

Industrial PhD's: Local arrangements on a global arena

Ingemar Denbratt
Educator, Networker



Ingemar Denbratt, Professor
in combustion engineering

Automotive exhaust emission has been an important research area at the institution of Applied Mechanics for a long time. Today, these levels are approaching what is considered sustainable and the research at the institution is now focusing on supporting the transition to a future sustainable transport system where fossil fuels have to be gradually replaced with alternative and renewable fuels.

I have set out to meet with Ingemar Denbratt, professor in combustion engineering at Chalmers, and with long experiences from research in collaboration with industry. He is also on the board of Chalmers Centre for Combustion Engine Research (CERC), an interdisciplinary engineering research centre housing long term research needs that are delineated within road-maps developed by the centre's industrial partners. "We have always had a good and close relation to the Swedish automotive industry – as long as I can remember", Ingemar Denbratt says, once we are installed in the sofa set at his office. We have made an appointment, specifically to discuss pros and cons of industrial PhD's, something he knows a lot about as he has tutored and examined 9 during his years at the department.

A large investment

Ingemar Denbratt tells me that he has always had at least two

ongoing industrial PhD projects; one from Volvo AB and one from Volvo Cars. Sometimes even more, because when SAAB Automobile was up and running in Trollhättan, one hour drive north of Gothenburg, they also had industrial PhD's placed at the department at Chalmers. Scania in Södertälje on the other hand, has only had one industrial PhD student placed at Chalmers so far, ever. When I ask him why, he replies: "I guess that the worst thing that could happen is that the company pays for the education of an Industry PhD and then, the student finds it so nice here on the west coast so that he or she wants to stay. It wouldn't be hard for them to find a job here either. They certainly become coveted" and he continues: "I understand Scania, I would probably have argued the same". I ask Ingemar Denbratt if the other industries are considering secrecy issues and therefore choose not to place their industry PhDs in the same environment as Volvo. "Most of our projects are not related to a specific product, they rather focus on issues in the future which normally are problems many actors can work together on." he replies and continues: "They trust their staff in not talking too much about business confidentialities. I rather think they wanted to avoid the risk of a student finding another job at a company on the west coast. An industry PhD is a great investment for the company and nothing they want to lose to easy." Perhaps Ingemar Denbratt is right. Distance may be an issue. Among the 25 industrial PhDs registered at Chalmers Energy Initiative in 2013, only three represented companies placed outside West Sweden. Ingemar Denbratt further tells me: "Despite a lot of international collaboration we have never had an industry PhD originating from industry outside Sweden, but among the "normal" PhD students, it is the other way around; most of them are recruited from abroad."

Basic and exploratory research is the start for the new

The best things with industrial PhDs are the great network, Ingemar Denbratt tells me. To all the Industry PhD projects at least one representative from industry participates in the tutoring committee, so this is a great forum that also facilitates discussions about future projects. "When we have research projects together with industry most of them engage 'normal' PhD students", Ingemar Denbratt says, continuing: "and a lot of times these students gets employed by that industry after dissertation."

We leave the pros and cons of industry PhDs and talks about 'the usefulness of research'. Ingemar Denbratt tells me that when CERC was evaluated there was one thing that really surprised him; several of the industrial partners in the centre referred to how useful specific research results had been for them. "I would have guess that educated people was the most important", Ingemar Denbratt says. The usefulness of research results is confirmed by Anders Karlsson, research-

er at Volvo Advanced Technology and Research and also adjunct professor at the institution of Applied Mechanics at Chalmers. *“The work I do at Chalmers is related to the work I do at Volvo, but the research question is more basic and explorative at Chalmers. At Volvo, we process the models further by applying them in our context and adding our information. Even though we do a lot of additional work, we have grate use of what is produced at Chalmers.”*

“The product development process normally lies beyond our work” Ingemar Denbratt says, and continues: *“Our participation is at the start of something new. One good example of this is Volvo’s development of DME (dimethylether) fuel. This was a project that we had at Applied Mechanics together with an Industrial PhD from Volvo Powertrain. Now, a few years later, that is about to become a product.”*

Text: Niklas Fernqvist

Making Science Useful

Roles: Seven types of roles are identified in relation to making science useful. The roles are developed from different activities for diffusion and utilisation, carried out by one or a group of researchers, or by an entire part of the organisation. The roles are; researcher, educator, advisor, debater, entrepreneur, infrastructure developer and networker. These roles are in general intuitive but develop differently, based on personal characteristics, area of research, the recipients of results within the area, and by different local traditions of how to work with utilisation.

More information: This framework is developed by Staffan Jacobsson, Eugenia Perez Vico, Chalmers University of Technology, Hans Hellsmark, SP Technical Research Institute of Sweden and Merle Jacob, Lund University. For more detailed information, please contact Eugenia Perez Vico (eugenia.perez@chalmers.se) or Hans Hellsmark (hans.hellsmark@sp.se).

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