ATIEL's role for sustainable lubricants, quality systems and compliance tools

DRIVING STANDARDS
IN LUBRICANT TECHNOLOGY

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GOMA
The 56th Lubricants & Base Oils Symposium

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Today's session - what we will cover

01

ATIEL mission and activities

02

Sustainability - context and changes

03

Action

04

Quality and compliance

01

ATIEL- mission and activities

Introduction to ATIEL

- A non-for-profit association representing the combined knowledge and experience of leading **European and international engine oil manufacturers and marketers**
- ATIEL promotes **consensus** on key **technical, product stewardship and sustainability** issues
- **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.

ATIEL members

ATIEL's technical activities for

QUALITY

- Promoting **superior quality** products in the market
- Developing **guidelines** and **best practices** for formulation of engine lubricants
- Supporting auditable **Quality Management Systems**, carrying out quality **surveys** to assess levels of quality **compliance** in the marketplace
- Contributing to development of industry engine and laboratory **tests**.

ATIEL's technical activities for

PRODUCT SAFETY

- Developing **generic exposure scenarios** and guidance to assist lubricants companies **to comply with EU's REACH regulation**
- Developing **common practices** on health, safety and environmental issues

SUSTAINABILITY

- **Carbon Footprint** and renewable carbon content
- **LCA** greenhouse gas accounting methodology
- Recyclability- **RRBS** (re-refined base stock)
- **In use benefits**

02

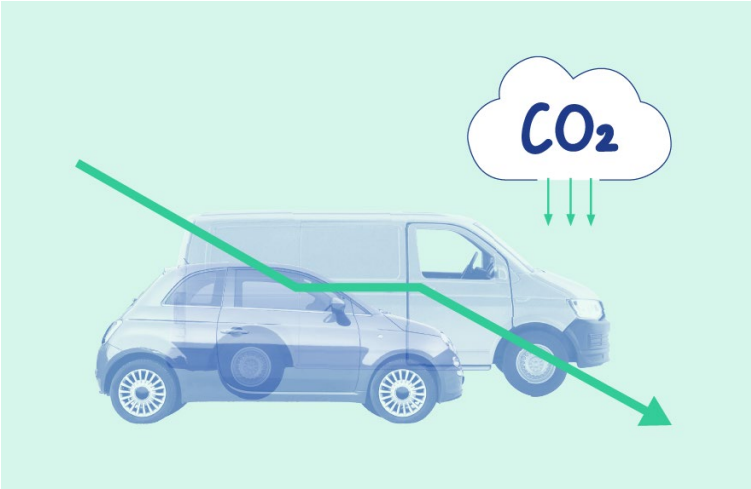
Sustainability - context and changes

A turning point for the industry

Complexity and ambition

Decarbonizing road transport

- **“Fit for 55”** (*ETS2*, *AFIR*, *Trans-European Transport Network*)
- Average CO2 emissions from new cars/vans and lorries **reduction…**
- **…Ban** for new cars and vans from **2035 (...)**
- EC legislation on CO2 emissions **from HD (-90 %** emissions by 1 Jan **2040**)
- **Greening Freight Transport** proposal, **Greening Corporate Fleets..**
- **Carbon border adjustment (CBAM)**
- **CSRD**
- **Green Claims Directive**
- **EURO 7** standard



Changes: Engine Oil Specifications driven by Emission Legislation

Initially focus on SO_2, NO_x and PM emission reduction → **Now more focus on CO_2 Emission Reduction**

Evolution main Viscosity Grades	15W-40	10W-40	5W-30	0W-20
Implications for base oil requirements	Group I	Group I Group II Group III	Mainly Group III	Group III/III+ Group IV

Increased use of Group II and III base oils in Light and Heavy Duty

- Very limited BOI (Base Oil Interchange) guidelines for Group II and III
- Current guidelines focused around Group I base stocks

Interchange Guidelines did not hold pace with specification evolution

Circularity

-> towards the new **Circular Economy Act**

Chemicals

- EU REACH
- EU CLP
- Eco-design for sustainable products (ESPR)
- Safe and sustainable by design (SSbD)
- PFAS
- SDPA

03

Action

ATIEL's work on specs development

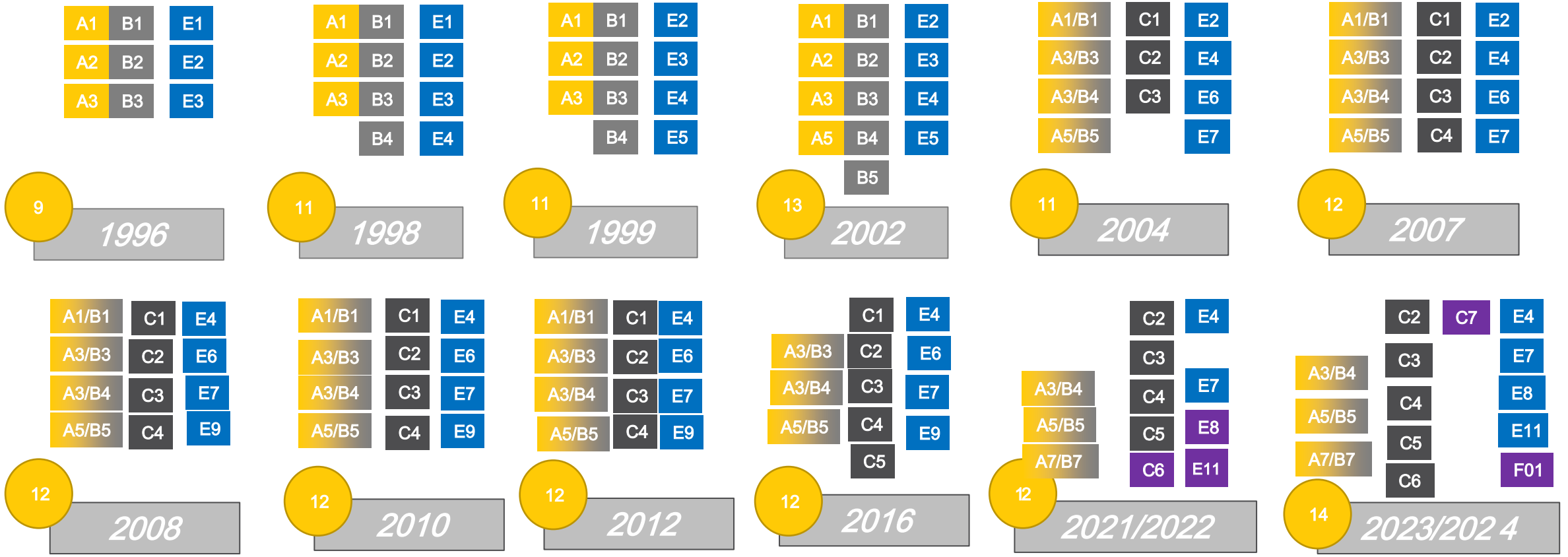
Work in AAA (ACEA ATIEL ATC)- ATIEL ILC Committee- HD and LD groups

- existing and emerging technical issues and trends impacting engine design and use their potential effects on lubricant performance and formulation.
- development of specifications that lead to fit–for– purpose lubricants

ATIEL is a stakeholder member of the European Coordinated Council for the development of performance test fuels, lubricants and other fluids (CEC).

The Complexity Challenge

From 9 to 14 categories



ATIEL's work on Interchange guidelines

- Interchange Guidelines help to manage increasing complexity
- They help reduce the number of engine tests needed to validate the use of alternative base stocks and viscosity grades when formulating engine oils meeting the latest performance specifications set out by the ACEA Sequences.
- a core element of the ATIEL Code of Practice
- ATIEL develops technically robust guidelines through its Technical Committee

Product Carbon Footprint for Lubricants – Why?

WHY do we need a lubricants sector specific standard methodology?

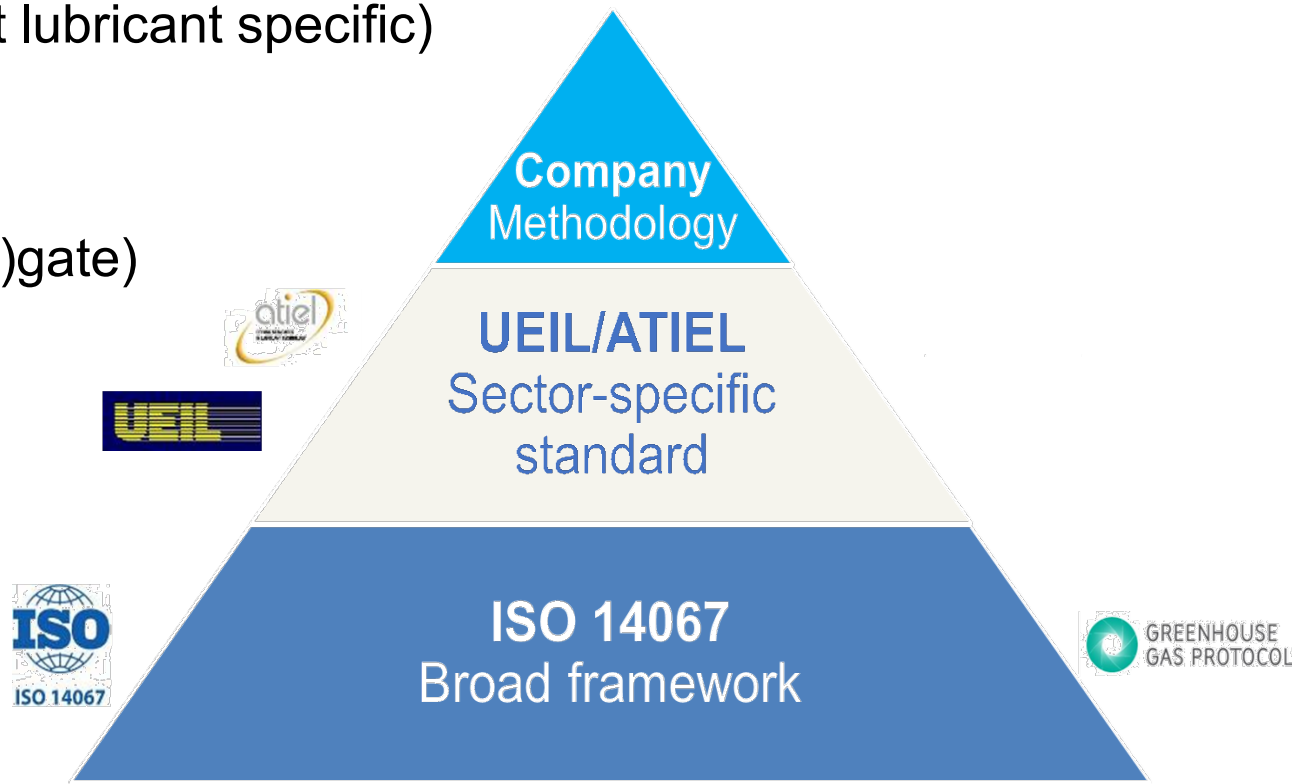
- ISO 14067 only provides broad framework (not lubricant specific)
- Transparency of PCF Calculation

WHAT does it describe?

- Scope of PCF calculation (cradle-to-(outbound)gate)
- System boundaries for PCF calculation
- How the PCF should be calculated
- How the PCF should be reported

HOW does it help the lubricants industry?

- **Transparency** → 3rd party reviewed
- **Harmonization** → ONE methodology
- **Pressure** on stakeholders → ONE voice



ATIEL-UEIL Joint Sustainability Committee

Established in **2024**

Guidance and support to ATIEL and UEIL members, ensuring leadership and alignment across the global lubricants, greases, and specialty products value chain.

Mission:

to empower stakeholders with reliable information and practical tools to navigate the rapidly evolving sustainability landscape. We promote responsible sustainability strategies, regulatory compliance, and industry best practices, while actively engaging with stakeholders to advocate for sustainable initiatives within the lubricants industry.

- **Carbon Footprint** Working Group
- **Downstream** Working Group
- **Circular Materials** Working Group
- **Communications** Working Group

Key achievement: Harmonized methodology for PCFs for lubricants and greases

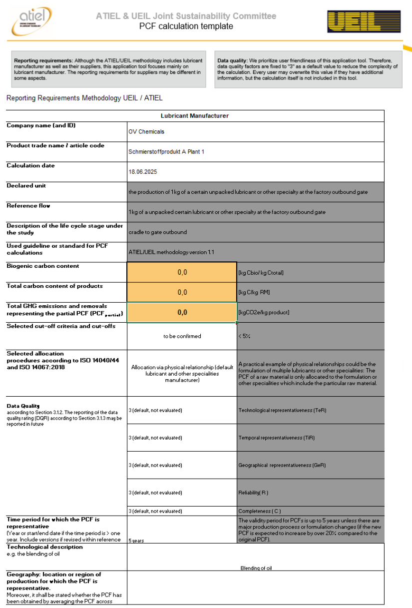
Methodology for PCF Calculations of Lubricants and other Specialties

Certified Calculation Method
Regular Surveillance
TÜVRheinland CERTIFIED
www.tuv.com
ID 0000087518

PCF-Methodologies in the Lubricant Value Chain

JSC: activities and achievements/1

- PCF **Self-assessment Tool**
- Publication of white paper “**Comparison** of Product Carbon Footprint Methodologies & Harmonization Across the Lubricants Value Chain”- *aiming for harmonization*
- Work on revision followed by re-certification of the ATIEL/UEIL PCF methodology by TÜV.
- Continue industry **liaison efforts** to harmonize PCF methodology (ELGI, ALIA, Catena X)
- Ongoing workstreams
- *Supporting EC LCI Database Working Group*
- *Supporting ESPR Taskforce. Both ATIEL and UEIL got a seat in Ecodesign forum. Lubricants not in first work package but decided to follow closely as approaches may be followed also in next work package in 5 years.*


ATIEL & UEIL Joint Sustainability Committee
PCF calculation template

Reporting requirements: Although the ATIEL/UEIL methodology includes lubricant manufacturer as well as their suppliers, this application tool focuses mainly on lubricant manufacturer. The reporting requirements for suppliers may be different in some aspects.

Data quality: We prioritize user friendliness of this application tool. Therefore, data quality factors are fixed to "3" as a default value to reduce the complexity of the calculation. Every user may overwrite this value if they have additional information, but the calculation itself is not included in this tool.

Reporting Requirements Methodology UEIL / ATIEL

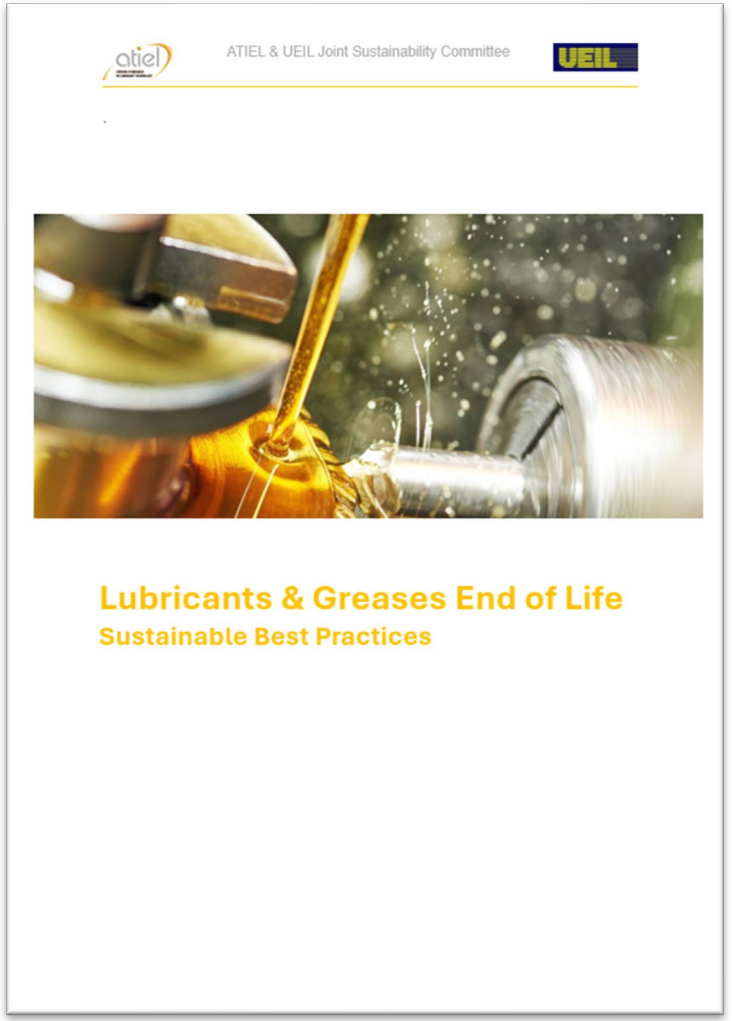
Lubricant Manufacturer		
Company name (and ID)	OV Chemicals	
Product trade name / article code	Schmierstoffprodukt A Plant 1	
Calculation date	18.06.2025	
Declared unit	the production of 1kg of a certain unpacked lubricant or other specialty at the factory outbound gate	
Reference flow	1kg of a unpacked certain lubricant or other specialty at the factory outbound gate	
Description of the life cycle stage under the study	cradle to gate outbound	
Used guideline or standard for PCF calculations	ATIEL/UEIL methodology version 1.1	
Biogenic carbon content	0,0	[kg Cbio/ kg Ctotal]
Total carbon content of products	0,0	[kg C/kg RM]
Total GHG emissions and removals representing the partial PCF ($PCF_{partial}$)	0,0	[kgCO2e/kg product]
Selected cut-off criteria and cut-offs	to be confirmed	< 5%
Selected allocation procedures according to ISO 14040/44 and ISO 14067:2018	Allocation via physical relationship (default lubricant and other specialities manufacturer)	A practical example of physical relationships could be the formulation of multiple lubricants or other specialities: The PCF of a raw material is only allocated to the formulation or other specialities which include the particular raw material.
Data Quality according to Section 3.1.2. The reporting of the data quality rating (DQR) according to Section 3.1.3 may be reported in future	3 (default, not evaluated)	Technological representativeness (TeR)
	3 (default, not evaluated)	Temporal representativeness (TiR)
	3 (default, not evaluated)	Geographical representativeness (GeR)
	3 (default, not evaluated)	Reliability(R)
	3 (default, not evaluated)	Completeness (C)
Time period for which the PCF is representative (Year or start/end date if the time period is > one year. Include versions if revised within reference	5 years	The validity period for PCFs is up to 5 years unless there are major production process or formulation changes (if the new PCF is expected to increase by over 20% compared to the original PCF).
Technological description e.g. the blending of oil	Blending of oil	
Geography: location or region of production for which the PCF is representative. Moreover, it shall be stated whether the PCF has been obtained by averaging the PCF across		

Comparison of Product Carbon Footprint Methodologies & Harmonization Across the Lubricants Value Chain

Whitepaper
Published 2025/04

JSC: activities and achievements/2

- **End-of-Life** white paper published
  - Objective: to provide ATIEL and UEIL members with practical guidance and best practices to enhance lubricant end-of-life management and promote circularity within the lubricants industry.
- Avoided emissions: ongoing collaboration with API – revised "**WBCSD Guidance** on Avoided Emissions" published.
- Webinars, Social Media etc
- Coordinating presentations on behalf of JSC at conferences
- ..*A lot in the pipeline (stay tuned!)*



ATIEL's work on lubricant HSE and regulatory compliance

EU CLP

EU CLP Revision

-ATIEL actively participate in the Partner Expert Group (PEG) working on the EU CLP guidance for labelling
-Engage with EC representative on examples of practical implementation challenges of label format changes, work with DUCC

EU REACH

-GCC (Global Chemical Compliance) with ACEA and ATC
-GES (Generic Exposure Scenarios
-REACH revision
-Work with DUCC (ATIEL is member), UEIL..

EU ESPR

-ATIEL member of the Ecodesign Forum.
-Lubricants excluded from the 1st work plan and considered again in the drafting of the 2nd work plan-mid term review
-ESPR TF ATIEL-UEIL

04

Quality and compliance

European Engine Lubricants Quality Management System

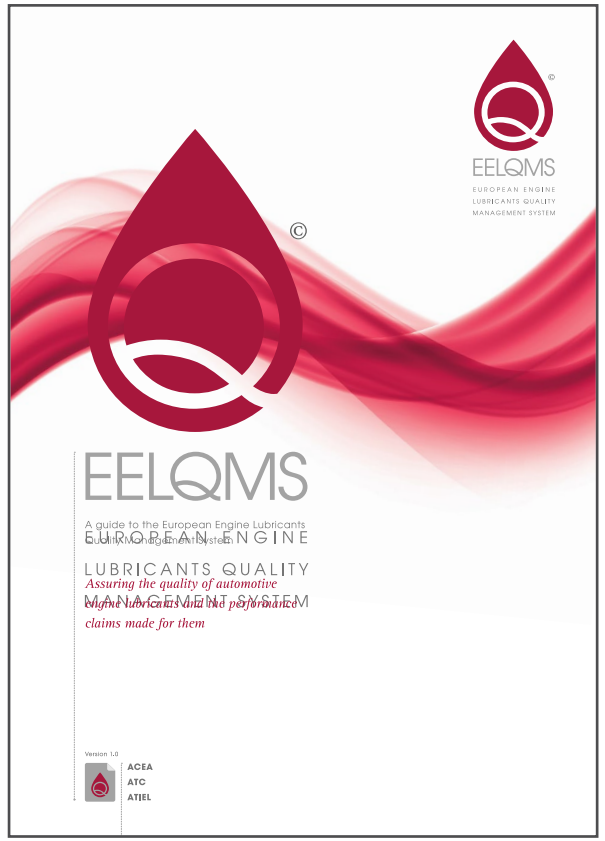
- Brings together key stakeholders – ACEA, ATIEL, ATC (additive developers) & CEC (test method standards)
- Detailed **process and structure** for lubricant **development, production and performance validation.**
- A **voluntary** system but the ONLY system, which provides assurance of the quality of engine lubricants on the market that claim to meet the performance requirements of ACEA Oil Sequences.
- **Multiple benefits** (OEMs, users, lubricants and additives industry)
- Code of Practice → clear **guidelines** to comply with the requirements of ACEA Oil Sequences.

EELQMS
EUROPEAN ENGINE LUBRICANTS QUALITY MANAGEMENT SYSTEM

EELQMS Structure

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 (e.g., ISO 9001, or IATF 16949).
  - ensuring an independent audit of the lubricant development process
  - having Codes of Practice checklists signed off by an authorised company representative
  - blending products according to requirements of ATIEL Code of Practice, including accreditation to an auditable quality management system
  - signing a Marketers' Letter of Conformance and registering it with ATIEL



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 SAIL

SAIL-Europe
Services to Associations and Industry in the Lubricants sector

Products/brands
Registration and Compliance

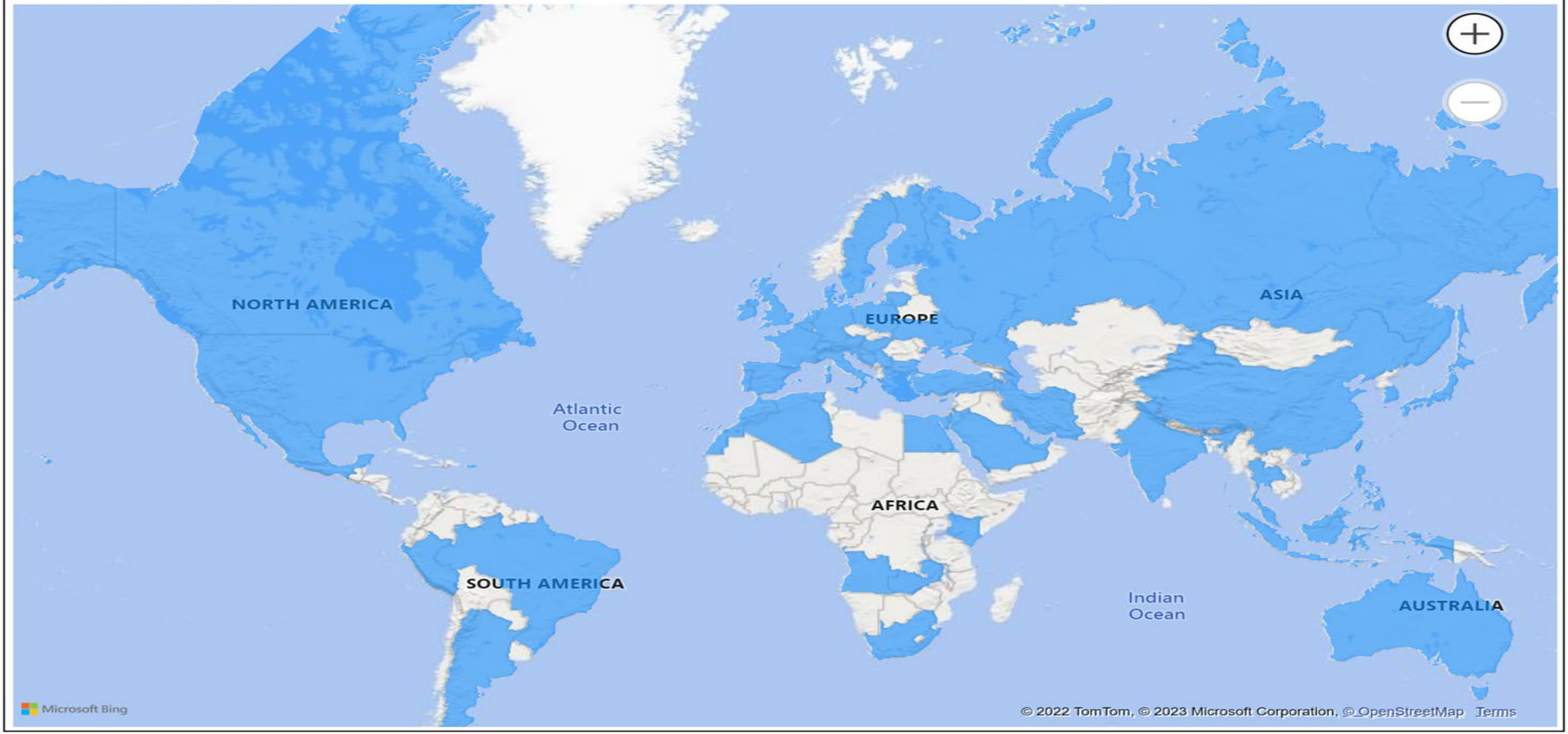
- Register with SAIL and submit a signed Marketers' Letter of Conformance
- Template letter available on SAIL website: www.sail-europe.eu
- Registrants have exclusive right to use of the EELQMS quality logo on product documentation and labels
- Quality of products claiming compliance are checked regularly through SAIL's product survey programme, covering all LoC signatories
- Pay annual registration fee

EELQMS
EUROPEAN ENGINE LUBRICANTS QUALITY MANAGEMENT SYSTEM

3. SAIL - Number of Participants listed on website

Date Refreshed = 15-Mar-23

Countries Participants listed on website



AUDITOR CHECKLIST (NEW!)

Improves compliance with Code of Practice

- Meets requirements under section 102 Auditing and Assessment.
- Self- help tool for Lubricant Marketers.
- Supports external ISO accreditation visits.
- Available on demand on SAIL website

QMS Auditor Checklist

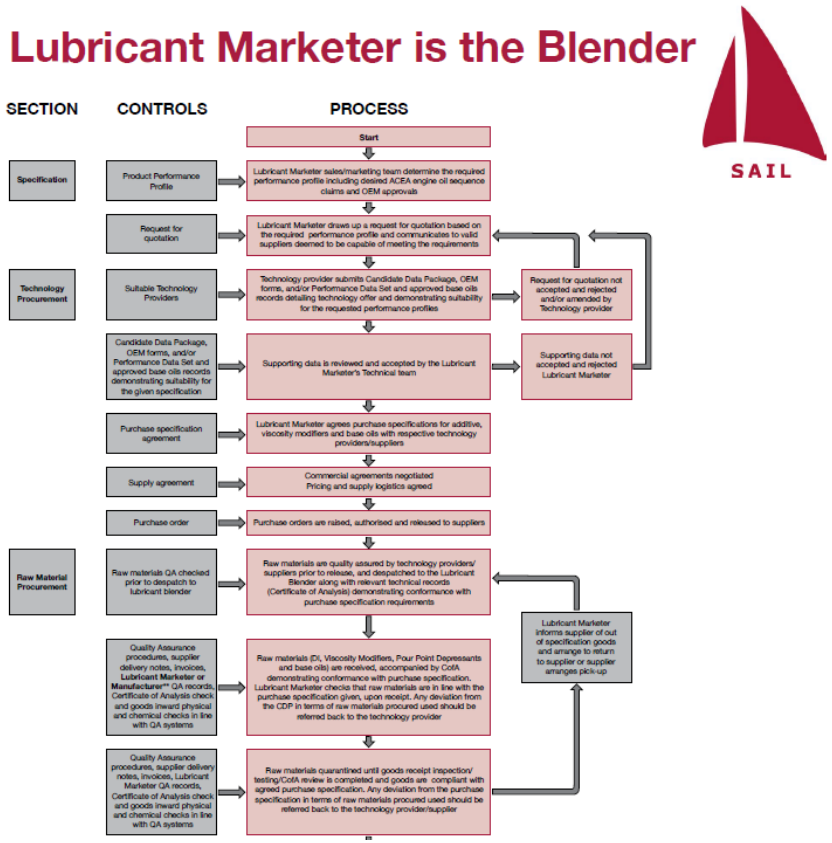
SAIL

1. Check allocated internal code for the Product Brand Name (PBN).
2. Search for formulation linked to internal code stored in database.
3. Request Candidate Data Pack (CDP) and/or ACEA (association of European Automotive Manufacturers) Performance Data Set for listed formulation.
4. The auditor should check that the CDP meets the current valid iteration(s) of the ACEA European Engine Oil Sequences.
5. Check formulation in CDP and/or ACEA Performance Data Set matches the product formulation from blend records.
6. Check the Quality Controls listed for PBN are aligned to characteristics shown in the CDP and/or ACEA Performance Data Set.
    a. The CDP and/or ACEA Performance Data Set will not necessarily list Production Tolerances but there will be typical values of key characteristics.
    b. The Quality Control (QC) protocol must be derived from CDP and/or ACEA Performance Data Set, material specifications from additive producers, SAE (Society of Automotive Engineers) J300 and ACEA European Engine Oil Sequences.
7. Check specification claims for PBN in labels and technical data sheets match those listed in CDP and/or ACEA Performance Data Set.
    a. If a claim for a formal OEM approval is being made, check the blender has corresponding approval letters for PBN from Original Equipment Manufacturers (OEMs) whose specifications are claimed.
    b. Check the formulation code in the OEM approval letter matches the code in the CDP and/or ACEA Performance Data Set etc.
    c. It is not unusual that some CDP and/or ACEA Performance Data Set specifications are not used for PBN for marketing reasons.

FLOWCHART (NEW!)

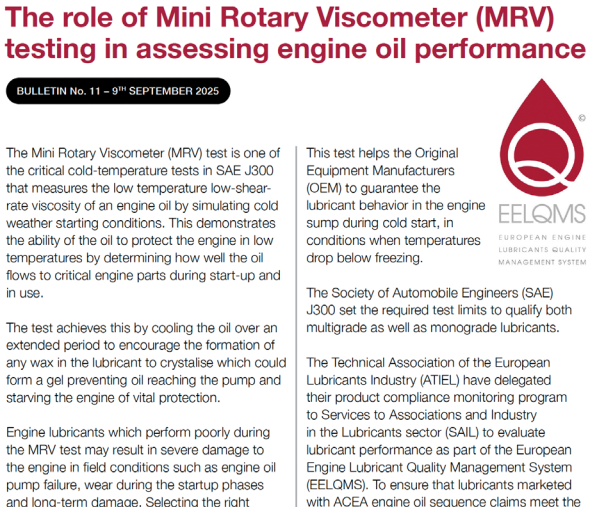
Improves compliance with Code of Practice

- Supports greater knowledge and understanding of the application of the Code at different steps in the manufacturing process.
- Self- help tool for Lubricant Marketers.
- Available on demand on SAIL website



Communication activities

EELQMS Newsletter



The role of Mini Rotary Viscometer (MRV) testing in assessing engine oil performance

BULLETIN No. 11 – 9TH SEPTEMBER 2025

EELQMS
EUROPEAN ENGINE LUBRICANTS QUALITY MANAGEMENT SYSTEM

The Mini Rotary Viscometer (MRV) test is one of the critical cold-temperature tests in SAE J300 that measures the low temperature low-shear-rate viscosity of an engine oil by simulating cold weather starting conditions. This demonstrates the ability of the oil to protect the engine in low temperatures by determining how well the oil flows to critical engine parts during start-up and in use.

The test achieves this by cooling the oil over an extended period to encourage the formation of any wax in the lubricant to crystalise which could form a gel preventing oil reaching the pump and starving the engine of vital protection.

Engine lubricants which perform poorly during the MRV test may result in severe damage to the engine in field conditions such as engine oil pump failure, wear during the startup phases and long-term damage. Selecting the right

This test helps the Original Equipment Manufacturers (OEM) to guarantee the lubricant behavior in the engine sump during cold start, in conditions when temperatures drop below freezing.

The Society of Automobile Engineers (SAE) J300 set the required test limits to qualify both multigrade as well as monograde lubricants.

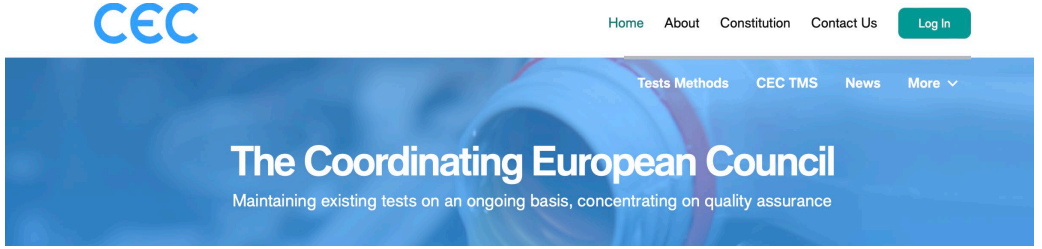
The Technical Association of the European Lubricants Industry (ATIEL) have delegated their product compliance monitoring program to Services to Associations and Industry in the Lubricants sector (SAIL) to evaluate lubricant performance as part of the European Engine Lubricant Quality Management System (EELQMS). To ensure that lubricants marketed with ACEA engine oil sequence claims meet the

Podcasts and webinars

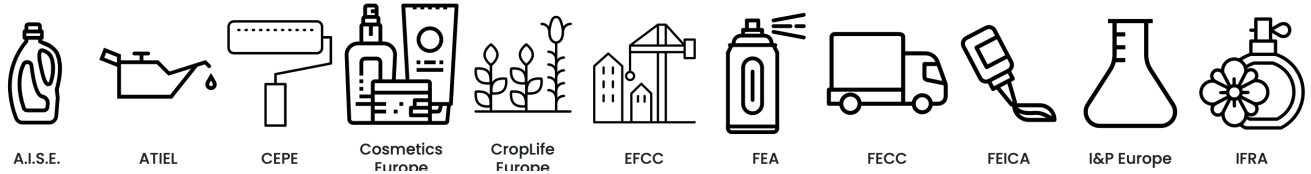
Collaboration and proactiveness are key to succeed

acea

CEC



ATC



API American Petroleum Institute

cefic

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