



InnoCAPE

InnoCAPE case study visits Seinäjoki, Finland

17th-18th September 2019

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1. Introduction

Seinäjoki University of Applied Sciences (SeAMK) hosted InnoCAPE project meeting and arranged three study visits in Seinäjoki on 17th and 18th of September 2019.

2. Programme

The first visit was to Kyrö Distillery (RyeRye Oy) after the meeting to learn about their approach and learnings of digital marketing in regulated market, followed with tour of the facilities. The other two meetings were scheduled for the afternoon of the second day. Bus took us two Kauhava where we visited MSK Cabins who have a long record in use of digital tools to enhance production. After the presentation, we got a quick tour of the factory with schedule pressing on. A ride back to Seinäjoki and FinnPower presented how they are enabling IoT and driving digitalization of their customers onward with their products.

3. Participants

The participants of project meeting attended the study visits, with a local media present in Kauhava.

4. Conclusions

The participants were positively surprised how advanced methods and systems are used even “in the middle of nowhere” and got answer on the availability of work force in such locations and how to make positions in these conditions more lucrative.

5. Case study: Kyrö Distillery (RyeRye Oy)

5.1 The company

Kyrö Distillery was founded in 2012 and specializes in rye-based spirits. The distillery received its permit in 2014. Kyrö Distillery produces gin and whiskey out of whole-grain rye. In addition to rye, the gins contain twelve dry and four freshly distilled herbs.

The distillery is situated in an old dairy in Isokyrö in Ostrobothnia, Finland, “in the middle of nowhere”. The aim is still to become the world’s best-known rye distillery. The company has grown from three persons into 30 people in a few years.

The company was founded by Miika Lipiäinen, Mikko Koskinen, Kalle Valkonen, Miko Heinilä and Jouni Ritola.

5.2 Financial data

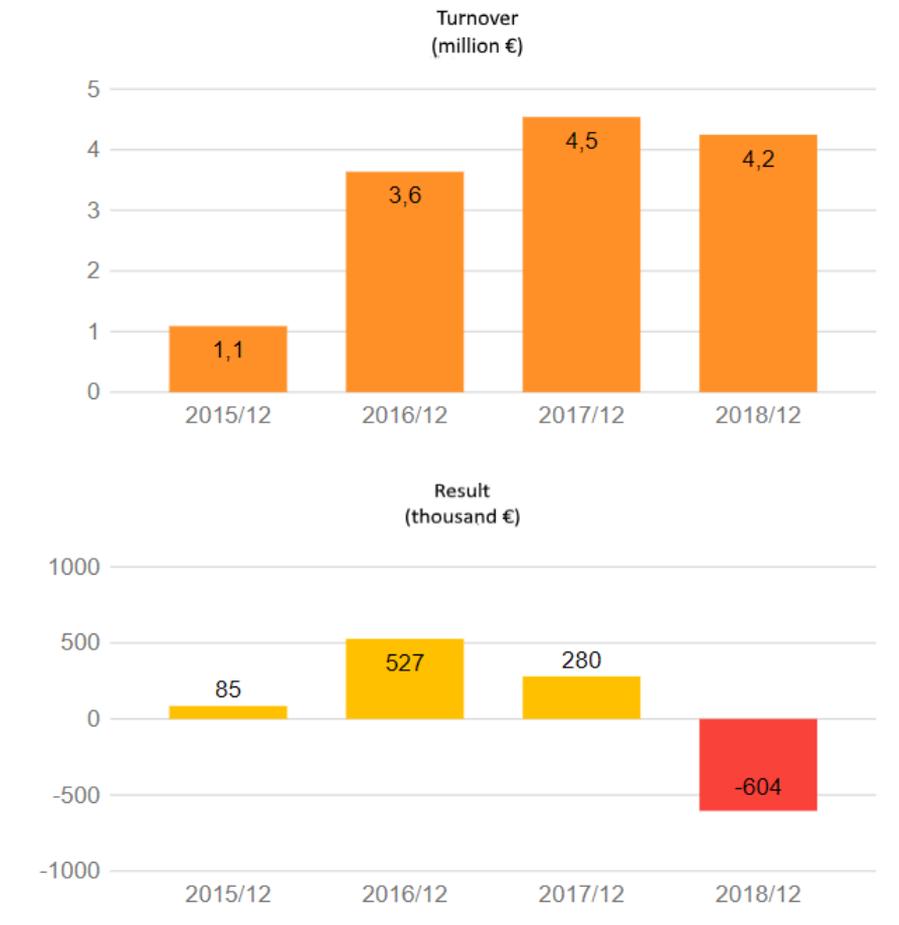


Image 1: Source: Fonecta Finder

5.3 Development of production

The first year 2014 sales were 5 000 bottles of gin and new make. Next year their Napue gin was selected as the best gin for gin and tonic at the International Wine and Sprit Competition. Of course, Kyrö launched a package with a bottle of Gin and a bottle of Tonic. Following the award, the production of Napue Gin increased from the planned 23 000 bottles to 100 000 bottles in 2015. Now production is over 600 000 bottles per year and it is exported to over 40 countries.

Since 2015, the company has received several awards on their products.

In 2017, the distillery separated its whisky and gin lines to allow for simultaneous production. The site also increased its bottling capacity, renovated its facilities and improved its logistics. The total production capacity quadrupled. A new bottling facility increased the bottling capacity from 1 700 to 4 500 bottles a day. A completely new whisky distillery was constructed at the same site in December 2019.

This site should expand Kyrö's annual distilling capacity from 85 000 litres of pure alcohol (LPA) to 350 000 n the first stage. It will have the ability to produce up to one million litres, including fermentation.

5.4 Marketing strategy

As the alcohol drinking habits of Finnish people are more on the beer-side, getting success with spirits is challenging. Brand Manager Mikko Koskinen knew this would need a strong enough brand to convince people to change their consumption habits.

The challenge for the company in the beginning was that marketing of alcohol in Finland is restricted. This means it had to be innovative when it comes to marketing: how to market a product that cannot be shown in the marketing? One of the first marketing photos was one of five men running naked through a rye field – not difficult to guess the amount of attention it got.

Kyrö has carefully chosen their partners to maintain the right brand image. The agency behind the marketing is Helsinki-based Werklig. It has overseen art direction, brand strategy, branding, digital packaging, publication, type design and visual identity.

The company wanted the brand and visual identity to reflect whisky culture but also the distillery's local roots and heritage. For this reason, all brand elements are filled with (hidden) stories.

For example, Kyrö's custom typeface "Napue Sans" was designed from old Battle of Napue (1714) memorial monument engravings (located right next to the distillery building), giving a true historical and local flair for the identity. Kyrö "Seal of Approval" is based on Isokyrö town coat of arms that has a bear in it, hugging a tree. In Kyrö's version bear is replaced with a seal hugging a bottle.

5.5 Digital marketing

Kyrö Distillery is quite strong at digital marketing. E.g. on Facebook, Kyrö Distillery's marketing show more engagement than Jack Daniels.

The marketing is based on stories and is thought very thoroughly. Everything starts from its founding story: five guys drinking rye whisky in the sauna, coming up with the idea to produce Finnish rye whisky. Even the company's official name RyeRye Oy, comes from the main ingredient.

Stories sell online and are easy to back up with visual elements. The good branding and strategy is of course a good base also for the digital marketing, but you still have to be active and innovative to succeed. There are targets, they are measured and followed. If they are not met, the company analyses why not.

Here are some of the solutions Kyrö uses in their digital marketing:

- Kyrö has a Slack¹ - channel for the personnel where everybody can share social media content related to the company. This makes the marketing more human, authentic and closer to the audience.
- Meltwater² is used for tracking traffic on home page.
- SEO (search engine optimization) is used a lot, as half of the home page traffic is generated by search engines.
- Pictures with Kyrö products are in color, but all other marketing pictures and videos are black and white.
- Facebook³, Instagram⁴ and LinkedIn⁵ as social media channels.

The company has cleverly used different situations, even difficult ones, for marketing. The company's flagship product has been the Napue Gin, named after the Battle of Napue. However, many the English-speaking customers often got a napkin at the bar, when asking for a Napue. Thus Kyrö decided to change the name of their drink Napue, but they also introduced a new product to their webshop: the Kyrö Napkin, limited edition.

They announced this change of brand name at the same time as the company won the price as Brand Creator of the Year by Marketing Finland. Brand manager Mikko Koskinen admits that was planned to get maximum attention in media. The reason for the change of name was not solely (if at all) the napkin-story, but a step

¹ <https://slack.com/>

² <https://www.meltwater.com/>

³ <https://www.facebook.com/kyrodistillery/>

⁴ <https://www.instagram.com/kyrodistillery/>

⁵ <https://www.linkedin.com/company/kyr%C3%B6-distillery-company/>

towards a unified brand image for export markets. Also, as the alcohol marketing legislation in Finland changed, it was possible to add the company name Kyrö to the product.

During summer festivals 2019 hired professional queues. According to many, the most annoying thing at big events is queuing. These hired people queued for the festival guests. This was of course also an effective way of getting publicity both in media and on social media.

Holistic in brand and marketing, a whole company effort, it's in our DNA, everybody tells the same story. Encourage people to come together, dream big and dare to follow those dreams

5.6 Further Improvements

One of the biggest opportunities Koskinen sees, is that the competitors don't understand their customers. Kyrö wants to develop target marketing. The aim is to track bottles to the final customers. When knowing where in Germany and Berlin e.g. the products are popular, one could use more targeted social media marketing around the bars in question.

Kyrö wants to understand the customer in the key area better and the tracking would help that. Therefore a CRM-system is also being developed, so that the sales calls can be made to where there seems to be demand.

The barrel system will be put into a data system when possible, in order to track the whisky production process.

5.7 DIH activities

Kyrö Distillery is participating in a project with SeAMK within the frame of data and digitalization.

6. Case study: MSK Cabins

6.1 The company

MSK is the leading European manufacturer of smartest cabins offering selected customers full service; including design, prototyping as well as low, mid and high volume cabin production supported by plastic parts.

MSK Group has four solutions divisions (MSK Plast, MSK Cabins, MSK Matec Germany and MSK Matec Slovakia) and two brands divisions (Junkkari and Juncar). The 100 % family owned company was established in 1950 under the name Maaseudun Kone Oy. It has a factory floor of 60 000 m² and employees 800 experts. Turnover is around 175 M€. Contract manufacturing represents 90 % of the production, 10 % is own products. MSK delivers 10 million parts annually. The biggest customers are Valtra, Rocla, Sandvik and Sampo Rosenlew.

MSK Cabins has 200+ employees. The main factory and office are in Kauhava, Finland.

6.2 The services

- MSK Cabins offers a fully automatized cabin **tube bending process**.⁶ The bending unit produces components fast, accurately and cost-effectively. The unique freeform bending machine enables tubes and profiles of varying radius to be bent to 3D forms without tool changes. The robot cell minimizes variations in quality and size and bends, cuts, measures, mills and loads the parts.

⁶ <https://mskgroup.fi/operator-cabin-manufacturer/tube-bending/>

- Each component is a unique part of the cabin and the manufacturing utilizes both **modern robot production** and **professional hand work in welding**.⁷ Robotized welding and state-of-the-art tooling minimizes quality variation and enables a steady, predictable process and constant high productivity.
- **Cost efficiently** and **precisely produced customized components** are assembled at the long assembly line supported by subassembly and material supermarket. MSK Group's cabin manufacturing utilizes sophisticated **Methods Time Measurement techniques** to assure optimal line balancing, resource allocation, quality and productivity. Constant development and efficient internal and external logistics make the assembly stage of MSK cabin manufacturing extremely effective.⁸

Automation and know-how assure **consistent quality**. Quality control utilizes modern measuring and 3D modelling. An educated and motivated personnel and PPAP, APQP, SPC and 8D reporting helps to maintain the quality.

A close **customer relationship** and **continuous development** are the corner stones of reliable deliveries and ensuring the quality of the end product. MSK Group's cabin manufacturing is also using the certified ISO 9001:2015 and ISO 14001:2015 environmental quality systems.

MSK Cabins has 230 suppliers, 5500 different items, 50000 order lines and 60 M€ purchases annually. The purchases consist of electricity 42 %, metals 25 %, plastics 27 % and other 6 %. 45 % of the purchases are for Finland, 39 % from the EU-area, 13 % from low-cost countries in Asia and 2 % others (America).

6.3 Financial data

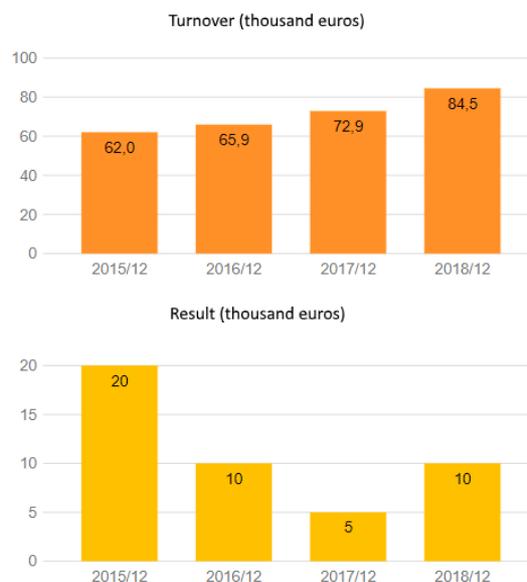


Image 2: Source: Fonecta Finder

6.4 Reasons for digitalization

The managing director of MSK Cabins Taneli Mäkelä said that when he came in house a couple of years ago, digitalization was already a normal thing in the company. So a digital mindset has been present in the house for a long time.

⁷ <https://mskgroup.fi/operator-cabin-manufacturer/welding/>

⁸ <https://mskgroup.fi/operator-cabin-manufacturer/assembly/>

The first welding robot was used already in the beginning of the 1980s. Nowadays it is difficult to find any function where digitalization is not used, be it design, production, financial management, reporting, marketing or remote work.

6.5 Digitalisation solutions at MSK Cabins

MSK Cabins uses many different solutions for its digitalisation. The core is Microsoft with Office 365, Dynamics and Power BI.

- The company has a lot of different solutions for its digitalisation:
- Scenario simulation MES with Delphi
- Machine track with Arrow
- CRM with Salesforce
- Marketing automation with Salesforce Pardot
- Digital marketing campaigns with Google AdWords
- ERP with Microsoft Dynamics
- Reporting with Microsoft Power BI
- EDI integration SAP => AX with Liasion
- Remote work and teams with Office 365
- VR robot programming with ABB Robot Studio

6.6 Some examples of digitalization projects and thinking

6.6.1 LEAN

MSK's business and activities are based on LEAN. MSK's directions for creating streamlining efficiency

- Create a flow so that problems can occur
- Equalize workload
- Let the demand steer to avoid overproduction
- If necessary, pause the process for problem solving, so that the quality is right from the start
- Standardize work. Continuously improve with your entire staff.
- Use visual control to prevent problems from being hidden.
- Only use reliable technology.

6.6.2 Production control

The cabs are manufactured in a queue-controlled manner based on EDI-messages including production line and product specification from the customer.

- 12 months forecast and a fixed period of about 2 weeks
- Machine areas, cells and workstations are loaded
- Adjusting resources according to the productivity target

= PUSH CONTROL

However, there are many different types of control within the production, which are also adjusted according to the production situation.

6.6.3 Control system

The cycle line for mass customized products operates with push control

- Mass customization is accomplished by assembling the cab and station-by-line variants
- Control of subassemblies under normal circumstances is conwip (Constant Work in Progress)
 - The subassembly team produces queue-controlled free jobs against maximum buffer

- Non-queue-controlled items are controlled by system minima and maxima, but practically as pull control with visual kanban
- Roofs are assembled inside the subassembly in line assembly = push control
- In times of resource scarcity, the team prioritizes open work on criticality and short-term need bases and switch to conwip => pull control
- In robot welding, queue-controlled production is carried out between stages against the maximum buffer
 - Both pull and push features
- In the pipe bending area, production is warehouse-driven batch production against maximum stock levels
- Fasteners are controlled by the two-bin system = visual kanban

MSK is using DFMA (Design for Manufacturability and Assembly):

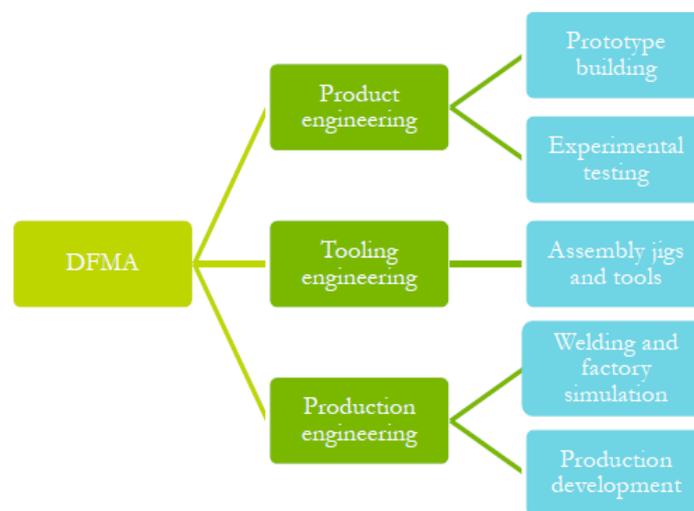


Image 3: Source: MSK / Mäkelä

Designing software used are Creo, Catia V and Solidworks. Simulation softwares are DelfoiARC and Quest Express.

6.6.4 Work-study

MSK uses MAXI MOST –work-study. Maynard operation sequence technique (MOST) is a predetermined motion time system that is used primarily in industrial settings to set the standard time in which a worker should perform a task.

Active lines to analyze are about 70 000.

6.7 Challenges and funding

Because of the size of the company, MSK nowadays rarely get access to EU-financed projects, but indirectly through suppliers, this is possible. Now suppliers of MSK are participating in two SeAMK-projects concerning the efficiency and monitoring of production.

6.8 Daily management

The production teams include safety, purchase, development, quality, production and maintenance. MSK has also invested in digital solutions concerning health and ergonomics. Examples of changes:

- Hand operated trolleys were replaced by automatic AGVs
- Manufacture of frames the customer's subscription order

- Set trolleys between robotic welding stages disabled
- Module assembly with a lighter directly into the welding jig

6.9 Impacts / benefits

Results and benefits of improvements includes less load on shoulders, knees and back. Error free installations rose from 47,1 % (2015) to 79,5 % (4/2017). Sick leaves decreased from 1,55 %(2015) to 0,84 % (1-4/2017). Load measurement is now one of the company’s KPI:s.

6.10 Further Improvements

Development goes on. sought a solution to measure factory-level total productivity as flow efficiency improved, the MD is now searching for a solution to measure factory-level total productivity.

7. Case study: FinnPower

7.1 The company

In 1969 Jorma Lillbacka established a company In Alahärmä under the name of Lillbackan Konepaja and started to produce grimping machines under the trademark Finn-Power. In 1994 the company was divided in two companies: Lillbacka Powerco Oy for the grimping machines and Lillbacka Oy for the sheet metal technology.

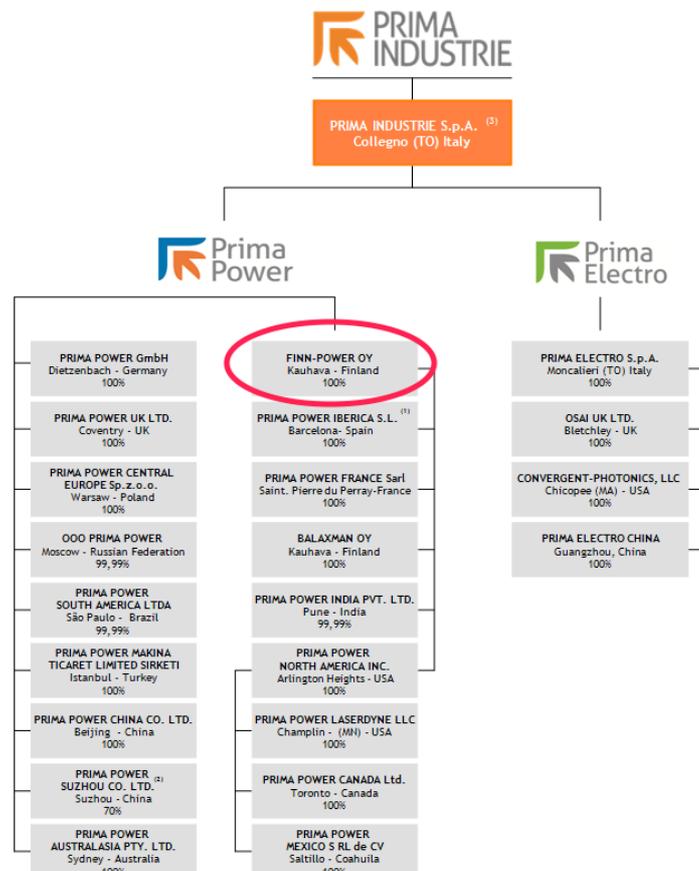


Image 4: Source: PrimaPower

In 2002 Lillbacka Oy was sold to an investment company and at that time the name changed to Finn-Power Oy. Six years later the investment company sold it to Prima Industrie Group.

Under Prima Power brand, Finn-Power is producing turret punch presses, bending machines and other sheet metal manufacturing products. As the Machinery Division of Prima Industries, it is also offering service and maintenance for the products.

7.2 Financial data

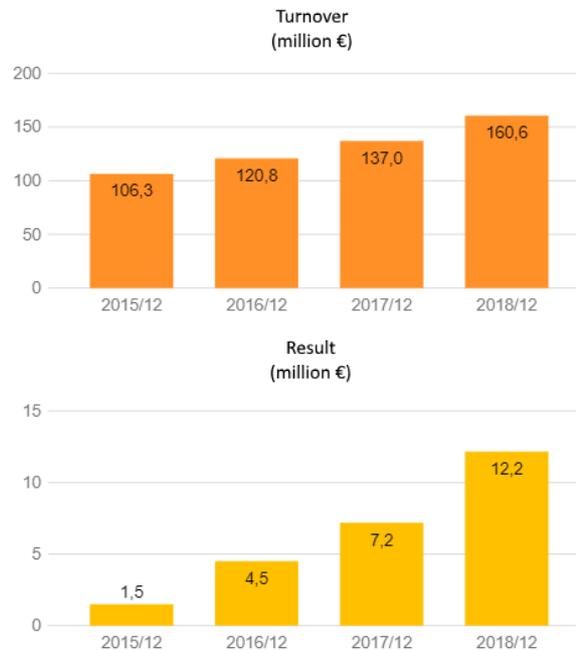


Image 5: Source: finder.fi

The factory from Kauhava was relocated to Seinäjoki in August 2018. In practice, a completely new factory was built according to the needs of Finn-Power. The price for a new factory was less than it would have been to renovate the old one. Now the factory in Seinäjoki employs 380 persons. The new factory also consumes 30 percent less heating than the old one. It also has a better productivity than the old one.

7.3 Factory2Fit –project⁹

Finn-Power (Prima Power) is one of the three industrial partners in the Horizon 2020 Factory2Fit EU-project, which provides examples of the way the companies can develop digitalization. The coordinator is VTT from Finland. The other partners were Amorph Systems GmbH (Germany), Carr Communications (Ireland), Information Technoloiges Institute, Centre for Research and Technology Hellas (Greece), Continental Automotive GmbH (Germany), Technische Universitaet Chemnitz (Germany), United Technologies Research Centre Ireland Ltd (Ireland) and Visual Components Oy (Finland).

The total cost of the project was approximately 4,3 million euros. The EU-contribution for Finn-Power Oy was approximately 500 000 euros.

Within the project, four different pilots were realized. As Industry 4.0 is changing workplaces and the ways of working, one study explores new ways for people and machines to work together. The project started from the idea that one best knowing the job is the person doing it. This was the bases for trying to find new ideas to make factory worker's life easier and better.

⁹<https://factory2fit.eu/wp-content/uploads/2019/11/ACE-Factories-White-Paper.pdf>
<https://factory2fit.eu/solutions/>
<https://www.euronews.com/2019/12/09/how-industry-4-0-is-changing-relationship-between-man-and-machine>

Esko Petäjä, R&D Manager at Prima Power, says this project is unique in its combination of technology and engineering, focusing on human factors. Earlier projects he has been involved in have focused on technical and visual aspects. He comments on the project as follows: “Prima Power places issues related to usability and adaptability of large machinery, training solutions and human aspects at the heart of all processes, which lie at the core of the priorities of Factory2Fit as well. Prima Power’s business interests, development needs and client preferences are also compatible with the project’s objectives.”¹⁰

7.3.1 Social Media Platform - engaging worker participation and knowledge sharing

Challenge: Unexpected failures can be hard to solve, as manuals do not include everything. In these cases, it is crucial to get experienced workers to share their silent knowledge.

Solution: Web-based application aiming to increase knowledge sharing among technicians. The platform integrates discussions to the manufacturing environment and real-time alarms, giving easy access to situationally relevant knowledge. The application aims to increase knowledge sharing and co-learning between experienced and new workers through various social media technologies, such as forums, instant messaging, news feeds, and gamification. The platform allows for sharing of multimedia content, reaching out to service representatives and providing solutions to common problems.

Impact: The platform can serve as a communication channel, an information exchange hub and a valuable knowledge repository as well as an educational system. Integration of production information and messaging is valuable and timesaving in getting guidance. Gamification might motivate workers to share knowledge.

Lessons learned: The piloting took the form of expert evaluation and testing with Prima Power trainers in winter 2019. The users accepted the system interface, and the knowledge sharing aspect was considered applicable as it allows instant contact with multiple people. The design features of the application revealed some restrictions in usability.

The developed tool could be extended to become a part of a bigger communication platform, between the equipment provider and their customers, aiming at strengthening their relationship.

7.3.2 Hands-on pre-training in a virtual environment

Challenge: In highly automated metal processing lines, intense customer training is needed. On-site training is not sufficiently efficient. Therefore a virtual training solution is needed.

Solution: The online training solution allows training in a realistic factory environment well before the actual machinery has been implemented at the customer site. It utilizes 3D-models, videos and textual guidance to enable training technicians in realistic working scenarios. Each training task is followed by questions or learning exercises (quiz) for highlighting the most important matters of the topic. This pre-training platform was piloted in spring 2019.

Impact: With the proposed solution, online training can be scheduled optimally which shortens training time. The training supports understanding and dealing with exceptional situations, e.g. disturbances in production. Expected impacts include Increased productivity and job satisfaction, a lower threshold to start using a manufacturing line independently.

Lessons learned: The proposed solution has been piloted in a use case from PRIMA Power, which produces CNC press break machines. The validation of the solution reflected the increased awareness of the workers, their acceptability as well as a significant decrease in task completion time and errors during operation.

The overall responses were positive. Presentation of the learning content (3D models, videos, animations, text, quizzes) were considered appropriate. The usability and user experience can be developed further.

¹⁰ <https://www.seamk.fi/automaatiotekniikan-opiskelijat-luovat-finn-powerille-manuaaleja-3d-koulutusymparistoon/>
<https://www.seamk.fi/hyvinvointia-ja-tuottavuutta-teollisuuteen-factory2fit-hanke-huipentui-tapaamiseen-prima-powerilla/>

7.3.3. Worker feedback Dashboard - empowering feedback on work well-being and achievements

Challenge: In the increasingly digitalized working environments, it is more and more difficult to see the achievements and results of one's work. Easily. Positive feedback on work is however important for motivation.

Solution: A web-based solution is for providing data-driven, personal feedback to factory operators. The solution focuses on creating awareness, tracking daily accomplishments, demonstrate progress and development of work, generating feedback based on automatically collected data, e.g. an activity wristband etc.

Impact: The solution aims at raising spirits at work, by helping employees recognize their strengths as well as their development needs. In the long term, the application can assist employees to develop their working habits.

Lessons learned: Worker Feedback Dashboard was piloted in three factories (Prima Power's customers Stera Oy, Elekmerk Oy and PRP Oy) in spring 2018 and spring 2019. For user acceptance, it has been crucial that the workers participated in planning how to use the solution, and what kind of work practices were related to its use. The pilot evaluation results indicate that there are potential lead users for the Worker Feedback Dashboard. Introducing the solution would facilitate showing the impacts and could then encourage those who may be more doubtful to join. The evaluation results were very positive. The workers found the user experience and usability good. They were mainly interested in data related to sleep, heart rate and number of steps.

7.3.4 Decision Support System

The final pilot consisted of an expert evaluation of the Task Distribution Engine (TDE) from the Decision Support System (assigning tasks, responding to events and real-time occurrences on the shop floor, making any necessary adaptations to the work schedules). The feedback on the user experience was neutral, a more thorough assessment will be made later.

More information about the results and the project can be found in dedicated project website¹¹ and in the insert made by Euronews.¹²

7.4 DIH-collaboration

Finn-Power actively collaborates with Seinäjoki University of Applied Sciences, its DIH and students. In the Factory2Fit-project a group of 23 students developed a 3D-learning environment (regarding the use and safety of the sheet metal workstations). The concept has been further developed by students as a part of Global Master School arranged at SeAMK with key partners from Aschaffenburg in Germany and Missouri, St Louis in USA.ⁱ

Also a Moodle¹³ course has been designed by SeAMK-students (a video in Finnish has also been produced¹⁴).

8. Communication of case studies

The MSK visit was reported in local newspaper article.¹⁵ An article on all visits¹⁶ has been published on SeAMK's InnoCAPE project page.

¹¹ https://factory2fit.eu/deliverables_and_downloads/

¹² <https://www.euronews.com/2019/12/09/how-industry-4-0-is-changing-relationship-between-man-and-machine>

¹³ <https://moodle.org/>

¹⁴ https://www.youtube.com/watch?v=3gcfpAfL_JQ

¹⁵ https://www.kauhava.fi/uutishuone/uutiset/uutisarkisto/innocape-vieraat_kavivat_katsomassa_miten_digitalisaatio_nakyy_lakeuksilla.14169.news

¹⁶ <https://www.seamk.fi/yrityksille/teki-projektit/innocape/seinajoki-study-visit/>