
CHALMERS
UNIVERSITY OF TECHNOLOGY
TRANSPORT
A CHALMERS
AREA OF ADVANCE

Transport

A Chalmers Area of Advance

Mobility of people and gods is a fundamental part of the modern society and generates tremendous economic and social value. However, growing transport volumes pose challenges such as climate change, environmental pollution and traffic accidents.

Improvements in vehicle efficiency, the implementation of new drivelines, and improved efficiency of transport systems have so far proved insufficient in our efforts in proceeding towards sustainable transport and logistics systems. The difficult task we face is to create the potential for sustainable, safe transport systems and, at the same time, increase effectiveness and efficiency. Future development cannot be conducted by a single industrial, public or academic actor. Mitigating climate impact and reducing risks in the transport sector are serious challenges that require collaboration between various stakeholders, including business and industry agents and the society as a whole. To approach the problems associated with transport development there is a need to simultaneously address several levels in and perspectives on the transport system, taking into consideration the interaction of vehicles and vessels, networks of infrastructures and the demand and supply of transport and logistics services.

Our key challenges:

- environmental impact
- land use
- urbanization
- traffic accidents
- effective transports

TRAFFIC SAFETY

Focus is on all aspects of safe road transport of or by people, including safe interconnection to other transport areas and modes.

TRANSPORT EFFICIENCY AND CUSTOMER ADAPTED LOGISTICS

Focus is on all aspects of effective and efficient transport and includes several subsystems such as companies' logistics, individuals' mobility, transport and traffic systems.

OUR VISION

- Become leaders in research and education on green, safe and efficient transport solutions.

SUSTAINABLE VEHICLE TECHNOLOGIES

Focus is on electrification, hybridisation, combustion engines, exhaust aftertreatment systems, renewable fuels in engines, systems engineering, resistance, maintainability and environmental aspects, all applied on different modes of transport.

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TRAFFIC SAFETY

Sweden has historically taken a scientific approach towards traffic safety and was the first country to express a Vision Zero (no fatalities or severe injuries in traffic accidents) thus making safety a systemic issue. Traffic safety research encompasses efforts to improve the understanding of real traffic environments, of countermeasures to avoid accidents and to prevent injuries, and of actions taken to mitigate their consequences.

Research, innovation and education are targeting high achievement within three active fields: Field data collection and analysis aiming at developing a holistic understanding of occurrence and effects of incidents and accidents; Accident avoidance aiming at developing new safety systems including technologies crucial for new safety systems as well as human factors and behavioural research; and Injury prevention aiming at developing strategies for increased crashworthiness, advanced structures and protective systems. An important basis for all research is advanced methods for evaluation of safety systems covering, computer models, simulator testing, full-scale testing and naturalistic driving studies.

TRANSPORT EFFICIENCY AND CUSTOMER ADAPTED LOGISTICS

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Well-functioning transport systems are essential for the effectiveness and efficiency of logistics systems and thereby the competitiveness of firms as well as mobility for people and quality of life.

Three active fields have been identified to develop research, education and innovation: Demand for transport services aiming at understanding and developing the design and organisation of supply, production and distribution networks; Supply of transport and logistics services aiming at finding ways to reduce traffic while transport work is increasing; and Interplay and interfaces between supply and demand of transport services aiming at developing more effective solutions by considering the interplay and interfaces between demand and supply of transport services.

A growing awareness of the relationship between transport efficiency and the environmental consequences of different logistics and transport solutions also spurs the development of the research.

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SUSTAINABLE VEHICLE TECHNOLOGIES

Chalmers has a long scientific tradition and a set of strong research centres in this profile area, which focuses on improving vehicles and vessels towards better fuel economy and less environmental impact. All conventional transport modes are represented.

Three active fields have been identified: Efficient powertrains aiming to find sustainable solutions for how to propel vehicles in future; Vehicle concept development aiming at reducing propulsion resistance through vehicle design; and System aspects of vehicles aiming at analysing factors affecting future generations of vehicle powertrains and concepts.

In addition to the active fields identified within each profile we are also exploring the potential need for three active fields that cut across the excellence profiles: Future Urban Transport, Long distance transport and Transport System Challenges.

RELATED CENTRES

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CHALMERS AUTOMOTIVE AND TRANSPORT ACADEMY

Chalmers Automotive and Transport Academy (CATA) is a joint organized interface between Chalmers and the automotive and transport industries, serving as a platform for contacts and forum of exchange between Chalmers and its industrial partners.

This ensures a flow of ideas, knowledge and vision between education, research and industry and is mutually beneficial for all involved. CATA has three aims:

- To stimulate work integrated learning
- To establish competency near term needs and long term desires through interaction between Chalmers, industry and society
- To integrate higher education and work integrated learning

Maintaining close links with industry ensures that Chalmers can provide students with the opportunity to get involved with cutting-edge projects and apply the theory they have learnt to real-life engineering challenges. This can be project work carried out on site with an industrial partner in the form of a Master's thesis or an internship. It can also be guest lecturers, who are experts in their fields, visiting Chalmers or alternatively students visiting companies for a short period to gain a better understanding of the industrial environment.

CATA is however not only about providing students at Chalmers with access to industry. It is equally about industry having access to the students and influencing the education that is undertaken. Chalmers works closely together with its industrial partners to design the Master's programmes relevant to the automotive and transport sectors to ensure that the education will meet their future needs. It is also an access point from which current and relevant research can be viewed.

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CATA

CHALMERS

ALL INFORMATION IN ONE PLACE:

- Master's Programmes
- Education for practitioners

INTERFACES:

- Website
- Annual meetings
- Reference groups etc.

WORK INTEGRATED LEARNING:

- Guest lectures
- Projects
- Master's thesis
- Field trips
- Internships
- Mentorships

INDUSTRY

SUSTAINABLE TRANSPORT INITIATIVE – CHALMERS AND UNIVERSITY OF GOTHENBURG JOINING FORCES

University of Gothenburg is an integrated part of the transport research effort - the Sustainable Transport Initiative. Together with the core research group of logistics and transport management at University of Gothenburg, there is a wide range of researchers in fields such as applied IT, law, economics, global studies, psychology, marketing, organization, cultural geography and chemistry, which complements the research groups at Chalmers.

COMMUNICATION AND SUPPORT

For more information of our activities, events and research in the Transport Area of Advance visit our website:

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