



4-7 March, 2019
Grand Hyatt Singapore

Data- Supporting Product Line Management

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Which market or country to concentrate on?

OATS provides industry leading insights through combining OEM specification data and research with lubricant product specifications and recommendations and OEM equipment production and sales data. Using sophisticated data analytics techniques, OATS can show trends and market potential estimates, provide product portfolio recommendations and build optimization models.

How OATS can help:

- ❖ Reduce/improve product line such as base oils, inventory, pack size, viscosity, oil specification, at depot storage (By Region).
- ❖ Reduce costs, overheads, dead and slow-moving stock, drum costs etc.
- ❖ Help to see which products give the best coverage for your market.

A snapshot of INDIA and EUROPE

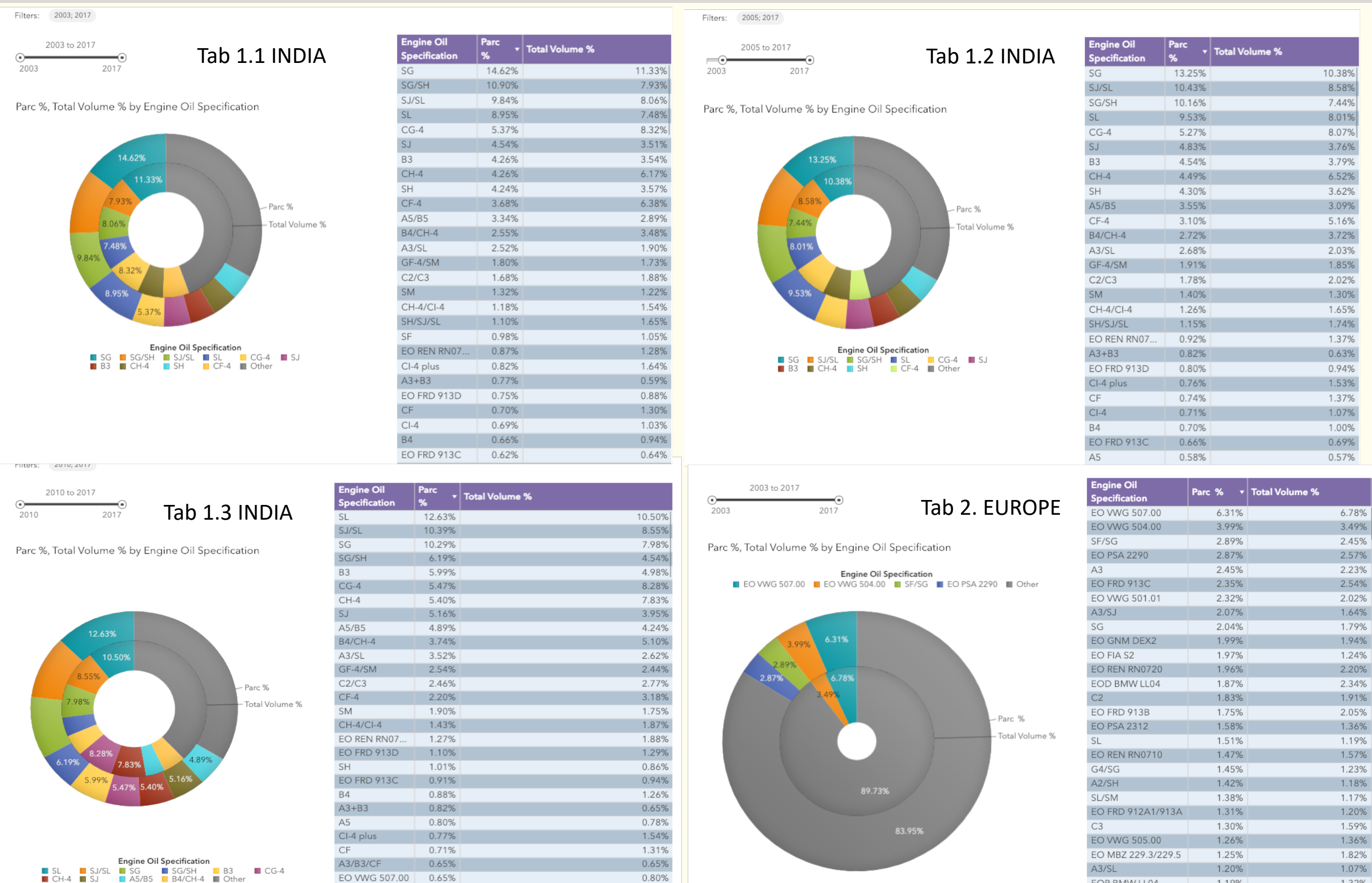
We provided an analytical insight for the engine oil specification requirements across Europe and India vehicle parc for Cars and Vans (LCVs) that are available in the OATS lubrication databases. This Analysis can enhance the customer's business and work as a guideline to infer better decision making.

Tab 1.1-1.2-1.3-2. A snapshot comparison between India and Europe Car Parc and Lubricant Volume coverage by Engine Oil Specification of equipment that are on the road today that were manufactured in the last 15 years. This is a representation of our database.

EUROPE: Europe is a more mature market with steadily stricter emission standards. OEMs own branded specifications proliferate in Europe, with ACEA as the accepted standard. VW diesel engine oil specification in this chart shows the trend to diesel fuelled vehicles. With the introduction of stricter emission testing standards, sales of gasoline engine cars have shown an increase. (**Tab 2**)
INDIA: In India the older generation engines required lubricant specifications that are obsolete in Europe. In the last 5-10 years, India has become a big industrial power house and the GDP increase is bringing more wealth to the country. This has resulted in European and Asian manufacturers entering the Indian market.

Tab 1.1. For the 15 year period from 2002 to 2017, API SG appears to be the dominant specification.
Tab 1.2 From around 2005 API SG started to decrease. This decrease becomes noticeable from 2010 when API SL, SM, SN became the dominant specifications see **Tab 1.3**. This shows that changes are taking place in India.

Is India catching up with the trend in Europe? This trend indicates oil companies should ensure that their specifications are suitable for the more modern engines.



Trend of viscosities in India and Europe

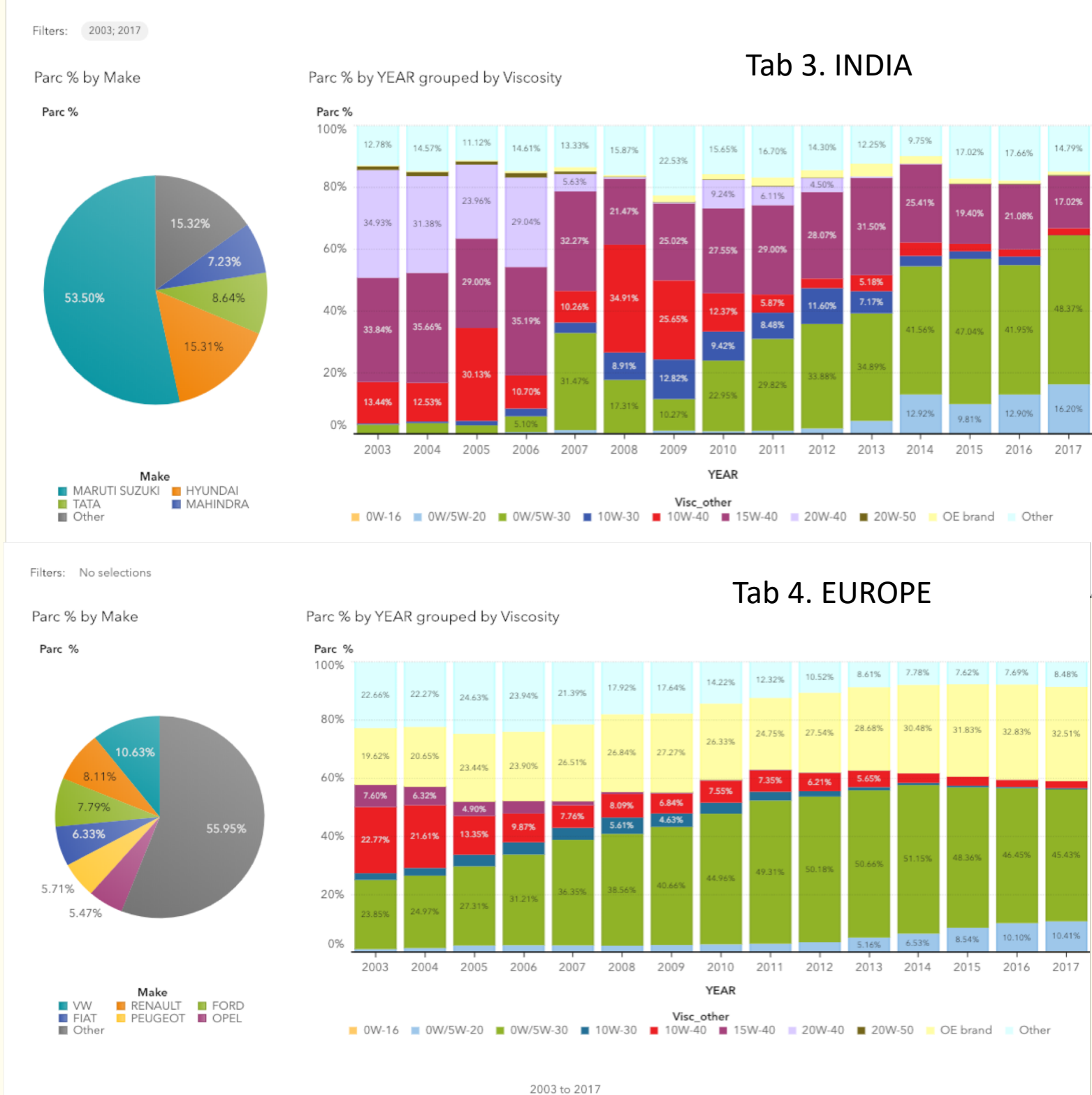
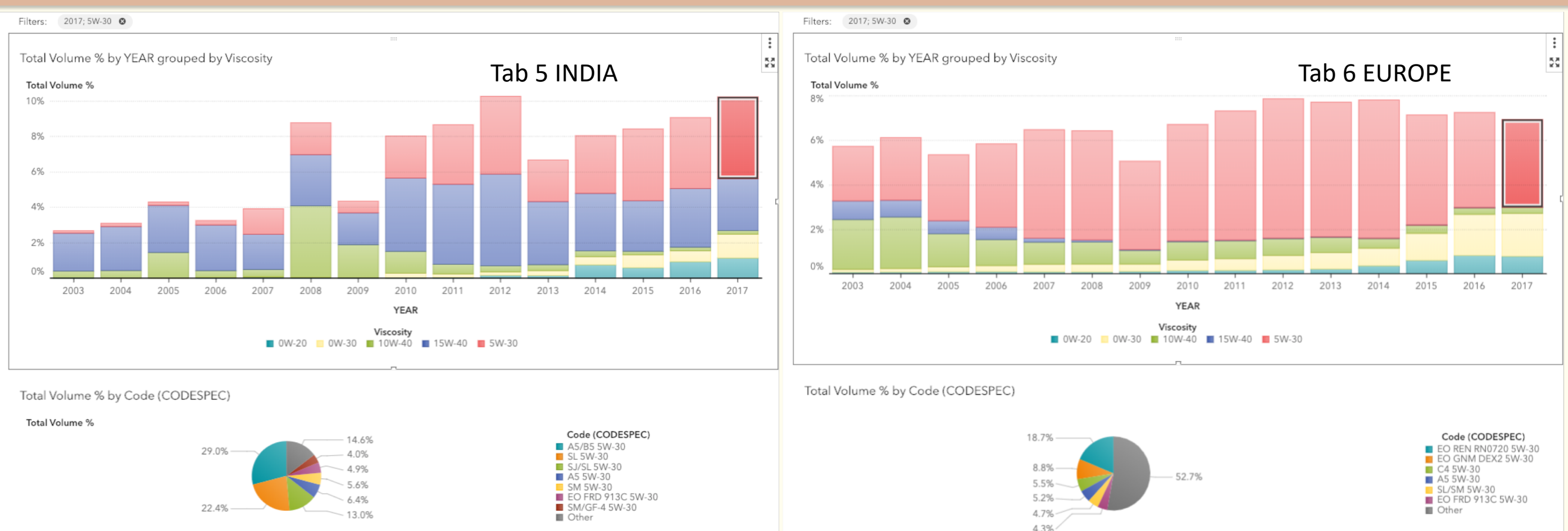


Table 3-4 With lower viscosity comes higher quality base oils formulated to SAE 0W/5W-20, 0W-16. Low viscosities are common in Europe, **Tab 4.** and slowly appearing into the Indian market (**Tab 3.**)

SAE 20W-40 and 20W-50 are still available in the Indian lubricants market but it is anticipated that the volumes of these viscosities grades, for passenger cars, will decrease and follow European trends.

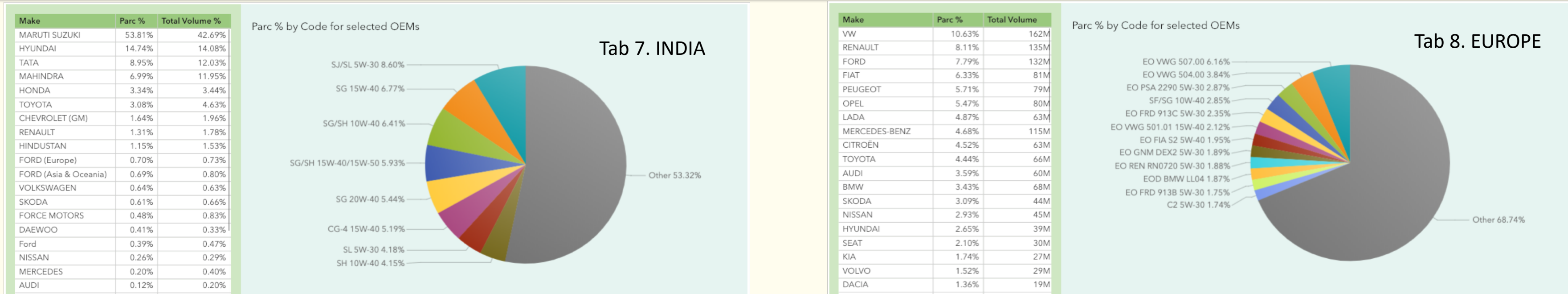
It is not just a change in the viscosity demand but it is a change in the quality of the base oil too. Low viscosity comes with increased oil quality and more severe engine oil specifications.
Tab 5-6. Low viscosity oil is not the whole story. It will depend on what the OEM specifies, and thus will determine the base oils to consider in the final formulation.



- ❖ In India there is still a market for Group I base oils, but Group II and higher specifications oil will increase.
- ❖ In Europe it is essential to have OEM specifications to maintain or gain market share.
- ❖ The European oils market driven by OEMs is the reflection of the engine oil technology which will also happen in India.

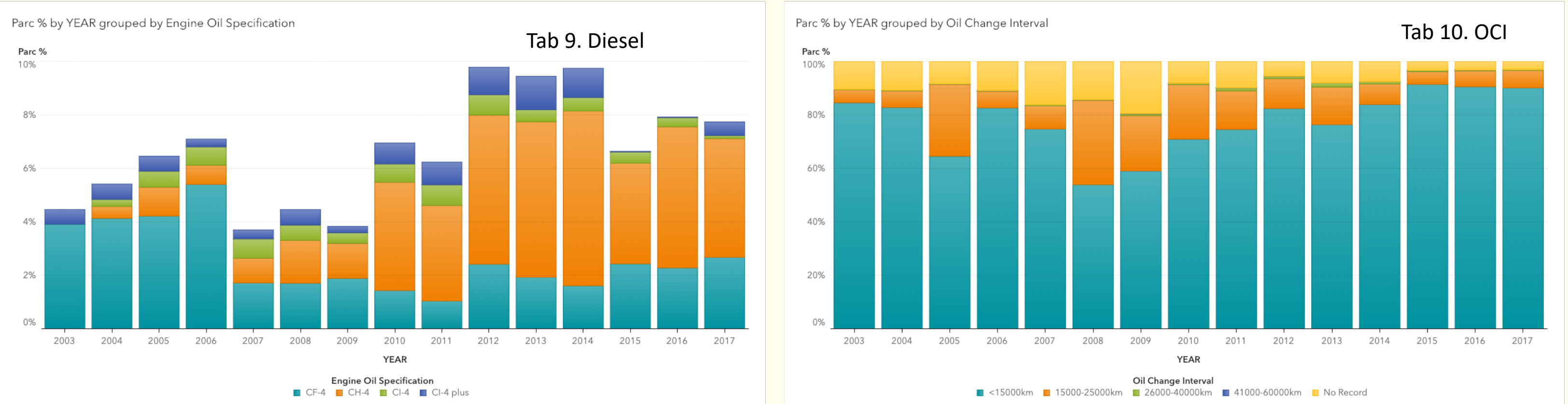
Which OEMs?

Tab 7. shows the current state of the most popular oil specification in India and compared to **Tab 8**, which shows the trend in Europe as being OEM driven.



INDIA

- ❖ Diesel powered engines in India are still at a low percentage and may change going forward. India is some years behind Europe and could probably miss the Diesel revolution, in Passenger Cars, due to recent negative publicity. **Tab 9.** shows some of the oil specifications used in vehicles.
- ❖ **Tab 10.** Our data shows the oil change intervals trend in India is fairly static, at circa 15000km with some OEMs with increased oil service regimes.



CONCLUSIONS

- ❖ In India, API SG decreases and replaced with API SL, SM, SN.
 - ❖ Trend indicates that oil companies should move away from older oil specifications as more modern engines enter the Indian market.
 - ❖ Low viscosities are common in Europe and slowly appearing into the Indian market.
 - ❖ In Europe it is essential to have OEM specifications to maintain or gain market share.
 - ❖ Diesel powered engines in India are still at a low percentage.
 - ❖ The oil change intervals trend in India is fairly static at circa 15000km.
- Using this type of modelling can help oil and additive companies to formulate lubricants and additive packages for their markets. This will help the drive to reduce unwanted stock and reduce costs.