

Soft focus

NIRA DYNAMICS PROMISES VEHICLE DYNAMICS SYSTEMS CAN BE SIMPLIFIED USING NEW SOFTWARE RATHER THAN MORE SENSORS. **ADAM GAVINE** FINDS OUT MORE



URBAN FORSELL HAS BIG PLANS FOR NIRA DYNAMICS' FUTURE



With greater demands for increased functionality and reliability, coupled with reduced weight and complexity, vehicle dynamics electronics is becoming a tricky area. However, one company believes the answer may not always lie in yet more sensors, but in data fusion through a focus on signal processing and control software systems.

NIRA Dynamics AB, founded in 2001, saw its first TPMS product hit the market last year in the Audi TT. "Tire pressure is our main focus due to the FMVSS 138 rule in the USA," says Urban Forssell, CEO. "Instead of installing pressure sensors and a radio transmitter in each tire, we look at wheel speed and other signals available on the databus, and calculate if one or more tires has low pressure, so we can warn the driver if there is a puncture or slow leak. This creates cost-, weight-, and complexity savings; all we need is a software component integrated into an existing system such as ESP. We are focusing on more functionality with less complexity."

This indirect TPMS, which the company calls TPI (Tire Pressure Indicator), was added earlier this year to the Audi A5 and A4 models, while Forssell expects the system to appear in many other vehicles in the future, in Audis – with whom NIRA has a close relationship – as well as other brands. "We are working hard to launch the first vehicle with indirect TPMS in North America next year with Audi. This is a major step for us, and we see ourselves as the market leaders in this technology. More OEMs and Tier 1s will join us; indirect systems were seen as a no-go in the USA as they weren't good enough. But now we have a good system, which will be suitable for the USA," Forssell asserts.

Further work at the company includes traction systems and road friction. Forssell explains, "We have developed a traction control system

software, and are also working on positioning control software. Our traction control software was in production in the old Volvo S40 and V40, and is now in series production for BMW motorbikes. We also have projects for estimating road friction, road surface texture, and other vehicle dynamics parameters. From the wheel-speed signals you can isolate and pick up information about the road, and the forces acting on the tires and the vehicle. You can combine this with information from brakes, gyros, accelerometers, etc, and use the software to estimate the state of the vehicle, roll/pitch, position speed, and acceleration, all in three dimensions, using existing sensors. This technology is in various stages of maturity, from initial ideas, to being close to production.

"We are in the middle of a rollout plan for TPI, which is consuming a lot of our resources and focus, but we plan to offer customers the chance to integrate a package of functions," he promises. "They will be able to have many functions, using the same interfaces, but get more output signals from our software, and use it for other systems or present it to the driver. For example, a friction measurement of the road surface, or a classification of the texture of the surface, could be additional output signals."

This work is made possible by an intensive R&D investment, with every dollar currently earned being reinvested two-fold into research. "We see big potential, and want to broaden our scope of functions," explains Forssell. "This is heavy investment with a clear focus, and we expect turnover to pick up rapidly over the coming years."

The company plans to expand its base of two offices in Sweden, in Linköping and Gothenburg, with an increase in its German presence in 2008, and an increased US presence in 2009-2010 through investments and by using Audi resources.

