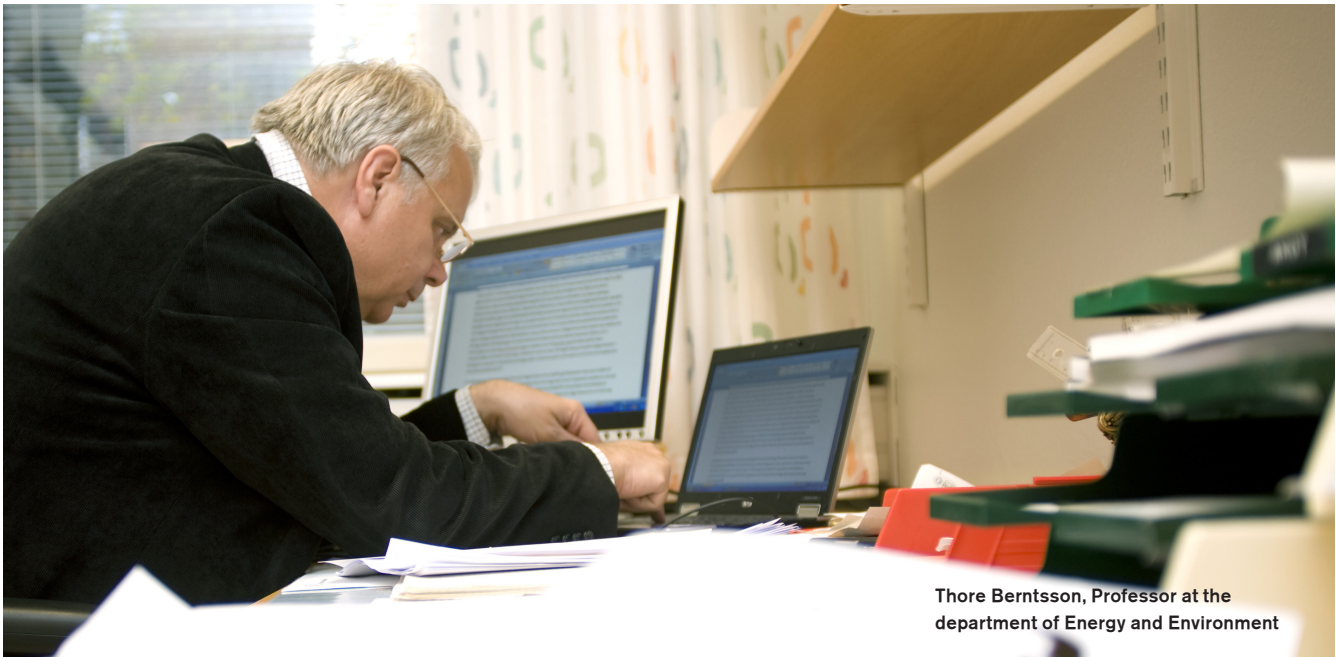


# The Triple Helix: Empowering the knowledge development for the future of Industry in West Sweden



Thore Berntsson  
Networker



Thore Berntsson, Professor at the  
department of Energy and Environment

**In Stenungsund the major cluster of chemical/ petrochemical industry is situated, and together with major oil refineries, a pulp and paper mill and energy companies (e.g. Göteborg Energi) in the region, West Sweden is a hub for production of fuels, plastic materials, chemicals, pulp, electricity, district heating, among other things.**

A lot of these companies are more or less dependent of each other, not only by markets but also by an intertwined exchange of different products, such as; heat, electricity, gases and materials. Through more development and cooperation, these companies can become even more efficient economically and environmentally. For example, the vision of the Stenungsund industrial cluster for 2030 is: *“In 2030 Stenungsund will be the hub for manufacturing of sustainable products in the chemical industry. Our business will be based on renewable feedstock and energy and contribute to a sustainable society.”*

## Close collaborations

*“The process and energy industry in West Sweden, have more than twenty large collaborative projects with Chalmers, including projects also together with policy makers and different institutes”,* Thore Berntsson says. He is professor at Heat and Power Technology at Chalmers and the previous director for Chalmers Energy Area of Advance.

*“These projects typically relate to issues on bio-based energy, fuels and materials or chemicals, but also to process integration in order to reduce energy consumption”,* he says. I have met Thore Berntsson to discuss the interactions between Chalmers’ research and these large industries in West Sweden. *“One of several core areas of Chalmers energy research is bio-refineries, biobased economy and energy efficiency. Chalmers collaborates with these companies in so many ways, and the collaboration has increased so much during the last years, that we need to improve the overview and identify different synergy effects between the projects.”* he says and continues: *“These companies give us a lot of data, which is important for the quality of our research, but is also means that the industry has a lot of thrust in our research results. Such detailed data transfer is really unusual in other countries”,* he says.

## For regional development

Both Chalmers and the industries benefit from this type of cooperation. Petter Holland, CEO at Preem AB gives one example when he points at the importance of Preem’s collaboration with the academy in their development of a production unit for talloil based diesel. *“Chalmers represents one of the most important research and knowledge partners for us in the area of energy and sustainable development, and especially regarding the development of efficient energy*

*combines*". He also stresses the importance of academic research results for the development of Preem AB's long-term strategy to obtain a sustainable position for their refineries. Among other things, these strategies are based on research results from process integration research; a research field that started to grow during the 80's with a strong focus on the economic aspects of energy efficiency. Today the research field of process integration is much broader. *"System oriented process integration research is important for the development of large scale bio-refineries, since they normally need to be integrated in a process industry complex to become profitable. The industries at the Swedish west coast have been an excellent case study to prove this. We are also working together to identify opportunities for regional energy systems including district heating networks"*, Thore Berntsson says and he continues:

*"With this cooperation we are able to combine our competences at Chalmers in bio materials, biotechnology, process technologies, process integration, biorefinery concepts and environmental system consequences and use them in real case studies. " and he continues: " We have developed a unique triple helix cooperation on the west coast of Sweden, and we strongly believe that the knowledge development of future opportunities for different concepts will be very important for the complex strategic decisions these industries are facing."*

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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