



# Responding to technical and quality challenges impacting European engine lubricants



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## Speaker introduction



**Maria Yagoda**

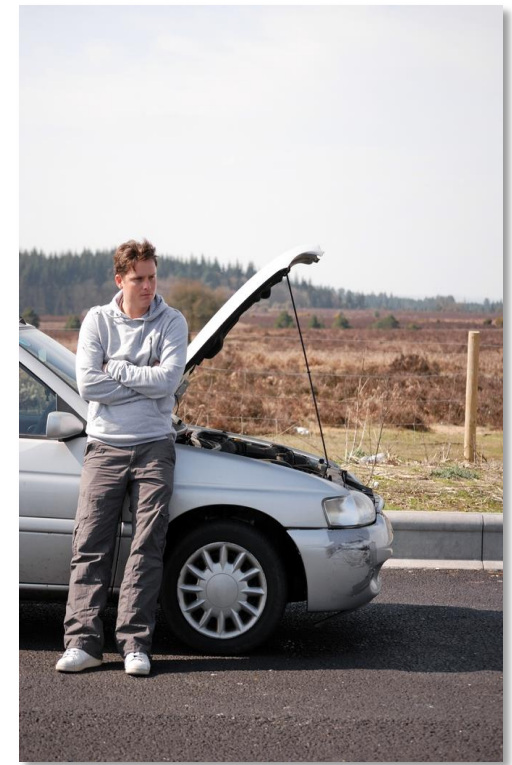
- Head of Division, OEM Product Development, LLK-International (Lukoil)
- Member of ATIEL Industry Liaison Committee and BOI/VGRA/VMI Committee
- Graduate in Chemistry and Technology of Lubricants from Russian State University of oil and gas named after I.M.Gubkin

## What we will cover

- About ATIEL
- Role of the ATIEL Industry Liaison Committee (ILC)
- European OEM (ACEA) lubricant performance specifications
- The European Engine Lubricant Quality Management System (EELQMS)
- The ATIEL Code of Practice
- Monitoring the quality of lubricants in the market

## Why lubricant quality is important

- Vehicle OEMs need to know that appropriate quality engine lubricants will be available in all their markets.
- Trade/workshops need assurance that inadequate lubricant technical performance will not lead to warranty claims.
- Consumers need confidence in the quality of the products being used in their vehicles.



## About ATIEL

- 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.



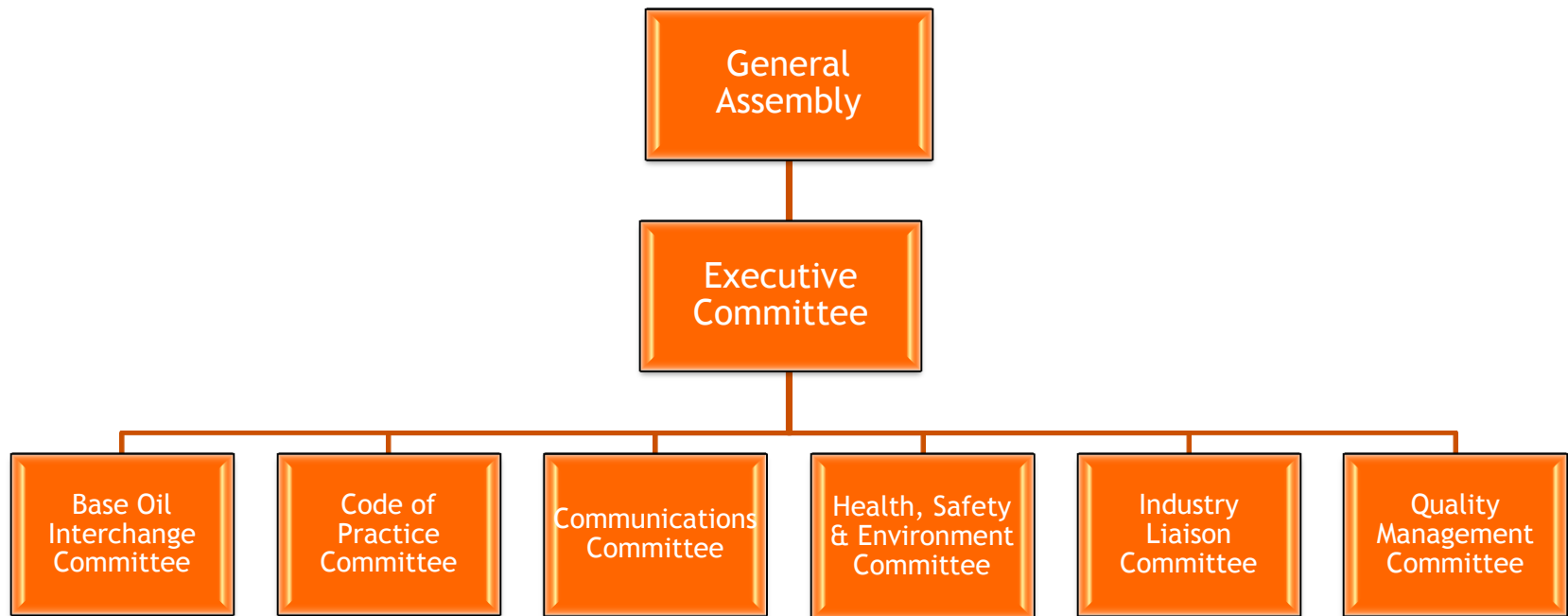
## ATIEL members



20 member companies - European and global representation



## How we work in ATIEL



## ATIEL: key activities

- ATIEL provides a forum for debate on topical, non-competitive industry issues and a platform for sharing resources and expertise:
  - monitors current and future technical trends and regulatory programmes
  - facilitates development of scientifically sound responses to changing market needs
  - Sets clear and consistent technical guidelines that address the needs of vehicle manufacturers and consumers
  - promotes European quality standards and best practices around the world
  - carries out quality surveys to assess levels of quality compliance in the marketplace





## ATIEL Industry Liaison Committee (ILC)

- Representatives from across the ATIEL membership.
- Formulates ATIEL responses to emerging technical trends and provides input into proposed changes to lubricant specifications.
- Actively engages in technical discussions with key industry stakeholders:
  - European automotive manufacturers represented by ACEA
  - Additive manufacturers represented by ATC (Technical Committee of Petroleum Additive Manufacturers in Europe)
  - CEC, body that develops lubricant test methods

## ILC: General objectives

- Provide technical input that helps to define future ACEA Oil Sequences (performance specifications).
- Monitor engine technology and its impact on lubricant requirements.
- Address specific technical issues.
- Develop and uphold the principles of the ATIEL Code of Practice.
- To strengthen information flow between key industry stakeholders.

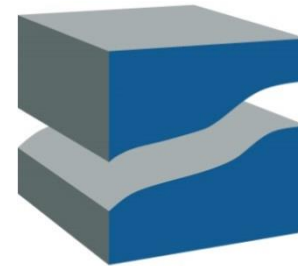


## ILC: key activities

- Improving ATIEL involvement in cross-industry AAA (ACEA, ATC, ATIEL) meetings to better anticipate future lubricant test needs.
- Establishing and updating a list of LD and HD technical concerns to support future test needs discussions.
- Select and fund technical studies on behalf of the AAA stakeholders.

## European OEMs - ACEA

- ACEA represents the interests of 15 major European car, truck and bus manufacturers.
- Sets performance specifications for engine lubricants through its European Oil Sequences.
- ACEA performance specifications increasingly adopted outside Europe.



A C E A

European  
Automobile  
Manufacturers  
Association

## ACEA members

**BMW Group**



**DAIMLER**



FIAT CHRYSLER AUTOMOBILES



**HYUNDAI**

**IVECO**



—  
GROUPE

**GROUPE  
RENAULT**

**TOYOTA**

**VOLKSWAGEN**

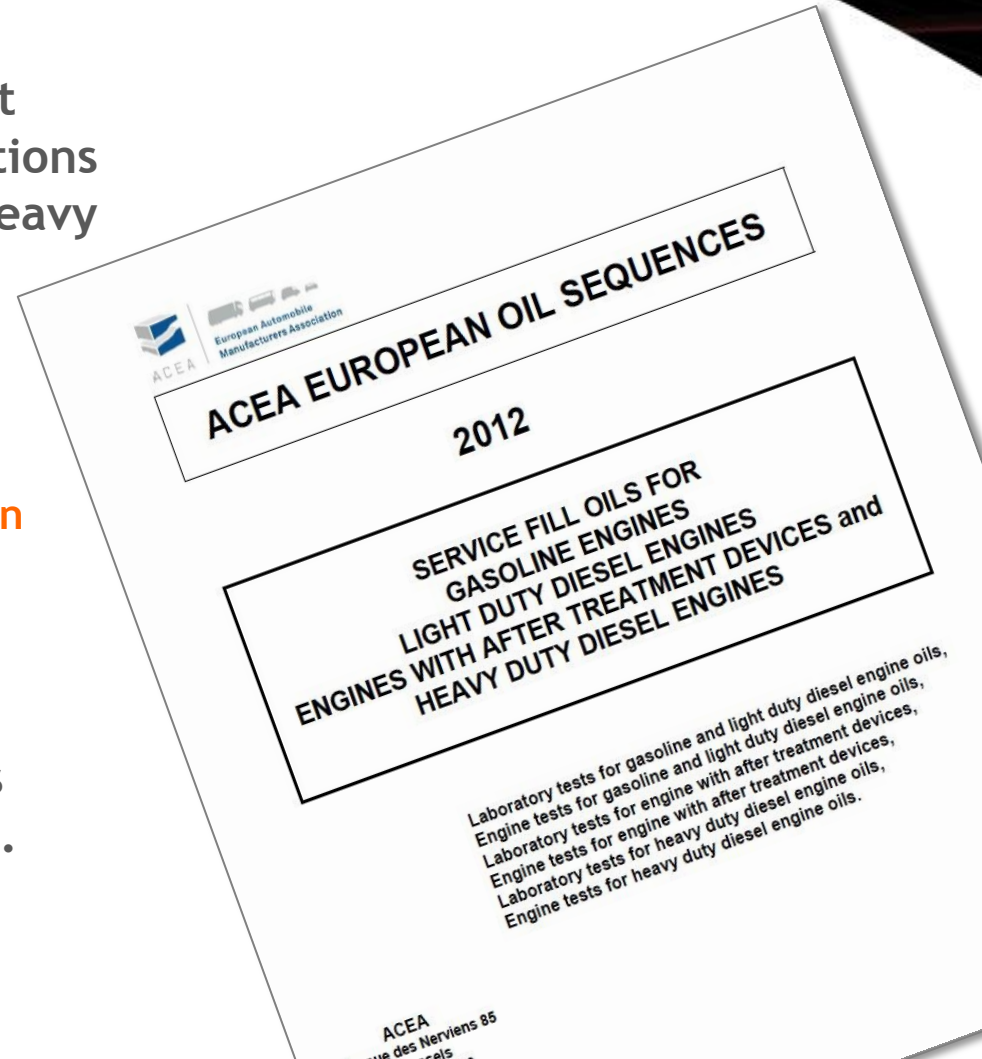
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**VOLVO**

## ACEA Oil Sequences

- ACEA European Oil Sequences set minimum performance specifications for 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 ACEA Oil Sequences are 2012 (ACEA 2016 imminent).





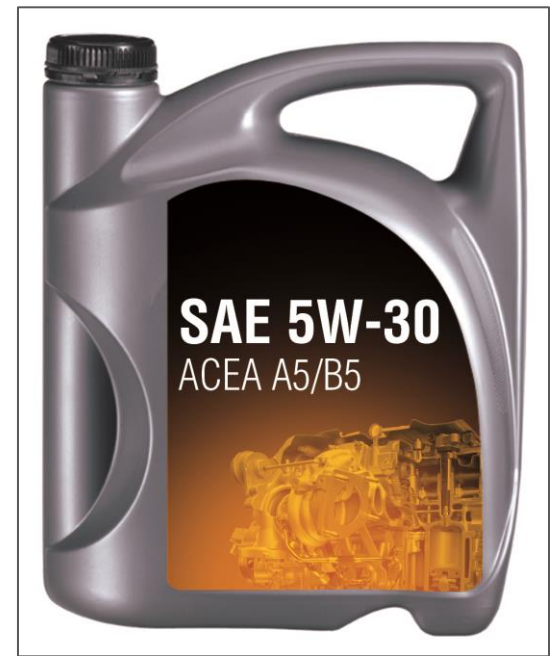
## Influence of ACEA Oil Sequences

- Market growth for vehicles and lubricants is mainly outside Western Europe.
- Russia is one of the largest car markets in Europe - still growing.
- Many ACEA members have vehicle assembly or engine production facilities in Russia.
- OEMs need to know appropriate quality lubricants will be available in the market.



## ACEA performance claims

- Lubricant **marketers** are responsible for all aspects of product liability!
- 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).



# The European Engine Lubricants Quality management System (EELQMS)

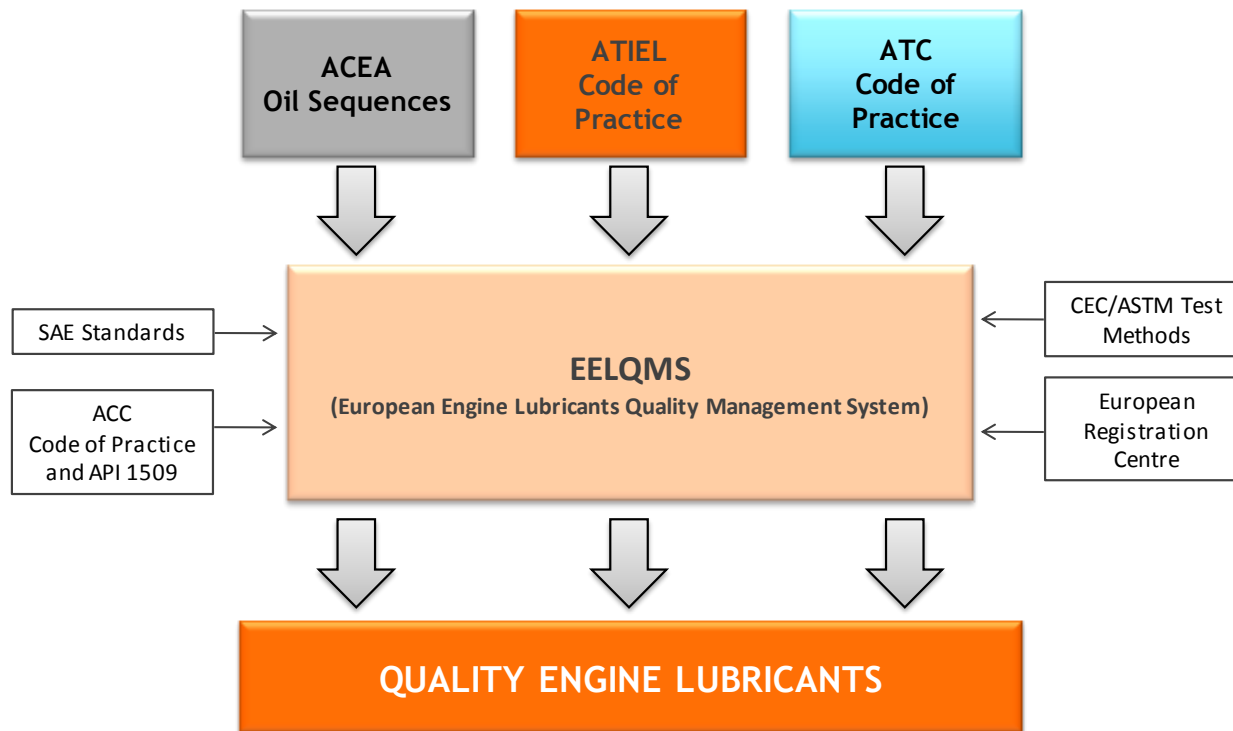
- Developed by industry stakeholders to promote development of fit-for-purpose engine lubricants meeting increasing technical requirements of the automotive industry.
- Designed to assist lubricant marketers in assuring the quality of their lubricants and the performance claims being made for them in the marketplace.
- Voluntary system but the ONLY system that can be used to qualify engine lubricants against ACEA Oil Sequences.



EELQMS

EUROPEAN ENGINE  
LUBRICANTS QUALITY  
MANAGEMENT SYSTEM

## EELQMS stakeholders



The EELQMS is  
administered  
by ATIEL

## Marketing

**Compliance with the EELQMS includes signing a Lubricant Marketers' Letter of Conformance:**

- Required for ACEA performance claims
- Confirms compliance with EELQMS
- Signed Letters held by ATIEL (EELQMS administrator)
- List of signatories on ATIEL website
- Renewed every two years
- Membership of ATIEL not required to be a signatory
- Letter of Conformance template available from ATIEL website: [www.atiel.org](http://www.atiel.org)





## ATIEL Code of Practice

- Key element of the EELQMS.
- Been in existence since 1996.
- Provides guidelines to help formulators and marketers in the development of lubricants that meet ACEA performance requirements.
- Evolves in line with ACEA Oil Sequences and is currently on Issue 19 (issue 20 imminent).



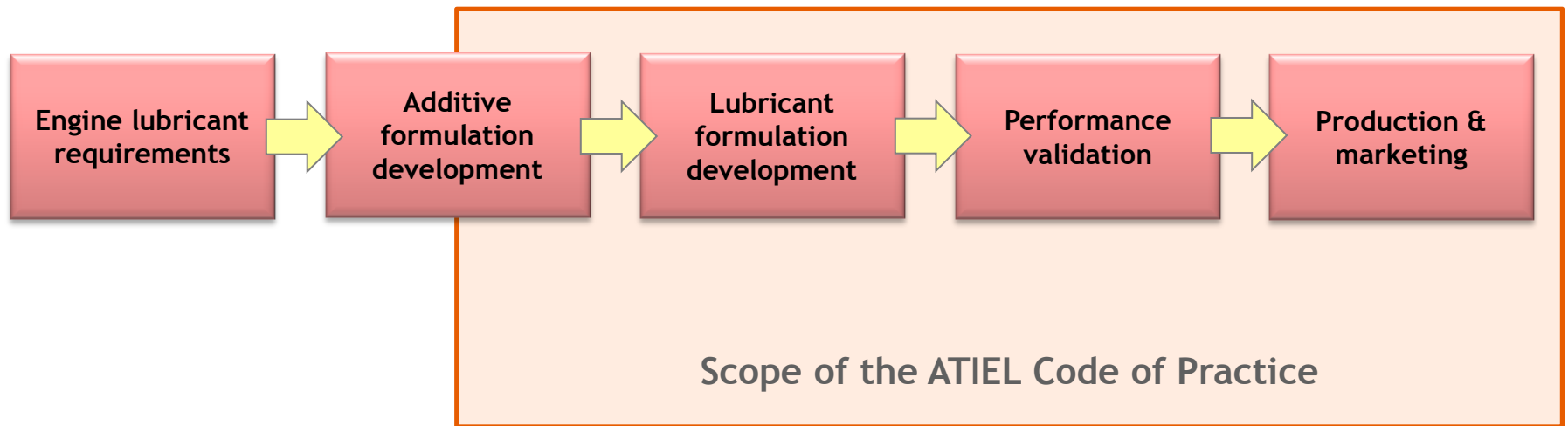


## Code of Practice - contribution to quality

- Common approach and standards for the whole industry to follow
- Represents accepted industry best practices.
- More precise engine & lab tests and clearer formulation guidelines
- Supported development of a robust lubricant quality management system
- Gives reassurance to OEMs and end-users of the quality and consistency of Lubricants making ACEA performance claims.



## How the ATIEL Code of Practice applies to the lubricant development process?

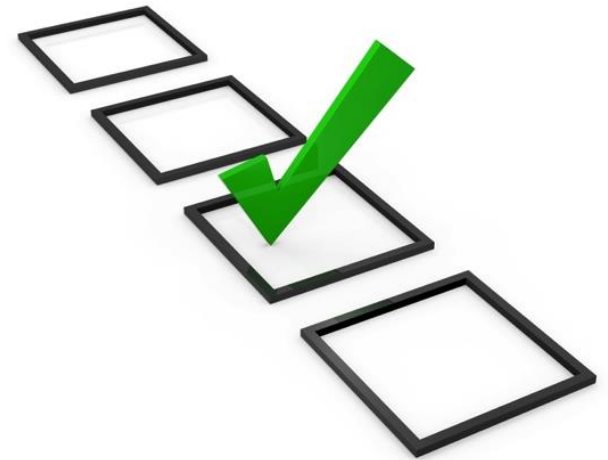


## Code of Practice - how does it help?

- Facilitates efficient lubricant development by:
  - providing a documented, structured approach
  - eliminating unnecessary or duplicate testing
  - reducing product development time
  - making more effective use of resources
- Provides guidelines for base oil interchange, viscosity grade read-across and viscosity modifier interchange.
- Provides standard guidelines and auditable quality management systems to ensure consistent quality of lubricants.
- Ensures availability of appropriate lubricants worldwide (different base oils, viscosity grades) through controlled formulation flexibility.

## Monitoring quality in the market

- In 2013 ATIEL conducted its first engine lubricants quality survey.
- Surveys are one of the most effective ways to demonstrate compliance with the EELQMS.
- As a result this has become an ongoing activity and a core part of ATIEL's Quality Management Committee's initiatives.
- Conducted by independent body.



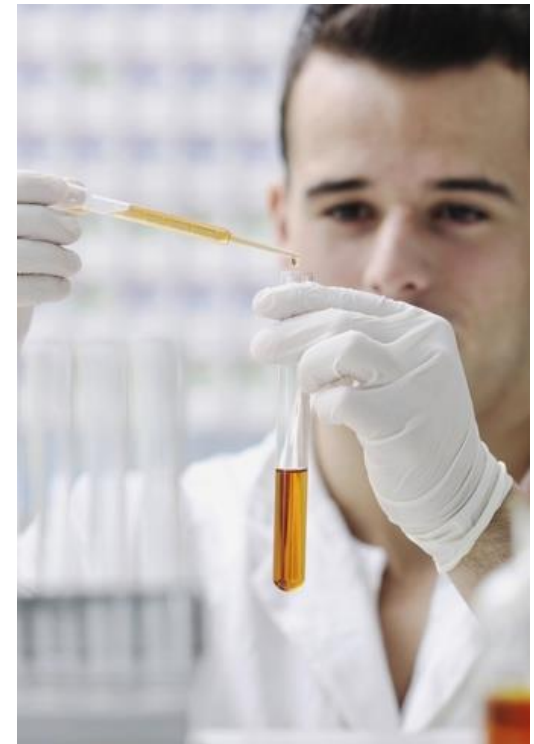
## Purposes of quality surveys

- Establish a base line for compliance with quality standards in Europe.
- Replicate to some extent best practice from other markets (eg API programme in North America).
- Test validity of anecdotal evidence of inaccurate performance claims of some lubricants on the market.
- Demonstrate the benefits of full adoption and application of the EELQMS.
- Enhance the overall robustness of quality management.



## 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 and appropriate follow-up actions taken.





## 2013 Survey

- 200 samples from across Europe
- All ATIEL members represented
- Covered range of common viscosity grades

## 2015 Survey

- Broader range of products and extended beyond ATIEL membership
- Covered marketers that are signatories to the EELQMS Letter of Conformance
- Results becoming more meaningful over time as more data gathered
- Highlighted a number of different types of invalid claims in the market



## Invalid performance claims

- Technically impossible or highly improbable claims found in the market.
- Most likely inadvertent due to lack of technical knowledge or understanding of ACEA Oil Sequences.
- Confusion over requirements of different releases of ACEA Sequences ie 2008/2010/2012.
- Not necessarily related to actual quality of lubricant.
- ATIEL aim is to provide more information and training on making valid and compliant performance claims.



# Valid combined performance claims

- Multiple ACEA claims on the same formulation are only possible where chemical limits and testing allows.
- Table shows possible combinations, impossible combinations and combinations that are possible but have restrictions which make the combination unlikely.

	A1/B1	A3/B3	A3/B4	A5/B5	C1	C2	C3	C4	E4	E6	E7	E9
A1/B1		M111FE	M111FE		SA, TBN	SA, TBN	HTHS, M111FE	HTHS, M111FE, SA	HTHS, M111FE, TBN	HTHS, M111FE	HTHS, M111FE	HTHS, M111FE
A3/B3	HTHS, M111FE			HTHS, M111FE	SA	SA	SA	SA	TBN	SA		SA
A3/B4	HTHS, M111FE			HTHS, M111FE	SA	SA	SA	SA	TBN	SA		SA
A5/B5		HTHS, M111FE	HTHS, M111FE		SA, TBN	SA, TBN	HTHS, TBN	HTHS, TBN	HTHS, M111FE, TBN	HTHS, M111FE	HTHS, M111FE	HTHS, M111FE
C1	SA, TBN	SA	SA	SA, TBN		SA	Phos	HTHS, M111FE, NV	HTHS, M111FE, SA, TBN	HTHS, M111FE, SA, TBN	HTHS, M111FE, SA, TBN	HTHS, M111FE, SA, TBN
C2	SA, TBN	SA	SA	SA, TBN	SA		HTHS, M111FE	HTHS, M111FE	HTHS, M111FE, SA, TBN	HTHS, M111FE, SA, TBN	HTHS, M111FE, SA, TBN	HTHS, M111FE, SA, TBN
C3	HTHS, M111FE	SA	SA	HTHS, TBN	Phos	HTHS, M111FE		SA, NV	SA, TBN	SA, TBN, Phos	SA, TBN	SA, TBN
C4	HTHS, M111FE, SA	SA	SA	HTHS, TBN	HTHS, M111FE, NV	HTHS, M111FE	SA, NV		SA, TBN	SA, TBN	SA, TBN	SA, TBN
E4	HTHS, M111FE, TBN	TBN	TBN	HTHS, M111FE, TBN	HTHS, M111FE, SA, TBN	HTHS, M111FE, SA, TBN	SA, TBN	SA, TBN		SA, TBN	SA, TBN	SA, TBN
E6	HTHS, M111FE	SA	SA	HTHS, M111FE	HTHS, M111FE, SA, TBN	HTHS, M111FE, SA, TBN	SA, TBN, Phos	SA, TBN	SA, TBN		SA, TBN	Phos
E7	HTHS, M111FE			HTHS, M111FE	HTHS, M111FE, SA, TBN	HTHS, M111FE, SA, TBN	SA, TBN	SA, TBN	SA, TBN	SA, TBN		SA, TBN
E9	HTHS, M111FE	SA	SA	HTHS, M111FE	HTHS, M111FE, SA, TBN	HTHS, M111FE, SA, TBN	SA, TBN	SA, TBN	SA, TBN	Phos	SA, TBN	

Not compatible
Possible combinations
Unlikely combinations
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 on the  
ATIEL website

## Future surveys

- Quality surveys to become a continuous activity for at least the next two years.
- Monthly survey results started September 2016.
- Approximately 20 samples tested each month.
- Initially will cover ACEA A/B and C categories and may be extended to HD (E).
- Will cover all LoC signatories and OEMs.
- Part of EELQMS compliance policy ATIEL is developing.
- Aim is to encourage greater compliance through sharing of information and positive engagement in communication with and education of lubricant marketers.

## Going forward...

- Clarify and communicate the impact and requirements of new editions of the ACEA Oil Sequences.
- Provide clearer guidance and training on technical aspects of lubricant development and valid performance claims.
- Develop policy to address products not meeting claimed specifications.
- Provide technical advice to individual marketers to prevent non-conforming products reaching the market.
- Make quality survey a continuous ongoing activity.
- Through the ILC further improve engagement and input on technical issues with ACEA and other industry stakeholders to better anticipate future needs.

# Thank you!

For more information and to download a copy of our  
Code of Practice visit: [www.atiel.org](http://www.atiel.org)

Contact us at: [info@atiel.eu](mailto:info@atiel.eu)