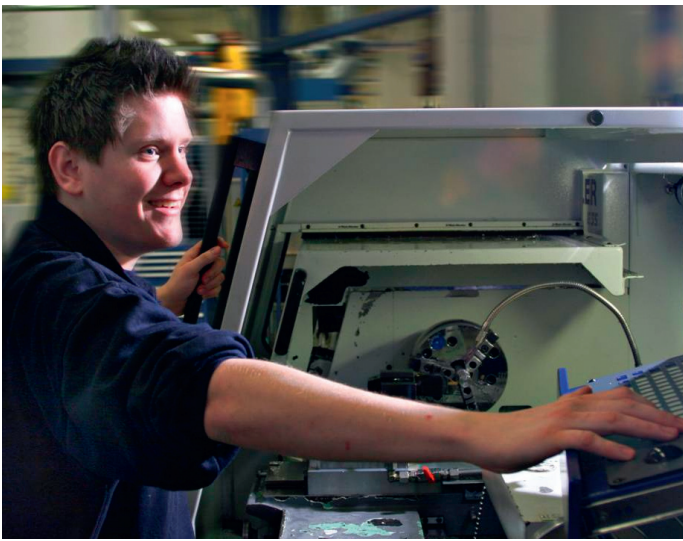


Photo: Bjørn-Ove Holmberg



Norwegian Centres of Expertise  
**NCE Systems Engineering  
 Kongsberg**

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During the past 20 years, the companies in the Kongsberg cluster have increased employee numbers from less than 5,000 to over 18,000 worldwide. Of these, approximately 6,000 work in the Kongsberg region with the overall majority employed outside Norway. In the same period, turnover has increased twelvefold, totalling approximately NOK 34 billion in 2008, of which turnover outside of Norway comprises approximately 85%.

### Background

Kongsberg is an industrial competence cluster. The companies are supplying advanced systems for critical operations in demanding industries such as space, defense, subsea, maritime, automotive and aircraft engines. The R&D investment is totaled to approximately NOK 2 billion per year and a majority of Norwegian research results are industrialized in these companies.

Cluster companies include Kongsberg Gruppen, Kongsberg Automotive, FMC Technologies, Volvo Aero Norge, Dresser-Rand, Esko Graphics, Kongsberg Devotek, Kongsberg Safety Systems, Argos Solutions and several more. The companies have both national and international owners, and are represented in more than 40 countries.

### Facts about the Kongsberg Industry

- Aircraft engines – Approximately 70% of all Boeing and Airbus aircraft have vital engine parts made by Volvo Aero Norge. These parts are produced exclusively in Kongsberg
- Automotive – Roughly 50% of the world's car manufacturers have products from Kongsberg Automotive
- Subsea – FMC Technologies in Kongsberg is world leading in the delivery of subsea

production systems for the oil and gas industry

- Defence – Kongsberg Defence & Aerospace has developed the world's most advanced naval strike missile. It is developed and produced in Kongsberg
- Space – Kongsberg Defence & Aerospace is Norway's largest space company
- Maritime – Kongsberg Maritime has a leading global position in the markets for dynamic positioning systems and is the world's largest in the field of marine automation
- Offshore – Gas turbines and compressors from Dresser-Rand in Kongsberg ensure 70% of the production of the Norwegian oil and gas industry

### Core Competence is Systems Engineering

The core competence within the Kongsberg cluster focuses on systems engineering. Systems engineering is an interdisciplinary approach and aims to enable the successful realization of complex systems. It focuses on defining customer needs and required functionality early in the development cycle, documenting requirements, subsequently proceeding with design synthesis and system validation while considering the complete problem for the system's entire lifetime.

### Unique Master Degree Programme in Systems Engineering

The Kongsberg cluster companies have initiated a Master Degree Programme in Systems Engineering (MSE). The programme is established at Buskerud University College in Kongsberg in cooperation with Stevens Institute of Technology in New Jersey, USA, and the Kongsberg industry. This programme is the first MSE in the Nordic countries.

In addition, the cluster is in the process of strengthening a wider selection of common core competences and initiate joint development projects. There is a plan to establish an R&D unit in cooperation with leading research institute(s) in the near future.



Photo: Bjørn-Ove Holmberg