN	HTHS, M111FE, SA, TBN	HTHS, M111FE, SA, TBN
C3	SA	SA	HTHS, TBN	Phos	HTHS, M111FE		SA, S NV, Phos	HTHS	SA, TBN	SA, TBN, Phos	SA, TBN	SA, TBN
C4	SA	SA	HTHS, TBN	HTHS, M111FE, NV	HTHS, M111FE	SA, S NV, Phos		HTHS	SA, TBN	SA, TBN	SA, TBN	SA, TBN
C5	SA, HTHS	SA, HTHS	HTHS	HTHS, Phos	HTHS	HTHS	HTHS		HTHS	HTHS	HTHS	HTHS
E4	TBN	TBN	HTHS, M111FE, SA, TBN	HTHS, M111FE, SA, TBN	HTHS, M111FE, SA, TBN	SA, TBN	SA, TBN	HTHS		SA, TBN	SA, TBN	SA, TBN
E6	SA	SA	HTHS, M111FE	HTHS, M111FE, SA, TBN	HTHS, M111FE, SA, TBN	SA, TBN, Phos	SA, TBN	HTHS	SA, TBN		SA, TBN	Phos
E7			HTHS, M111FE	HTHS, M111FE, SA, TBN	HTHS, M111FE, SA, TBN	SA, TBN	SA, TBN	HTHS	SA, TBN	SA, TBN		SA, TBN
E9	SA	SA	HTHS, M111FE	HTHS, M111FE, SA, TBN	HTHS, M111FE, SA, TBN	SA, TBN	SA, TBN	HTHS	SA, TBN	Phos	SA, TBN	

Not compatible

Possible combinations

Possible but needs care due to physical and chemical requirements

HTHS = High temperature high shear viscosity

SA = Sulphated ash

TBN = Total Base Number

Phos = Phosphorus

M111FE = M111 fuel economy

NV = NOACK Volatility

S = Sulphur

Available at:
<https://atiel.org/industry-info/acea-oil-sequences/acea-combined-claims>

A close-up, high-speed photograph of water being poured from a white plastic bottle. The water is captured mid-pour, creating a dynamic, flowing shape with visible ripples and a small splash at the bottom. The background is a soft, out-of-focus light gray.

BUSINESS RESPONSE: IMPROVING EFFICIENCY

BOI and VGRA interchange guidelines

- Determine the benefits and feasibility of a cross-industry approach to Base Oil Interchange (BOI) and Viscosity Grade Read-across (VGRA) guideline development.
- Propose a high-level process acceptable for managing the development of BOI and VGRA guidelines which is agreeable to all stakeholders with the following objectives:
 - Establish criteria to define which engine tests are selected for BOI and VGRA guideline development.
 - Explore potential cross-industry ways-of-working that may enable collaborative BOI and VGRA guideline development.
 - Define possible approaches (or protocols) for developing BOI and VGRA guidelines for new and/or existing engine tests.
 - Evaluate options for cross-industry funding of BOI and VGRA guideline development.

Benefits of VGRA guidelines

- Allows product development to be carried out in one viscosity grade and applied to multiple other viscosity grades.
- Sustains the technical principles of VGRA already in place across ACEA specifications with existing engine tests.
- Can reduce engine testing costs and overall engine test demand, hence freeing up valuable resources.
- May provide formulation flexibility to apply technologies in a range of viscosity grades.
- Helps to increase availability of lubricant formulations everywhere in the world and at any time.

ATIEL focus going forward

- Clarify and communicate the impact and requirements of each new edition of the ACEA Oil Sequences.
- Provide clear guidance and training on technical aspects of lubricant development and valid performance claims.
- Provide technical advice to individual marketers to prevent non-conforming products reaching the market.
- Make quality surveys a continuous ongoing activity.
- Communicate and enforce Compliance Policy to address products not meeting specification or performance claim requirements.

Summary

- Quality is important if you want to meet the requirements of the ACEA European Oil Sequences and make valid performance claims.
- The European Engine Lubricants Quality Management System (EELQMS) is the only quality system for meeting ACEA requirements.
- The ATIEL Code of Practice guidelines support and assist lubricant companies with development programmes that comply with EELQMS.
- ATIEL monitors quality compliance in the market and takes appropriate follow-up action where necessary via:
 - Provision of information and advice to enable lubricant companies to comply with EELQMS through trainings sessions, webinars, presentations and on its website.

Any questions?



Thank you!

For more information visit:

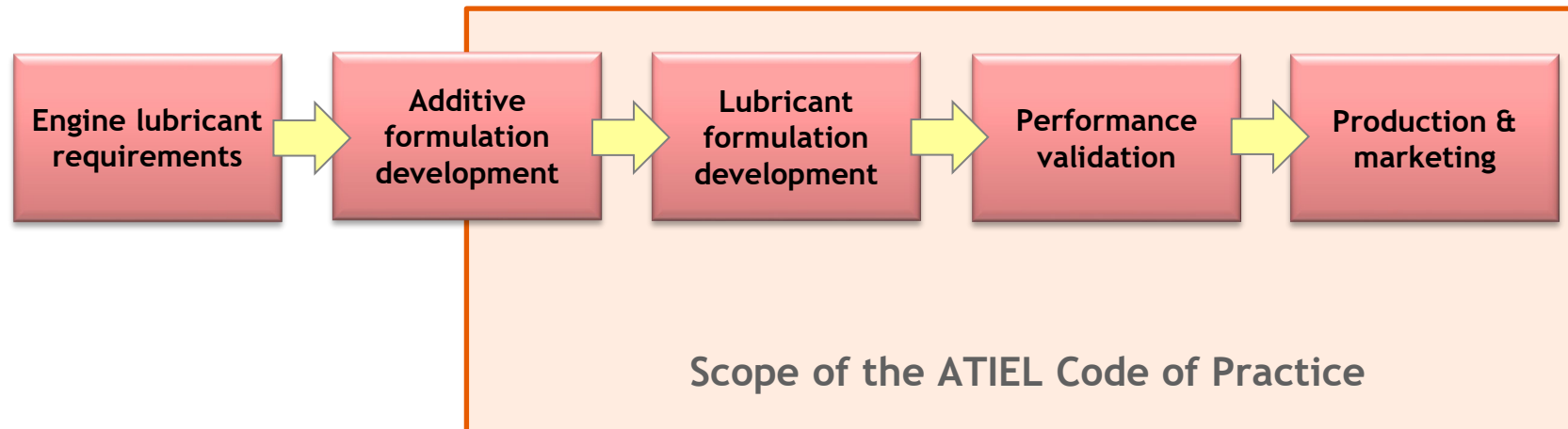
www.atiel.org
www.eelqms.eu

Contact us at: **info@atiel.eu**

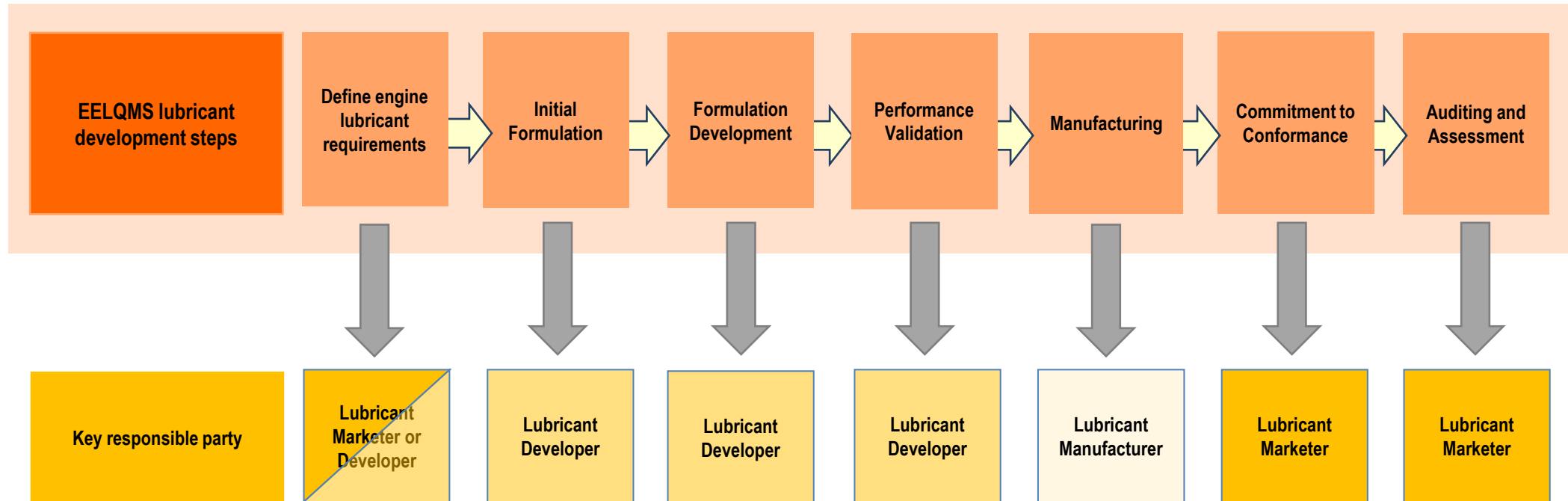
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BACK-UP SLIDES

Applying the ATIEL Code of Practice to the lubricant development



Description of EELQMS development programme



ATIEL VGRA read-across tables

One table per test showing whether a change in viscosity means the test has to be run?

ex : VW TDi table

Test run on	Can be read-across to														
	0W-20	0W-30	0W-40	5W-20	5W-30	5W-40	5W-50	10W-30	10W-40	10W-50	10W-60	15W-40	15W-50	20W-40	20W-50
0W-20		no	no	yes	yes	no	no	yes	yes	no	no	yes	yes	yes	yes
0W-30	yes							yes	yes	yes	no	yes	yes	yes	yes
0W-40	yes	yes						yes	yes	yes	yes	yes	yes	yes	yes
5W-20	no	no	no	no	no	no	no	yes	no	no	no	yes	no	yes	yes
5W-30	yes	no	no	yes		no	no	yes							yes
5W-40	yes	yes	no	yes	yes		no	yes							yes
5W-50	yes	yes	yes	yes	yes	yes		yes	yes	yes	yes	yes	yes	yes	yes
10W-30	no	no	no	yes	no	no	no		no	no	no	yes	no	yes	yes
10W-40	yes	no	no	yes	yes	no	no	yes		no	no	yes	yes	yes	yes
10W-50	yes	no	no	yes	yes	yes	no	yes	yes		no	yes	yes	yes	yes
10W-60	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes		yes	yes	yes	yes
15W-40	no	no	no	yes	no	no	no	yes	no	no	no		no	yes	yes
15W-50	no	no	no	yes	yes	no	no	yes	yes	no	no	yes		yes	yes
20W-40	no	no	no	no	no	no	no	no	no	no	no	no	no		no
20W-50	no	no	no	yes	no	no	no	yes	no	no	no	yes	no	yes	

Yes, you can change

No, test has to be run again

Cost-benefit analysis

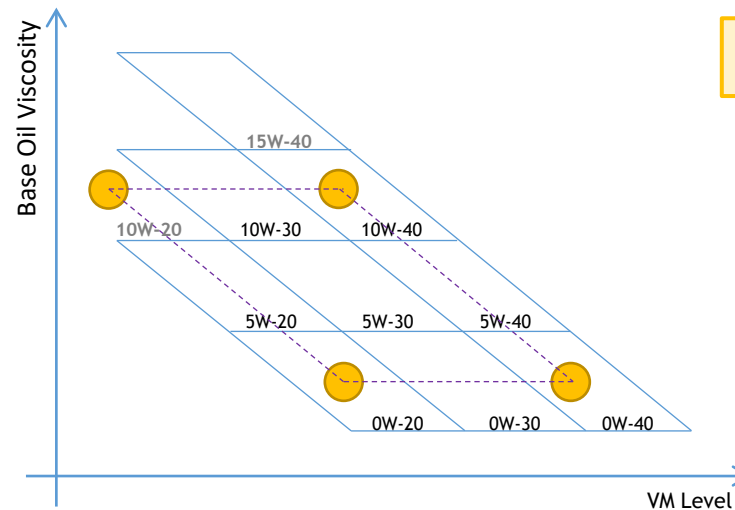
	New Engine Tests for ACEA 2016 LD				
Potential Selection Criteria	DV6	EP6	M271EVO	OM646Bio	value
A priority for VGRA?					
A priority for BOI?					
Test cost per run, EUR					
Duration of test, days					
Expected lifetime of test					
Data availability					
Cost of matrix					
Likelihood of OEM acceptance					
Grandfathering possible?					
Cost/benefit Outcome					

VGRA matrix

- Viscosity Grade coverage from 0W-20 to 10W-40.
- Group III base oil with consistent PAO correction fluid.
- Three technologies, across three suppliers.

EP6 Design

**Total cost:
approximately
€1 million**



4 tests



3 settings

- 3 additive technologies
- 1 base oil group



12 tests



4 duplicates



16 tests

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SECTION START

Heading

- Bullets
- Bullets
- Bullets

