



Prana Tharthiharan Natarajan, Frost & Sullivan

Market penetration of EPS increases. A very important milestone on this way was the successful addressing of rack loads of more than 13kN.

we.CONECT spoke with Prana Tharthiharan, Team Leader at Frost & Sullivan, about his assessment of market developments & the main challenges for the development of steering systems.

we.CONECT: Please describe briefly the industry and market in which your company is operating?

Prana Tharthiharan Natarajan:

Frost & Sullivan is a global market research and consulting firm with over 50 years of experience in tracking various industries and trends. Our global outlook allows us to capture key insights in some of the most important markets such as Europe, North America, Asia Pacific, besides emerging economies such as Brazil, Russia, India, China, Korea etc. One of the areas that is more relevant to this conference event is my business unit – Automotive & Transportation which has me leading a team of analysts for chassis, safety and driver assistance systems.

we.CONECT: In your opinion what are the main current challenges and trends your company has to face?

Prana Tharthiharan Natarajan:

There are three major issues that the steering system manufacturers of today are facing – integrating safety functionalities and innovative value-added functions to steering systems; secondly, containing the fluctuations in the pricing of rare-earth metals which go into the electric power steering system's motor; and last but not least, the implications of the recent ISO 26262 standard and its indirect influence of demanding a mechanism to mitigate the risk of loss-of-assist. While these are easier mentioned on paper, it warrants

tremendous effort to make progress in any of these issues even to a reasonable level, rendering solutions commercially viable.

we.CONECT: How is your company reacting to this? Which implication does this have for your work?

Prana Tharthiharan Natarajan:

Frost & Sullivan has been assisting various OEMs, tier-1 and tier-2 suppliers in identifying best practices in the industry in incorporating changes to their value-chain and even their value proposition. For instance, our work scope has cut across various entities in the value-chain – bearing suppliers, motor manufacturers, and ambitious new entrants in the market are a few for example.

We are identifying new opportunities, challenges and best practices that help our clients address these issues.

we.CONECT: Please describe in brief the project you will be presenting on the Automotive Steering Technology 2013.

Prana Tharthiharan Natarajan:

The findings that are to be presented at the Automotive Steering Technology 2013 conference are mainly our insight on the electric power steering systems market. There have been differences in OEM approaches with regard to their preference of various types of electric power steering. Daimler, for instance, does not prefer to adopt the C-EPS solution, which is widely

adopted by most other OEMs. Certain other advanced angle-overlay systems such as Active Steering seems to be a niche-application, with limited application only among luxury OEMs.

The presentation focuses on how Frost & Sullivan believes the market will develop over the next 7-8 years.

we.CONECT: What are the alternatives to Rare-earth metals in the motors for electric power steering?

Prana Tharthiharan Natarajan:

Rare-earth metals undergo tremendous changes in their pricing trends. However, motor manufacturers and tier-1 steering systems suppliers tend to fix their system prices immaterial of these fluctuations. This results in variation in profitability of the suppliers, although each of them does have various techniques to hedge the pricing fluctuation. Ferrite magnet motors, however, seem to be a potential alternative for mitigating this risk. Some suppliers are also experimenting with Samarium-Cobalt. Certain others are experimenting on injection-molded or compression-molded Neo magnets. The problem with Ferrite magnet motors is the weight penalty and size.

we.CONECT: How well are OEMs adopting EPS for vehicles with front axle load of more than 13kN?

Prana Tharthiharan Natarajan:

This has been the biggest challenge for, not just OEMs and

suppliers, but for the EPS technology by itself. The most important milestone in the recent times has been the implementation of a rack-drive on the Ford F-150. This is mainly done by a variable ratio steering-rack that can accommodate higher loads. The same is also being favoured by OEMs like Volkswagen in Europe. At present, this is one proven way of addressing rack loads of more than 13kN in the near term.

we.CONECT: Advanced solutions such as Active Steering is present only in the portfolios of few suppliers such as ZF Lenksysteme, ThyssenKrupp Presta, Nexteer etc. to name a few. Will more suppliers enter this space?

Prana Tharthiharan Natarajan:

Well, there is already a sufficient number of market participants in that space among suppliers. How many OEMs are keen on this technology? We saw it on the Sierra Denali, Renault-Nissan / Infiniti models, besides the obvious models among German OEMs. How many individual programs do we have, among OEMs? That decides the number of suppliers, because, clearly, for each platform / program, there are one or two suppliers. Each supplier will want to supply the same technology to at least two and if possible 3 or more OEMs. Therefore, the numbers add-up in ways that make the supplier-base already saturated. More suppliers here are welcome, only if they make the solution

cheaper and more suitable for a Volkswagen Golf or a Nissan Cube, rather than for an S-class or a Q5.

we.CONECT: Advanced Driver Assistance Systems are becoming more and more interfaced and integrated with chassis-systems such as steering and braking. Besides the obvious technical challenges, what other challenges does Frost & Sullivan expect?

Prana Tharthiharan Natarajan:

Good point! What we see in this market has various implications. For starters, we have Bosch and Continental trying to make some efforts on coming up with a centralized chassis controller. But certain other suppliers operate with these individual ECUs as a separate revenue stream. Integrating various ECUs into one impacts their business. So, we can expect a Bosch or a Continental to proceed in that direction, as they see the bigger picture of being able to serve the greater goal. Others may tend to vary.

Yet another interesting development is that of Autoliv being likely to launch their integrated safety controller in the near future, which integrates active & passive safety with brake controls. Whether the same system will be integrated or interfaced with steering in the future is to be debated.

we.CONECT: Does the introduction of Steer-by-wire system this year by Infiniti imply that

this solution has finally become a commercial success?

Prana Tharthiharan Natarajan:

As mentioned above, the Active Steering by itself is just a watered down version of the complete steer-by-wire concept launched by BMW in Z22 in the year 2000. Certain components of the concept were retained and now Active Steering is a success in the market. A comparable technology is that of the 4WAS by Nissan & Infiniti. They have now come up with a steer-by-wire concept. It is not for the lack of benefits of the 4WAS but because the SBW technology comes with its own benefits, with regard to how “real” the steering feel is. For it to become a commercial success, we need to see it on multiple vehicle models. At the moment, no other OEM believes there’s a need for those kinds of benefits that only a SBW has to offer. I’m only reminded of what Einstein once said – “if an idea doesn’t sound absurd in the beginning, there’s probably no hope for it”. Let’s wait and watch as the future unfolds.

Mr. Prana Tharthiharan Natarajan, thanks a lot for this interview!

Interview Partners:

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Prana Tharthiharan Natarajan

Prana has been an automotive manufacturing planning engineer, prior to entering the market research space. He has been tracking the market for electric power steering in Europe and North America for passenger cars.

Automotive Steering Technology 2013 is a global automotive conference that discusses latest developments in the steering industry: EPS applications, market adaptations and current challenges, steering system development and new technologies such as steer-by-wire. <http://automotive-steering.we-connect.com/en>

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