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Educational workshop of the future

21.11.2013

Anssi Suhonen

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”shift happens 2013”

Presentation contents

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Present state of the Technology industries in Finland

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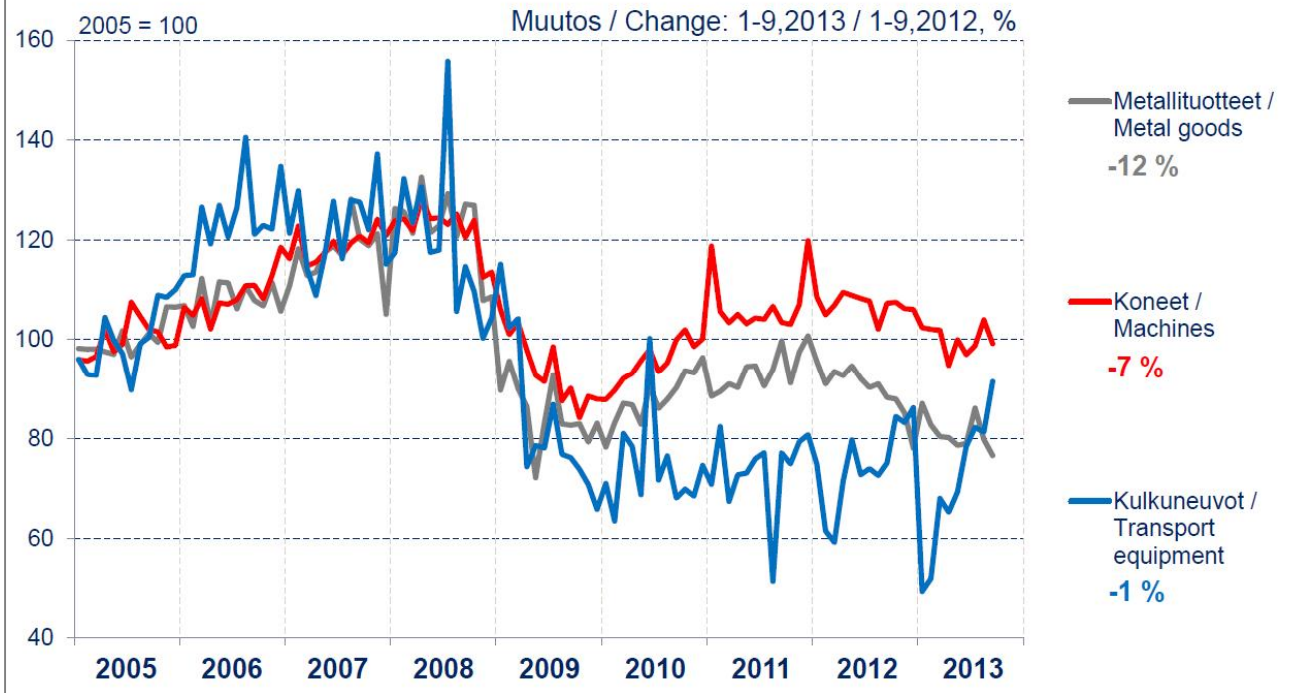
Otsikoita syksy 2013

Kone- ja metallituoteteollisuuden tuotannon määrä

Production Volume of the Mechanical Engineering



Kausipuhdistettu volyymi-indeksi. Osuudet liikevaihdosta 2012: koneet 59 %, metallituotteet 29 %, kulkuneuvot 12 % / Seasonally adjusted volume index. Shares of turnover 2012: machinery 59 %, metal goods 29 %, transport equipment 12 %.

Teknologia teollisuus

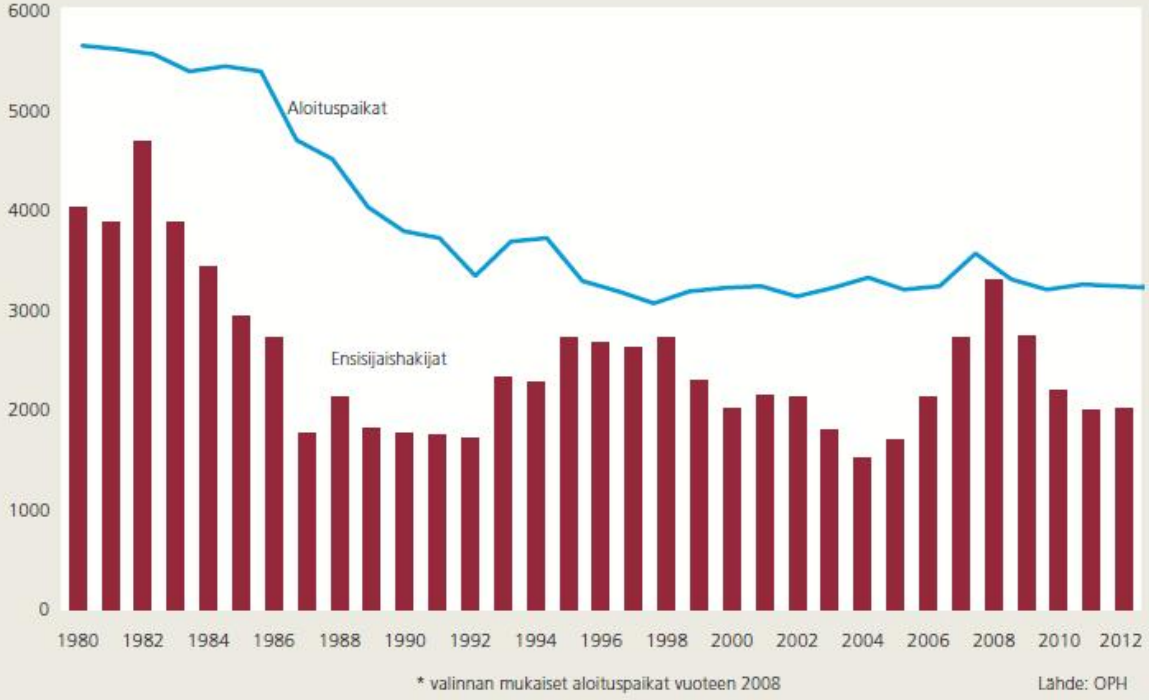
Viimeisin havainto / Last observation 9/2013.
Lähde / Source: Tilastokeskus / Statistics Finland R:\tuotanto\jptu01cf.pptx 8.11.2013/pr

- **Talvivaara pysäyttää kaivoksen ja aloittaa yt-neuvottelut**, T&T, Tuula Laatikainen, 15.11.2013
- **Synkkä syksy takana - varsinkin tällä toimialalla**, T&T, Esko Rantanen, 11.11.2013
- **98-vuotiasta Lokomon valimoa uhkaa lakkautus,** T&T, Harri Repo, 25.10.2013
- **Jopa 220 uhkaa saada potkut Suomessa - Kenkä heiluu Valmetilla,** T&T, Marko Laitala, 21.10.2013, 12:45
- **Teknisen kaupan myynti laskee edelleen,** T&T, Kari Peltonen, 21.10.2013
- **Suomen vienti sai jääkylmää kyytiä loppukesällä: -11%,** T&T, Ulkomaankauppa, 8.10.2013

Attraction of mech. engineering

Nuorten koulutusvalinnat: suurin haaste kone- ja metallialan ammatillisessa koulutuksessa

Kone- ja metallialan toisen asteen ensisijaishakijat ja aloituspaikat* vuosina 1980–2012 (Peruskoulupohjaiset linjat)



Metallialan koulutus ei vedä – Etujärjestöt ennakoivat työvoimapulaa

Teknologiateollisuus on laskenut, että työvoimapula toteutuu, vaikka kaikki metallialan opiskelun aloittaneet valmistuisivat ja työllistyisivät alalle. Viimeaikojen irtisanomisuutisten lisäksi alaa rasittaa likaisen työn maine.,
Lähde: Yle Uutiset, Talous, 3.10.2013

Profile and possibilities of mechanical engineering industry at Northern Savo

- Finland's and Northern Savo's strengths are **strong global companies** and their **networks**.
- Part of the strengths are highly **specialized products.**
- The most important ones are **energy sector products, forestry, mining** and **building infrastructure machines**. Also **boat** manufacturing is considered an important business at Kuopio region.
- With these products, the county's companies have bravely penetrated their selves into the **export markets** and they have been able to create **global** or at least local **sales and service networks**.

- On the other hand, the weakness is the **low number** of strong global companies.
- Possible threat is that **production will move away** from Northern Savo and Finland. This should not be accepted!

- Specializing in **specific functions** within different countries and areas should be seen as an opportunity.
- Developing **technology, production efficiency and automation** which makes local manufacturing possible.

  For example in Upper Savo area, forestry machines can be produced 100% competitively by developing the products and their production.
- All of the production processes shouldn't be outsourced.

Competitiveness

- According to ETLA mass production in technology industries is lost, but **specialized** and **customer driven** industry isn't.
- Industry will merge into **services**, **80%** of service exports are coming from technology industry.
- Strategic R&D will stay in Finland
- It's not worthwhile to sell machines without profit in order to sell services.
- Profitable manufacturing is still important.

- Why have the companies in Northern Savo that have "swam upstream" succeeded? How can we support these and other such companies?
  - The recession showed which companies are competitive. The development of subcontractors must be ensured.
- Miksi vastavirtaan kulkijat ovat Pohjois-Savossa onnistuneet – Miten niitä ja muita vastaavia yrityksiä voidaan tukea?
  - Lama osoitti, ketkä ovat kilpailukykyisiä. Alihankkijoiden kehittäminen on pyrittävä turvaamaan

Globalization

- Globalization will increase industry's **growth possibilities.**
- The main question is that, will the clusters be replaced by function and sector specific specialization.
- According to ETLA value– / supply chains will be broken down into pieces globally. Most **value creating functions will be in the front end of the production chain, where innovation activities take place.**
- **Added value in mass production is quite low** and it doesn't turn in enough to cover the wages of developed countries.

• China will grow into it's own market.

- Germany will not produce new products in China, because the **risk of copying is too high**. This should also be understood in Finland as well.
- Production in China isn't necessarily cost-effective in demanding products, product copying is successful, but efficient production process isn't yet.
- Specializations in non-road mobile machinery **niche-product** production can thrive in Finland, the products must be variable.
- **Germany is an important partner**, since many of the components are purchased from Germany.
- China and other Asian countries must be taken into account because of the importance of the market. In particular, the **environmental business** and **cleantech** are growing areas.

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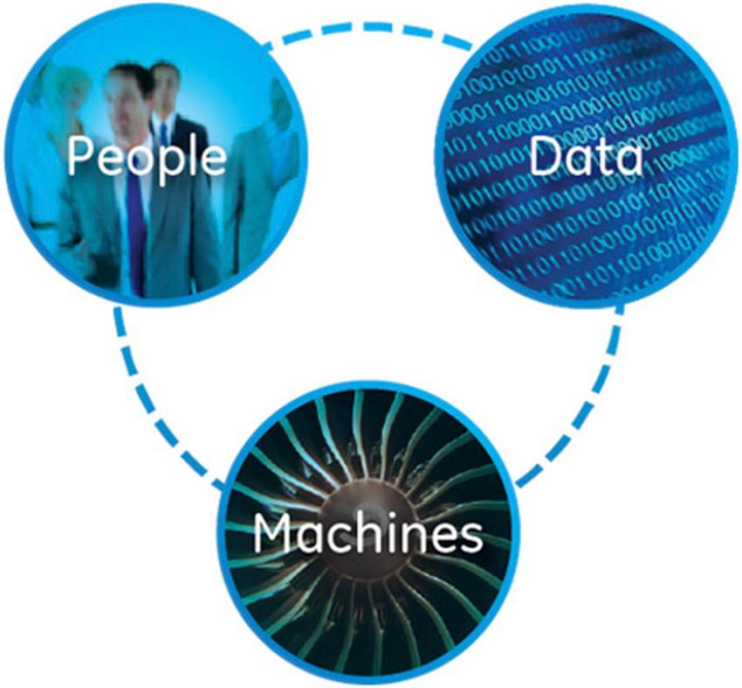
Factors affecting competitiveness

Factors affecting competitiveness

- Quality, delivery reliability, price, reputation
- Innovations -> new technology
- Intelligent products, communication between machine and the operator, smart production cells, service business, customer and product information and lifecycle costs are all factors of competitiveness.
- To increase production efficiency it’s wise to use and develop different production control systems (PDM, ERP)
- Process development is also crucial
- Never forget to develop manufacturability and reduction of production cost throughout the whole supply chain
- The common competitiveness of the OEM and the subcontractors is the main target. There’s still a lot of development to be done in this field.



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New Educational workshop

NEWS (New Educational workshop) Mission, Vision, Values

Mission

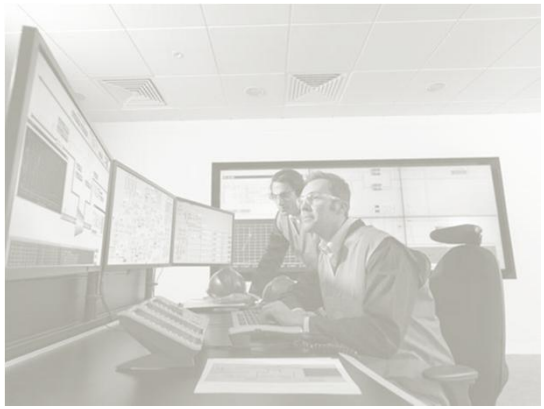
Ensuring the liveliness and competitiveness of Northern Savo's (Eastern Finland's) industry.

Vision

NEWS's objective is to be a well known partner in educating "new minds" for the Finnish industry. NEWS is also a respected partner in product and production development for the whole industry.

Values

Openness, fairness, sustainable growth, passion for excellence and succeeding together



NEWS, mission statement

"NEWS's main objective will be to **ensure the competitiveness of Northern Savo's machine and metal industry**. It's function is also to provide the machine building customer the **best know-how and new innovations to mechanical engineering sector**. NEWS is known for **high-quality services and education** for the Finnish and European machine industry and universities"

- **Key market** – machine manufacturers, mechanical engineering sector including schools and universities

- **Contribution** – latest know-how and new innovations to the field of machine designing and building

- **Distinction** – the best expertise of mechanical engineering and manufacturing found in the area of Eastern Finland

NEWS, vision

NEWS is the main ”window” to Northern Savo’s machine building.

NEWS’s Vision is to create a **multidisciplinary workshop environment** that nurtures **creativity and new innovations** to Eastern Finland’s machine builders. It’s main objective will be to ensure that machine building stays in Eastern Finland and NEWS will help the **companies grow and stay competitive**. It’s also a new approach to second degree and university education, where a distinctive feature is close **collaboration with industrial companies and educational institutions**.



NEWS economics

The Business Model Canvas

Designed for:

Designed by:

On:

Iteration:

Key Partners

Who are our Key Partners?
Who are our key suppliers?
Which Key Resources are we acquiring from partners?
Which Key Activities do partners perform?

MOTIVATIONS FOR PARTNERSHIPS:
Optimization and economy
Reduction of risk and uncertainty
Acquisition of particular resources and activities

Key Activities

What Key Activities do our Value Propositions require?
Our Distribution Channels?
Customer Relationships?
Revenue streams?

CATEGORIES
Production
Problem Solving
Platform/Network

Key Resources

What Key Resources do our Value Propositions require?
Our Distribution Channels? Customer Relationships?
Revenue Streams?

TYPES OF RESOURCES
Physical
Intellectual (brand patents, copyrights, data)
Human
Financial

Value Propositions

What value do we deliver to the customer?
Which one of our customer's problems are we helping to solve?
What bundles of products and services are we offering to each Customer Segment?
Which customer needs are we satisfying?

CHARACTERISTICS
Newness
Performance
Customization
"Getting the Job Done"
Design
Brand/Status
Price
Cost Reduction
Risk Reduction
Accessibility
Convenience/Usability

Customer Relationships

What type of relationship does each of our Customer Segments expect us to establish and maintain with them?
Which ones have we established?
How are they integrated with the rest of our business model?
How costly are they?

EXAMPLES
Personal assistance
Dedicated Personal Assistance
Self-Service
Automated Services
Communities
Co-creation

Channels

Through which Channels do our Customer Segments want to be reached?
How are we reaching them now?
How are our Channels integrated?
Which ones work best?
Which ones are most cost-efficient?
How are we integrating them with customer routines?

CHANNEL PHASES
1. *Awareness*
   How do we raise awareness about our company's products and services?
2. *Evaluation*
   How do we help customers evaluate our organization's Value Proposition?
3. *Purchase*
   How do we allow customers to purchase specific products and services?
4. *Delivery*
   How do we deliver a Value Proposition to customers?
5. *After sales*
   How do we provide post-purchase customer support?

Customer Segments

For whom are we creating value?
Who are our most important customers?

Mass Market
Niche Market
Segmented
Diversified
Multi-sided Platform

Cost Structure

What are the most important costs inherent in our business model?
Which Key Resources are most expensive?
Which Key Activities are most expensive?

IS YOUR BUSINESS MORE:
Cost Driven (leanest cost structure, low price value proposition, maximum automation, extensive outsourcing)
Value Driven (focused on value creation, premium value proposition)

SAMPLE CHARACTERISTICS:
Fixed Costs (salaries, rents, utilities)
Variable costs
Economies of scale
Economies of scope

Revenue Streams

For what value are our customers really willing to pay?
For what do they currently pay?
How are they currently paying?
How would they prefer to pay?
How much does each Revenue Stream contribute to overall revenues?

TYPES
Asset sale
Usage fee
Subscription Fees
Lending/Renting/Leasing
Licensing
Brokerage fees
Advertising

FIXED PRICING
List Price
Product feature dependent
Customer segment dependent
Volume dependent

DYNAMIC PRICING
Negotiation (bargaining)
Yield Management
Real-time-Market

www.businessmodelgeneration.com

NEWS

Collaboration/ Key Partners

Funding

EU, Tekes, ELY, PS-liitto, Companies

Partners

- Cities of Kuopio, Varkaus, Iisalmi
- Regional Development organizations (Ylä-Savon kehitys, Navitas Works)
- Universities (UEF, LUT, TUT, Aalto)
- International partners
- Networks (Cluster of Intelligent Machines, It's OWL)

Key recourses

Key players (roles)

- University of Applied Sciences
  - Students, Teachers, RDI-personnel
- Vocational colleges
  - Students (basic students, adult students), Teachers
- Companies
  - Employees, Management, Owners

RULES OF THE GAME !

For whom we are creating value?

- Companies and their customers
- Rural areas of Eastern Finland
- Second degree education
- University education

Facilities

Present locations:

- Toivala, Opistotie, Presindentinkatu, Kylmämäki, Hydroline, J-Metallikaluste

Future scenarios:

- All operations under "one roof"?
- Locations distributed in different companies?
- Locations within campuses?
- Or all of the abowe?

Image: Modern + cosy

Requirements:

- Space for theoretical studies
- Space for practical work at the machines
- Space for "real life" production
- Space for innovation activities (prototyping)

NEWS

NEWS technology

- Digital machine building
  - 3D-CAD, PDM, ERP, FEA, CAD/CAM, Simulation
- Basic manufacturing technology and machines
  - Sheet metal machines, welding, machining, surface finishing, …
- Robotics, FMS
- Latest technology
  - 3D-printing, nanocoatings, digital hydraulics, robotics, etc..

NEWS skills (competences)

Practical and Theoretical skills in:

- Innovation methods
- Product development
- Production development
- Service business
- Manufacturing skills
- Material sciences
- CAD/CAM, ERP, PDM, 3D-CAD, FEA, FMS

Operational model

- Curriculum?
- Thesis works, project works, practical training
- Prototypes
- Lean production practices
- Synchronizing teaching and R&D activities
- Business incubator for new start-ups

NEWS internationalization

- Collaboration projects with int. Partners
- Teacher and student exchanges
- Taking part in international exhibitions (Hannover messe, Essen messe…)
- Joining international competence networks.

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Educational workshop's SWOT

Vahvuudet

- Konkreettinen yhteistyö Savonian, SAKKYn ja yritysten kanssa
- Aito kone- ja metallialan kehitysympäristö (monipuolinen laitekanta ja monipuoliset palvelut)
- Aito OIS oppimisen ympäristö
- Teknologiateollisuus on sitoutunut koulutuskonepaja ideaan
- Kalliissa kone- ja laiteinvestoinneissa säästetään

Heikkoudet

- Erillään Savonian ja SAKKYn pääkampuksista
- Alussa lisäkustannuksia
- Ilman erillistä osakeyhtiötä toiminta hankalaa johtuen eri organisaatioiden päätöksentekokyvystä ja nopeudesta
- Kuntayhtymien byrokratia

Mahdollisuudet

- Opiskelijoiden keskeyttämiset vähenee
- Luontaiset opintopolut
- Parempia osaajia toimialalle
- Toimialan imago kasvaa
- Toimialan vetovoima lisääntyy
- Toimialan kilpailukyky lisääntyy
- Uusi toimintaympäristö houkuttelee kansallisia ja kansainvälisiä tutkimuspartnereita

Uhat

- Yritysten kilpailukyky laskee ja toimiala hiipuu
- Yritykset eivät sitoudu kehittämään KKP:aa (ei löydy yhteistä intressiä)
- SAKKY, Savonia ja yritykset eivät löydä yhteistä toimintamallia
- Yritykset eivät osaa toimia yhteistyössä

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Future's challenges, possibilities and trends in technological development

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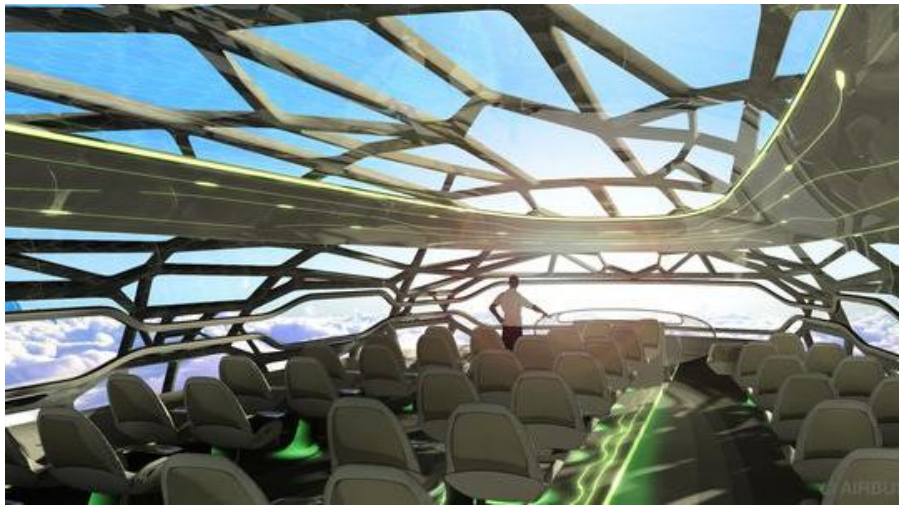
- Industrie 4.0
- 3-D printing
- Digital hydraulics
- Machine intelligence, AI
- Augmented reality
- Cleantech
- Haptical interfaces
- Nanotechnology



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Team Finland – Team Northern-Savo

Team Finland -> team Pohjois-Savo

Team Finland (TF) tuo yhteen Suomen taloudellisia ulkosuhteita, yritysten kansainvälistymistä, Suomeen suuntautuvia investointeja ja maakuvatyötä edistävät toimijat kotimaassa ja ulkomailla.

- Team Northern-Savo
- Mahdollisuus nostaa Pohjois-Savon osaamista ”kartalle”
- Osaamisen vienninedistäminen (koulutusmyynti)
- Pohjois-Savon teknologiateollisuus pystyy menestystuotteissaan kilpailemaan osaamisessa ja kustannustehokkuudessa halpatuotantomaiden kanssa.
- Uusien start-up yritysten tukeminen / kehittäminen

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Conclusion

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- Pohjois-Savossa teknologiateollisuuden **tuottavuus ja tuotanto** halutaan säilyttää, **tuottavuutta ja kilpailukykyä** on mahdollista nostaa paljon. Lama söi osan konepajoista, joilla oli huono palvelu-tuotanto-konsepti. Työttömyyttä aiheutui myös liian nopean kasvun seurauksena. **Tuotannon eettisyys**, onko tämä relevantti kysymys? Kyllä, sillä **kestävä valmistus** (sustainable manufacturing) nousee.

- Koulutuskonepaja on ehdoton edellytys Pohjois-Savon teknologiateollisuuden **kilpailukyvyn varmistamiseksi**.

- NEWS is a sine qua non for the Northern Savo, in order to ensure the competitiveness of the technology industry.




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www.savonia.fi

Kirjallisuuden ja kuvien lähteet

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