



Safeguarding quality in European automotive engine lubricants

The role of the European Engine Lubricant Quality Management System (EELQMS) and the ATIEL Code of Practice.



GOMA 48th Lubricants and Base Oils Symposium, 14-16 October, Croatia

Speaker introduction



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 - Technical Coordinator, Kuwait Petroleum
 - Member of the ATIEL Base Oil Interchange Committee
 - 30-year career in the oil industry



What we will cover

- ATIEL and its role in the lubricants industry.
- Overview of the European Engine Lubricant Quality Management System (EELQMS) and the ATIEL Code of Practice.
- How EELQMS helps marketers of engine lubricants claiming to meet European OEM quality requirements to support their performance claims.
- How the ATIEL Code of Practice supports cost-effective lubricant development while giving reassurance to OEMs and end-users of the quality and consistency of lubricants.
- Quality surveys ATIEL undertakes to assess levels of quality compliance among products in the market.



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.

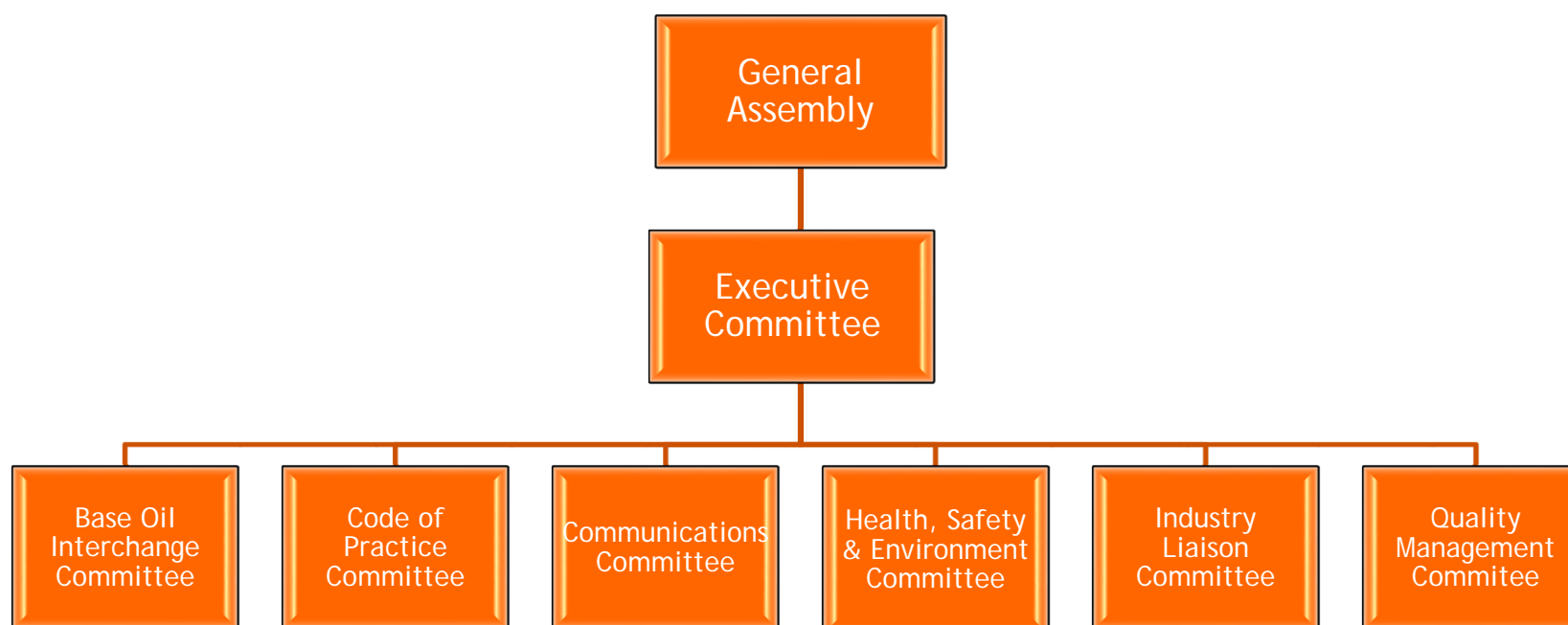


ATIEL members



20 member companies - European and global representation

How we work in ATIEL



ATIEL: key activities (1)

For its members -

- ATIEL provides a forum for debate on topical, non-competitive industry issues and a platform for sharing resources and expertise.
- Through the work of technical committees and working groups ATIEL:
 - monitors current and future technical trends and regulatory programmes
 - facilitates the development of scientifically sound responses to changes in market needs
 - promotes European quality standards and best practices around the world
 - carries out quality surveys to assess levels of quality compliance in the marketplace

ATIEL: key activities (2)

For regulators, industry partners and end-consumers -

- Through collective expertise of members ATIEL contributes to development of best practices and standards that promote superior quality products in the market:
 - Sets clear and consistent technical guidelines that address the needs of vehicle manufacturers and consumers.
 - Acts as a focal point for technical issues relating to the performance and environmental demands of engine oils.
 - Acts as a respected partner and advisor on lubricants matters to all external stakeholders.



Why 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 performance will not lead to warranty claims.
- Consumers need confidence in the quality of the products being used in their vehicles.



OEMs - ACEA

- ACEA (European Automobile Manufacturers Association) 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.



ACEA members

BMW Group

PSA PEUGEOT CITROËN

DAF

DAIMLER

FIAT

Ford

GM



HYUNDAI

IVECO

JAGUAR

LAND-ROVER



TOYOTA

VOLKSWAGEN
AKTIENGESELLSCHAFT



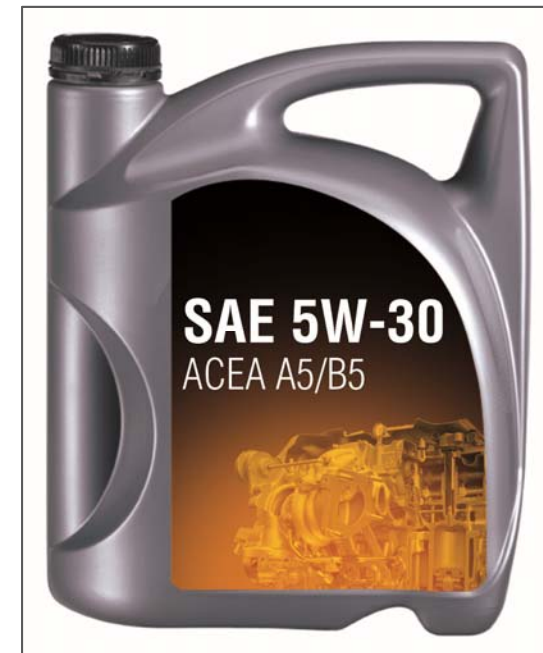
Role of quality standards

- 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 ACEA Oil Sequences are 2012.



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).



About the EELQMS

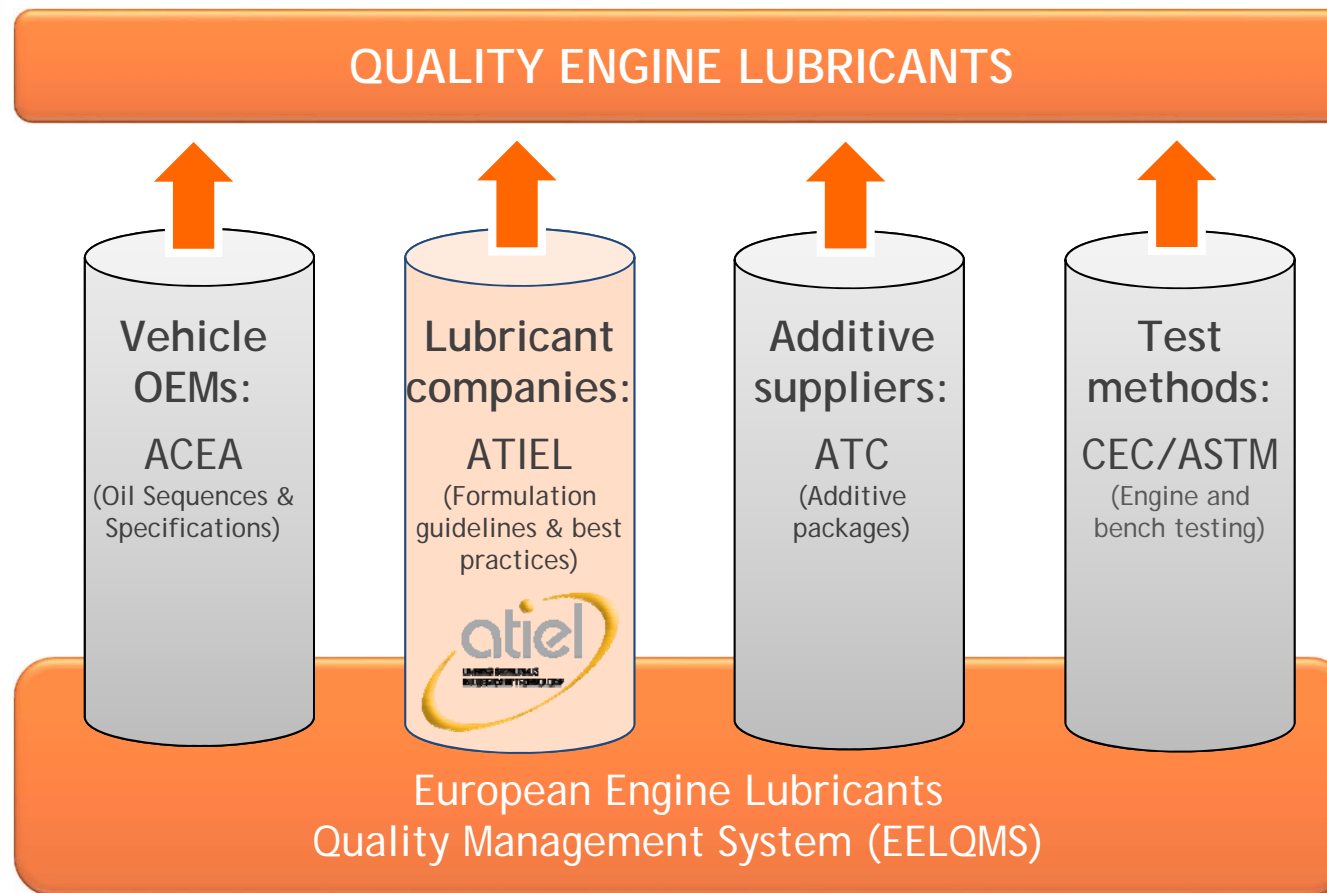
- The European Engine Lubricant Quality Management System (EELQMS) is a voluntary quality management system for automotive engine lubricants.
- Developed by industry stakeholders to promote development of improved, fit-for-purpose engine lubricants that meet increasing technical requirements of the automotive industry.
- Designed to assist lubricant marketers in assuring the quality of their lubricants and the performance claims being made for them in the marketplace.



EELQMS

EUROPEAN ENGINE
LUBRICANTS QUALITY
MANAGEMENT SYSTEM

EELQMS stakeholders



The EELQMS is
administered
by ATIEL.

EELQMS contribution to quality

- Detailed process and structure for lubricant development, production and performance validation.
- Provides assurance of the quality of engine lubricants on the market that claim to meet the performance requirements of ACEA.
- A voluntary system but the ONLY system that can be used to qualify engine lubricants against ACEA Oil Sequences.
- The ATIEL Code of Practice is a key element of the EELQMS.



ATIEL Code of Practice

- Been in existence since 1996.
- Provides guidelines to help formulators and marketers in the development of lubricants that meet ACEA performance requirements.
- Has evolved in line with ACEA Oil Sequences and is currently on Issue 19.



Code of Practice - contribution to quality

- The existence of the ATIEL Code of Practice has contributed to:
 - Higher quality lubricants in the market
 - More precise engine & lab tests
 - Clearer formulation guidelines
 - Development of a robust lubricant quality management system



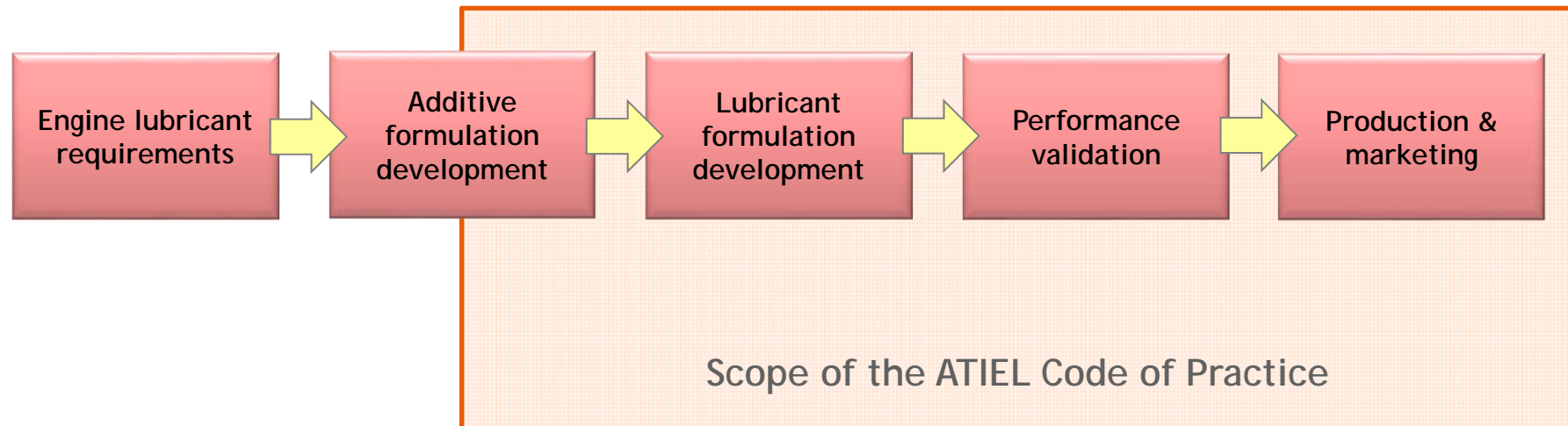
Code of Practice - guidelines

The ATIEL Code of Practice Provides lubricant development guidelines that:

- Enable lubricant companies to comply with the requirements of the ACEA Oil Sequences.
- Represent accepted industry best practices.
- Offer a common approach and standards for the whole industry to follow.
- Give 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?





ATIEL 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.

Marketing

Compliance with the Code of Practice includes signing a Lubricant Marketers' Letter of Conformance:

Required for ACEA performance claims

Confirms compliance with EELQMS

Signed Letters held by ATIEL

List of signatories on ATIEL website

Renewed every two years

Membership of ATIEL is not required to be a signatory

Letter of Conformance template available from ATIEL website: www.atiel.org



Summary of stakeholder benefits

OEMs

- Controlled and consistent quality of engine lubricants
- Wide availability of lubricants meeting ACEA requirements
- Protection against warranty claims



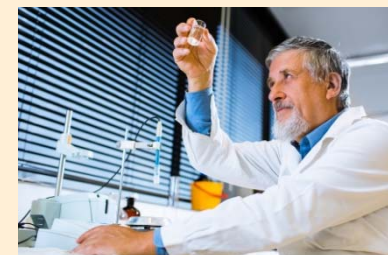
End user

- Trouble-free operation
- Confidence in lubricant performance claims
- Wide availability of lubricants of appropriate quality



Lubricant and additive industry

- Timely, cost-effective engine lubricant development
- Common approach & standards (level playing field)
- Formulation optimisation and controlled flexibility



ATIEL Quality Survey

- 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.
- Paid for by ATIEL members but conducted by independent body.



Purpose 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

- Covered broader range of products
- Extended beyond ATIEL membership to cover marketers that are signatories to the EELQMS Letter of Conformance
- Baseline and methodology is developing and results becoming more meaningful over time as more data gathered
- Highlighted some interesting anomalies...



Incompatible performance claims

- A number of incompatible claims - technically impossible or highly improbable - 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's aim is to provide more information and training on making valid and compliant performance claims.



NOT POSSIBLE!

Valid 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	A1/B2	A1/B4	A1/B6	C1	C2	C3	C4	E1	E2	E3	E4
A1/B1		M111FE	M111FE		SA, TBN	SA, TBN	HTHS, M111FE	HTHS, M111FE, SA	HTHS, M111FE, TBN	HTHS, M111FE	HTHS, M111FE	HTHS, M111FE
A1/B2	HTHS, M111FE			HTHS, M111FE	SA	SA	SA	SA	TBN	SA		SA
A1/B4	HTHS, M111FE			HTHS, M111FE	SA	SA	SA	SA	TBN	SA		SA
A1/B6		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
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
E1	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
E2	HTHS, M111FE	SA	SA	HTHS, M111FE	HTHS, M111FE, SA, TBN	HTHS, M111FE, SA, TBN	SA, TBN, Phos	SA, TBN	SA, TBN		SA, TBN	Phos
E3	HTHS, M111FE			HTHS, M111FE	HTHS, M111FE, SA, TBN	HTHS, M111FE, SA, TBN	SA, TBN	SA, TBN	SA, TBN	SA, TBN		SA, TBN
E4	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

Survey observations and follow-up

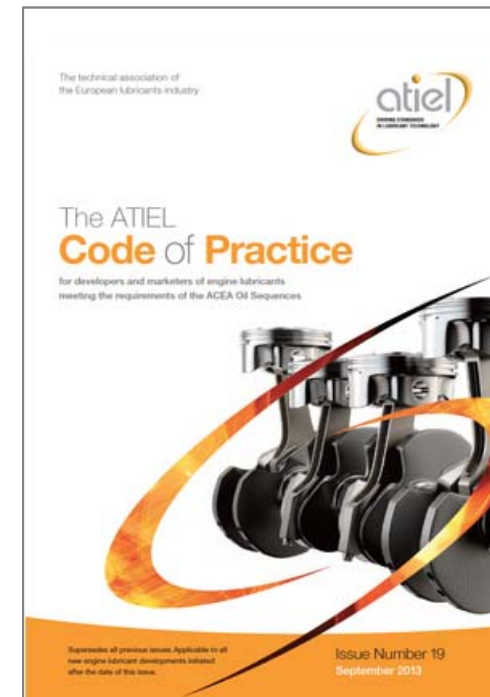
- Passing rate below 100% demonstrates value of survey
- TBN (Total Base Number) most common technical cause of inconsistent product data
- Mutually incompatible claims found on some product labelling

Follow-up actions

- Provide clearer guidance and training on technical aspects of lubricant development
- Clarify and communicate the impact and requirements of new editions of the ACEA Oil Sequences
- Develop policy to address products not meeting claimed specifications
- Provide technical advice to individual marketers to prevent non-conforming products reaching the market
- Continue with regular surveys

Conclusion

- The EELQMS and ATIEL's Code of Practice benefit all stakeholders:
 - OEMs ✓
 - Lubricant companies ✓
 - Additive companies ✓
 - Workshops ✓
 - Consumers ✓
 - Base oil suppliers ✓





Thank you!

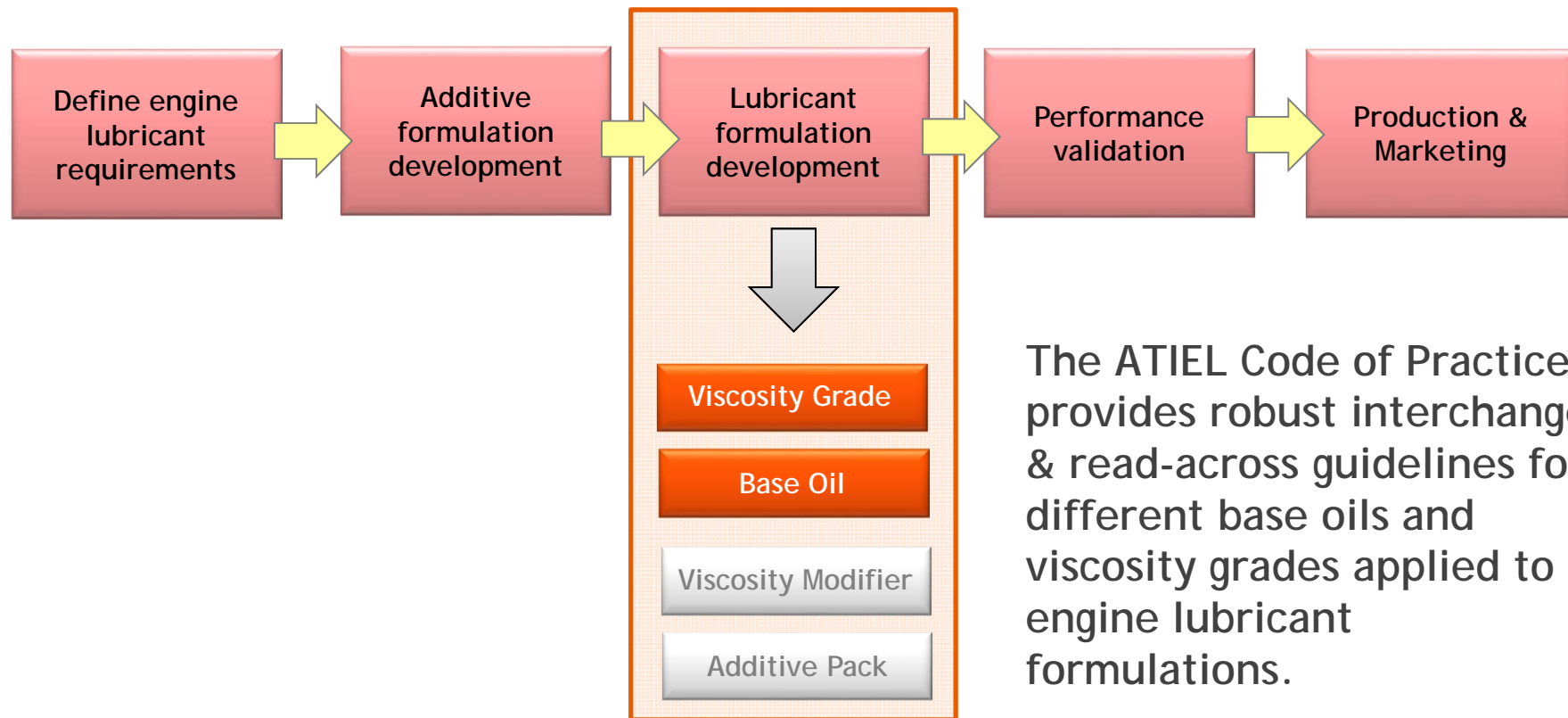
For more information and to download a copy of our
Code of Practice visit: www.atiel.org

Contact us at: info@atiel.eu



Back-Up Slides

Engine lubricant development programme





Why we need interchange guidelines

The purpose of interchange guidelines is to maintain the integrity and quality of lubricants while allowing formulators and marketers to:

- accommodate variations in base oils
- optimise their formulations
- develop variations in formulations (eg viscosity grades) for different markets, performance criteria, engine types etc.

Formulation development guidelines

Viscosity Grade Read-Across (VGRA) guidelines allow development of tailored viscosity formulations for:

- different climate zones
- fuel economy
- different engine types

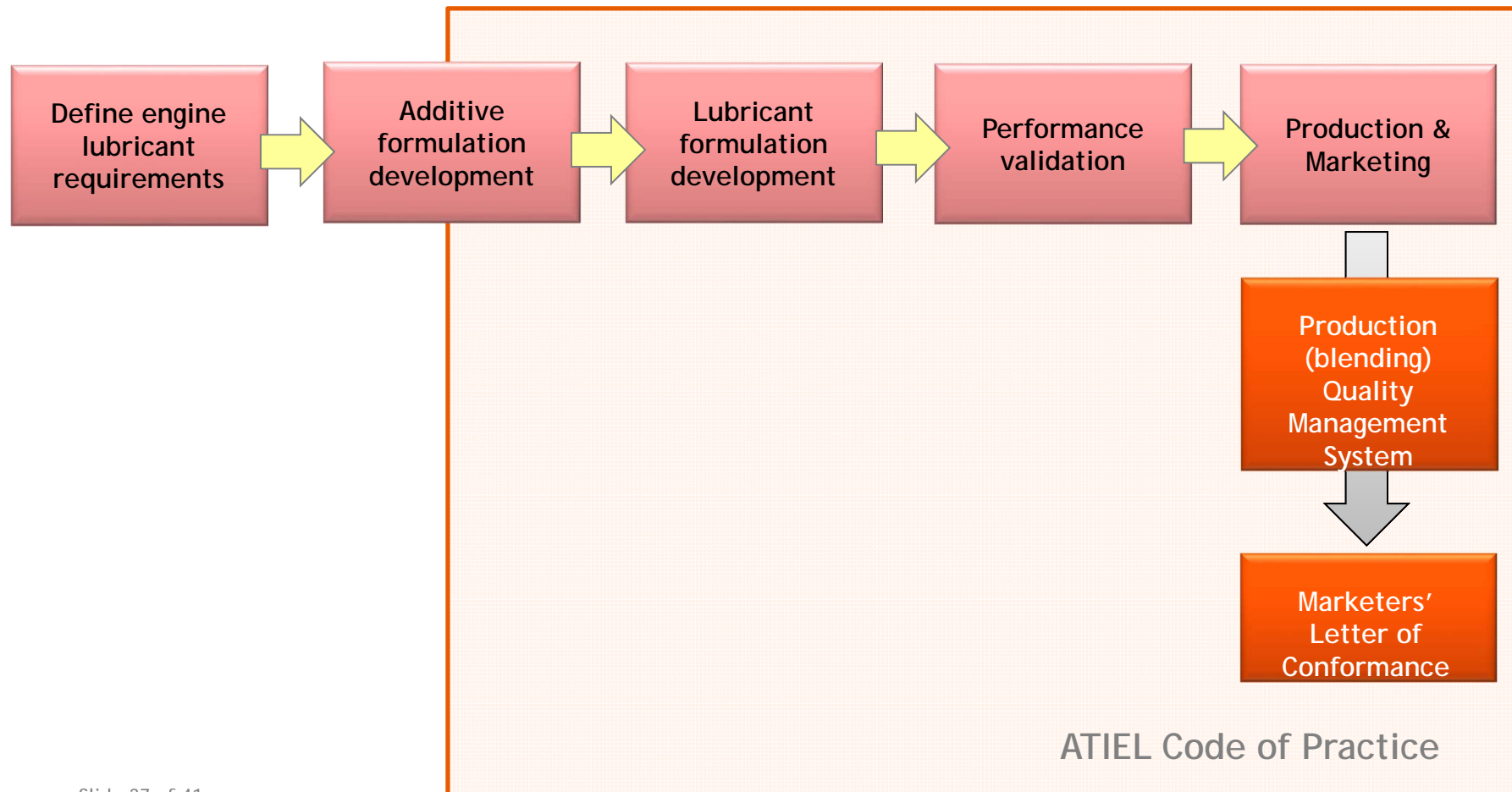
Base Oil Interchange (BOI) guidelines allow:

- Formulators to accommodate variations in availability of base stocks
- Optimisation of lubricant formulations

Viscosity Modifier Interchange (VMI) guidelines allow for:

- Variations in availability of different viscosity modifiers
- Formulation optimisation
- Product performance enhancement

Engine lubricant development programme



Engine lubricant development programme

