Lube-Tech

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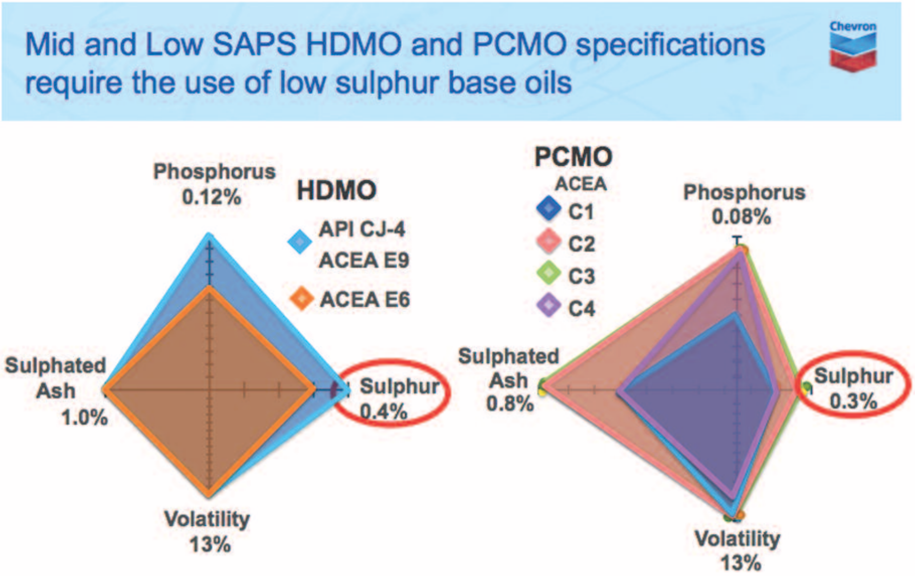
# Modern Base Oils & Blending for Optimal Performance



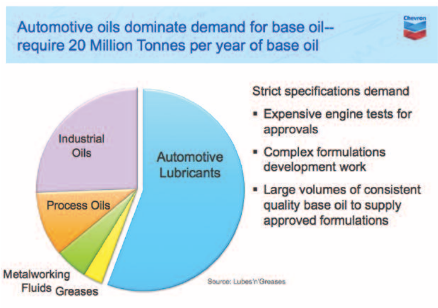

### Meeting the Evolving Needs of the European Lubricant Market

The lubricants industry in Europe is at a crossroads. Historically, lubricant formulations have been based upon optimising Group I, Group III or a Group I/III blend with a proven additive package.

Relying on Group I and Group III has served the European lubricants industry exceptionally well. Group I is readily available, and typically, is the least expensive base oil. Historically, it has been the dominant ingredient in many lubricant formulations, particularly industrial lubricants and automotive formulations with a lower viscosity index (VI). As a result, Group I has become the 'work horse' base oil throughout Europe, whilst Group III has been used to deliver higher performance and lower viscosity.

With tightening environmental legislation this historical balance is being challenged. In order to meet 'green' initiatives, the Automobile Manufacturers Association (ACEA) is pushing for tighter engine oil specification standards.

This has created a maze of OEM requirements that call for emission system protection and extended drain intervals from both Passenger Car Motor Oils (PCMO) and Heavy Duty Motor Oils (HDMO). Meeting those specifications requires lubricants with lower viscosity and lower volatility.

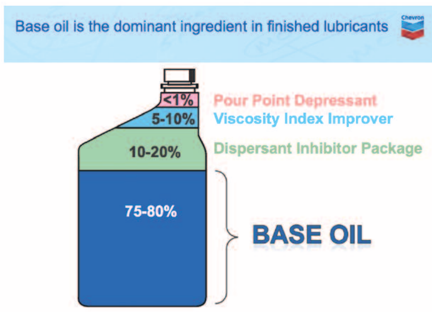



In addition to tightening performance requirements for crankcase lubrication, automatic transmission fluids, greases and industrial oils are also facing tougher challenges. Automatic transmissions are being redesigned to boost fuel economy and are moving to fluids that can provide fill-for-life performance. Greases are being subjected to higher loads, higher bearing speeds, and higher temperatures that require formulations with better oxidation and thermal stability. Similarly, users of industrial lubricants want better thermal stability and longer oil life.

Generally speaking, these performance trends are calling for base oils that have

- Higher VI to enable better fuel economy and low volatility
- Lower volatility for reduced oil consumption
- Practically zero sulphur
- Excellent oxidation stability
- High saturates content for improved additive response

Whilst these new standards are very good for the environment, they are creating significant challenges for lubricant manufacturers who must grapple with optimising lubricant formulations for new specifications whilst managing supply chain cost and complexity. New premium quality base oils will need to be added to the supply chain in order for blenders to meet the full range of new specifications for their Automotive Engine Oils (AEO). This means increasing tankage to accommodate additional base oils or re-evaluating formulations across a blenders entire product line and identifying opportunities for reformulating with new premium base oils.




Careful selection of base oil suppliers will help reduce potential supply chain complexity and cost. Given the complicated and costly process for qualifying lubricants, selecting base stocks from suppliers with large volumes and multiple plants helps minimise the need for expensive requalification testing with alternative base stocks. This also reduces tankage requirements. These challenges have brought a new level of scientific sharing between OEMs, lubricant manufacturers, additive companies and base oil suppliers to find solutions that optimise performance and meet market demands.