

Brought "Pecha Kucha" to Kongsberg



PHOTO: ELIN SVILÅAS

Earlier this fall, enthusiastic ambassadors of Kongsberg introduced the presentation format Pecha Kucha to employees in the Kongsberg industry. The format allows you to show 20 images, each for 20 seconds. "NCE SEs main task is to strengthen the shared industrial expertise of Kongsberg and to stimulate knowledge-sharing across companies. Pecha Kucha represents a new and different way to pass on and share knowledge," says Torkil Bjørnson. The event will be repeated at the end of November.

Master programme and research strengthened



PHOTO: ELIN SVILÅAS

The Norwegian Institute of Systems Engineering (NISE) is in the process of building up a team of academics as well as establishing alliances with leading R&D communities globally. The institute has already attracted and initiated co-operation with both national and international researchers. NISE has also developed new courses at Buskerud University College within Lean Product Development and Knowledge Management, and the Institute's Reference Group is currently working on establishing a master programme with subsea specialization that commences in the fall of 2014.

GLOBAL CENTRES OF EXPERTISE

Important for the Kongsberg industry

In its declaration the new government has stated that they will use industry clusters as drivers for innovation, and will invest in introducing a new global cluster level, Global Centres of Expertise. "The technology industry in Kongsberg is very pleased about this," say Torkil Bjørnson and Johnny Løcka in NCE Systems Engineering.



PHOTO: IRENE LISLIEN

Johnny Løcka, Executive Vice President, Corporate Functions in Kongsberg Gruppen (left) and Torkil Bjørnson, Managing Director of NCE Systems Engineering agree that a GCE status will mean a lot for the Kongsberg industry.

"Being part of a cluster enables collaboration, joint research and knowledge exchange with the best in the world. NCE Systems Engineering is therefore working purposefully towards Kongsberg attaining status as a global centre of expertise," say Bjørnson, Managing Director of NCE Systems Engineering (NCE SE), and Løcka, Executive Vice President, Corporate Functions in Kongsberg Gruppen and a board member of NCE SE.

Of major significance

Around 85 per cent of the turnover in the industry of Kongsberg takes place globally. "The global market is of greater significance for us than the Norwegian market. Through the NCE programme we have the opportunity to participate in joint development projects and we have built alliances with leading companies throughout the world, academia and research institutions. This creates new synergies that contribute to enhancing our competitiveness in the global

value chain. GCE status is very important for improving and further developing this cooperation," Løcka points out.

More innovation per krone

"GCE status will make the Kongsberg cluster more attractive for the global research institutions. If the Kongsberg industry is to improve its global competitiveness, we must ensure that our rate of innovation is higher than the rate of increase in costs," Bjørnson points out. The tool for achieving this is Systems Engineering – the common denominator for the technology companies in Kongsberg. "Systems Engineering is the best method for arriving at new and competitive solutions. The approach prepares the companies and R&D communities for utilising and combining existing and new knowledge, research and technology and applying them in new ways. It increases the pace of innovation and contributes to more innovation per krone," says Bjørnson.

THIS IS THE KBD PROJECT

- The research project Knowledge-based Development (KBD) was initiated by NCE Systems Engineering in 2011 and will last until the end of 2014.
- The project has a budget of NOK 30 million, of which the Research Council of Norway has contributed NOK 10.5 million through the programme User-driven Research-based Innovation ("Brukerstyrt Innovasjonsarena – BIA"). The companies themselves have invested NOK 19.5 million.
- The participants are FMC Technologies, Kongsberg Automotive, Kongsberg Gruppen, Kongsberg Devotek, The Norwegian University of Science and Technology (NTNU) and Buskerud University College.
- The companies in the KBD project have acquired broad insight into the various principles involved in Lean Product Development and Knowledge Management, which are at the cutting edge of research. They have considered which methods they can use jointly and which they can use to make their own workplaces more efficient.

"A key task for NCE Systems Engineering is to contribute to increasing the rate of innovation as well as increasing the efficiency of the companies' development tasks. The KBD project is making major contributions in this area and knowledge obtained in Kongsberg is now being exported globally," says Torkil Bjørnson, Managing Director of NCE Systems Engineering.

KNOWLEDGE-BASED DEVELOPMENT PRINCIPLES

Changes the mindset of employees the world over

Kongsberg Automotive's employees throughout the world now start all new projects using Knowledge-based Development (KBD) principles. The company has redefined its whole project management tool into what they describe as KBD-NPI (New Product Introduction). This is a big change and a lot of work lies behind it. The mindset of more than 10,000 employees in 12 countries is to be changed.

"The challenging part was finding out how implementation of KBD would go in the context of the cultural differences in some of the countries where we have factories. Countries where we have tested KBD include China, India, Canada, South America, the USA and Germany. We have received nothing but positive feedback," says Simen Skiaker, R&D Manager in the Driver Control

Systems Division of Kongsberg Automotive (KA). He is also the company's representative in the KBD project (see separate box).

KBD-NPI

The basis of KBD-NPI is that when KA starts a new project, they put a lot of resources into the starting phase. In this way any knowledge gaps that have to be filled are

PHOTO: KONGSBERG AUTOMOTIVE



Employees at the factory in Wuxi, China receives training in the product management tool KBD-NPI. The factory has made good progress with the implementation.

PHOTO: ELIN SVILAAS



Kåre Sande, VP Programs (left) and Simen Skiaker, R&D Manager in the Driver Control Systems Division are happy about how the method addresses and closes any knowledge gaps.

Students as bearers of change

Students taking a master's degree in Systems Engineering at Buskerud University College (HiBu) are learning how collaboration between academia and the industry gives the companies an advantage in the market place.

Based upon the research project Knowledge-based Development (KBD) the Norwegian Institute for Systems Engineering (NISE) gives a master's course in Lean Product Development (LPD). The students taking LPD as an optional subject learn about the companies' practical pilot projects. They also get to learn about the advantages that the close contact between research, industry and the university college give.

"The exciting thing about working with academia is that we broaden our knowledge

and receive new impulses that we can use to improve solutions within the company," says Dag Espen Tegdal.

Tegdal says that the master's degree students at HiBu are bearers of change for implementing the KBD philosophy and culture that the companies want to achieve. "The students have a cross-disciplinary background in KBD and Systems Engineering. It is this type of expertise we need and will invest in," he says.

Left to right: student Heidi Røseth Bakka, Torgeir Welo, NTNU, Dag Espen Tegdal, Kongsberg Defence Systems and student Henning Haugen.

"The collaboration challenges us and leads us to acquiring the latest knowledge"

Dag Espen Tegdal, Lean Manager in Kongsberg Defence Systems

addressed and closed. They start on a broad basis with many solutions and then gradually separate them out. The knowledge is systemised and they are able to gain from this while the project is under way. The risk of big surprises late in the process is significantly reduced. The knowledge that they develop is utilised in subsequent projects.

“There is also more focus on cross-disciplinary cooperation when we have more input at the start,” says Skiaker.

“The biggest challenge is to change the mindset to accept the use of many resources at the start (front loading),” says Kåre Sande, VP Programs in the Driver Control Systems Division, who also teaches the KBD mindset.

“There is more focus on cross-disciplinary cooperation with more input from the start”

Simen Skiaker, R&D Manager, Driver Control Systems Division

One of the important building blocks in KBD is Robust Learning. That means having a systematic approach to a problem and how to learn from the problem and make use of it, i.e. understanding what the problem is without jumping to a conclusion. “We find the root cause to the problem; there is no culture of hiding it,” says Sande. “Confront the brutal fact, as we say.”

Worldwide in 2014

KBD-NPI is already the official project management tool in KA’s Driver Control

PHOTO: KONGSBERG AUTOMOTIVE



Kongsberg Automotive employees from Scandinavia have taught the KBD principles to their colleagues in Wuxi, China. The goal is that all projects will be run using KBD-NPI at the end of 2014.

Systems Division. It is now being implemented in three other divisions – Interior, Driveline and Fluid Transfer. 53 projects of various sizes in the division are currently being run using KBD-NPI, and during 2014 it is anticipated that all projects will use the method.

One of the factories outside Scandinavia that has made the most progress with implementation, is in Wuxi, China. KA employees from Scandinavia have taught the KBD principles to their colleagues in Wuxi. “Asia is now ready to implement KBD! This was the message we received from the Wuxi team when they had completed the training,” says Skiaker.

NPI started as a research project in KA in 2007. The initiative for the project came from lower levels of the organisation. The changes rapidly took root with top management. “This has been an important success factor,” says Skiaker.

“We find the root cause to the problem; there is no culture of hiding it. Confront the brutal fact, as we say”

Kåre Sande, Vice President Programs, Driver Control Systems Division



Tom Ole Haukom of FMC Technologies receives an internal quality prize for the company’s pilot in the KBD project.

PHOTO: FMC TECHNOLOGIES

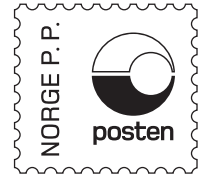
Quality prize for their pilot project

FMC Technologies has worked out a methodology for improving knowledge transfer between projects. A cross-disciplinary engineering team in the company won an internal quality prize for the pilot project.

The method enables FMC Technologies to meet different customer requirements based on standardised modules, whilst simultaneously effectively dealing with factors such as safety, quality, use of standard components, maintenance philosophy and the environment. There is a big potential for efficiency gains and the intention is to roll it out to 18,000 employees worldwide.

“We continue to tailor our solutions to different customer requirements, but we have now constructed what we call a

“safe source” and a drawer system for storing knowledge and solutions. The KBD project has made this possible, using methods in the areas of modularisation and product and system architecture. But it is the employees, with their open-mindedness and willingness to accept change and improvement, who have made implementation possible,” says Tom Ole Haukom, systems engineer in FMC Technologies and the company’s representative in the project group for the research project.



NCE Systems Engineering, Kongsberg
Postboks 1020
3601 Kongsberg

+47 920 37 160
post@nce-se.no
www.nce-se.no



SUPPLIER DEVELOPMENT

Significant results with coaching project

“Oswo is an established supplier to the offshore, maritime, defence and medical equipment market. The coaching project has given us better processes and methods for sales and market follow-up. We have also become more visible in the markets we supply and have also approached new markets,” says Managing Director of Oswo, Skjalg Mortvedt.



As part of NCE SEs supplier development project, Torfinn Kildal (left) has acted as coach for the mechanical and electronics company Oswo, here represented by managing director Skjalg Mortvedt.

The Horten-based mechanical and electronics company has participated in NCE Systems Engineering’s coaching programme, which is a part of the commitment to supplier development. NCE SE has a pool of coaches and the programme is also offered to other suppliers, which contribute to a strengthening of the value chain. Torfinn Kildal, former president of Kongsberg Maritime, has acted as coach.

Efficiency improvements

Oswo has seen significant results from the project, including an increase in turnover of around 25 per cent. The coaching project cannot take all the credit for this, but it is an indication that Oswo is on the right track. “We work more methodically and efficiently. Therefore the growth in turnover has been greater than the increase in the number of employees”, says Mortvedt.

“The internal improvements make us even better qualified in the various markets”

*Skjalg Mortvedt,
Managing Director, Oswo*

“A part of the challenge has been to clarify our core expertise and enter the customer’s value chain at an earlier stage. Oswo offers a total range of services from design, construction, sheet metal, welding, machining, surface treatment and electro-mechanical assembly. Our knowledge and experience in industrialization, production, quality and logistics are important competitive advantages. Through this process we have analysed different needs and made internal improvements that make us even better qualified in the various markets”, he says. Mortvedt adds that this is a continuous process and that

SUPPLIER DEVELOPMENT PROJECT

- Aims to develop small and medium-sized companies into attractive suppliers for the larger industrial locomotives.
- Offer support with new product development, expertise enhancement and other improvement measures.
- The coaching programme, where resourceful people with experience in the Kongsberg industry act as coaches, has been very successful. Innovation Norway is part sponsor of the programme.
- The Supplier Development Project collaborates with the Programme for Regional R&D and Innovation (VRI) Buskerud, The Kongsberg Region, Kongsberg Chamber of Commerce, Buskerud University College and Notodden Development Agency.

Oswo is investing long-term.

The company has consciously involved its employees in the process. A cross-disciplinary working group was established, working in accordance with a milestone plan. This has led to employee involvement and ownership of the processes, and has made it easier to implement the changes. “Torfinn Kildal has been an excellent coach and supporter to the process. His solid experience and expertise has inspired, motivated and not least challenged us to create an environment that focuses on continuous improvement, where the customer always comes first”, concludes Mortvedt.