NTNU

June 29th - 30th, 2016

6TH CONFERENCE ON LEARNING FACTORIES

Sponsored by the CIRP and SFI Manufacturing

Wednesday, June 29TH 2016

Venue site: Raufoss Industry Park - Building 1, Enggata 40, 2830 Raufoss

11:00	*Bus from Quality Hotel Strand*		
11:00	Registration opens		
12:00	**Lunch** *Welcome - Professor Dr.Ing. Kristian Martinsen*		
12:45	***Group sessions:***		
	RED:	YELLOW:	GREEN:
12:45-14:30	Key note talks* - Building 1	Workshop at the LeanLab Learning Factory	Tour of Raufoss Industry Park
14:30-16:15	Workshop at the LeanLab Learning Factory	Tour of Raufoss Industry Park	Key note talks* - building 1
16:15-18:00	Tour of Raufoss Industry Park	Key note talks* - Building 1	Workshop at the LeanLab Learning Factory
18:00	*Bus to Quality Hotel Strand*		
19:15	*Bus to campus NTNU from Quality Hotel Strand*		
19:30	**Conference dinner** - Atrium A-building		

***Key note speakers:**

Knowledge management in the Raufoss industry cluster:
Ottar Henriksen, Project director, SINTEF Raufoss Manufacturing AS
Industrial Experiences from LeanLab Learning factory:
Tore Hjelmås, Plant manager, Nammo Raufoss AS
University Experiences from LeanLab Learning Factory:
Torbjørn Skogsrød, Dean, NTNU faculty of Technology, Economy and Management

Presentation of NTNU: https://innsida.ntnu.no/documents/portlet_file_entry/10157/brosjyre_engelsk.pdf/b6b6ccad-cc59-470f-9395-14283f8e9b78?status

Thursday, June 30TH 2016: Conference Day

Venue site: NTNU Gjøvik, Teknologiveien 22, Gjøvik

08:30	**Plenary session** - *Room K105* *Chairman: Professor Dr.Ing. Kristian Martinsen*		
08:30	Welcome Speech *Professor Dr.Ing. Jørn Wroldsen,* NTNU vice rector		
08:40	Key note: Knowledge and Innovation Community on Added-value Manufacturing *Professor Dr. Ing. George Chryssolouris, Director of the Laboratory for Manufacturing Systems & Automation* *Professor Dimitris Mourtzis, Division Director, Division of Design & Manufacturing. University of Patras, Greece*		
09:25	Key note: Industry 4.0 in Lean Learning Factories *Professor. Dr. Ing. Joachim Metternich, Associate Director,* *Institute of Production Management, Technology and Machine Tools, Technische Universität Darmstadt* *President of the Initiative on European Learning Factories*		
10:00	**Coffee Break** - *Atrium A-building*		
10.30	**Parallel sessions 1**		
	1A- Room K105 *Chair: Andreas Jäger*	*1B – Room K102* *Chair: Wilfried Sihn*	*1C – Room K109* *Chair: Terje Lien*
	Learning in Industry 4.0 / Cyber Physical Manufacturing Systems	**Learning Factories**	**Cooperation, Flexibility and Transparency in Manufacturing Education and Learning**
10:30	Holistic approach for human resource management in industry 4.0 ***F.Hecklau*,*** *M.Galeitzke, S.Flachs, H.Kohl*	Benefits of a learning factory in the context of lean management for the pharmaceutical industry ***C.Rybski*,*** *Roland Jochem*	Manufacturing Education- Facilitating a Collaborative Learning Environment for Industry and University. **O.J.Mork*,** I.E.Hansen, L.A.Giske, P.S.Kleppe, K.Strand
10:50	Implementing cyber-physical production systems in learning factories ***M.Juraschek****, S.Thiede, C.Herrmann*	Preconditions for Learning Factory. A case study - ***O.Ogorodnyk****, M. Granheim, H.Holtskog*	State of the Art of Makerspaces - Success Criteria when Designing Makerspaces for Norwegian Industrial Companies **M.B.Jensen*,** C.C.S. Semb, S.Vindal, M.Steinert
11:10	Tangible Industry 4.0: A scenario-based learning factory approach for future production *S.Erol,* ***A.Jäger****, P.Hold, K.Out, W.Sihn,*	Application of modern educational methods through implementation of the ambulance simulator at a clinic laboratory (NTNU in Gjøvik) **J.Sterten*,** O.Ogorodnyk	The principle of the stored program applied to servo motors **S.Fjeldaas*,** M.L.Furevik
11.30	Decentralized control of logistic processes in cyber-physical production systems at the example of ESB Logistics Learning Factory ***J.Schuhmacher****, V.Hummel*	Complementary research and education opportunities—a comparison of learning factory facilities and methodologies at TU Wien and MTA SZTAKI **Z. Kemeny*,** J.Nacsa, G.Erdös, R.Glawar, W.Sihn, L.Monostori, E.Ilie-Zudor	Intelligent learning management by means of multi-sensory feedback G.Posselt, S.Böhme**, S.Aymans***, C.Herrmann, S.Kauffeld
11:50	Railway Operation Research Centre - a Learning Factory for the Railway Sector ***Streitzig****, A.Oetting*	The MTA SZTAKI Smart Factory: platform for research and project-oriented skill development in higher education. **Z.Kemeny*,** R.J. Beregi, G. Erdős, J.Nacsa	ETA Learning Factory: A holistic Concept for teaching Energy Efficiency in Production. E. Abele, C. Bauerdick, **N.Strobel*,** N.Panten

***Presenting author**

12:10	**LUNCH – Canteen G-building**

13:10	**Parallel sessions 2**		
	2A- Room K105 *Chair: Kristian Martinsen*	*2B – Room K102* *Chair: Emanuel Moser*	*2C – Room K109* *Chair: Dimitris Mourtzis*
	Learning in Industry 4.0 / Cyber Physical Manufacturing Systems	**Learning Factories**	**Lean learning**
13:10	Using a learning factory approach to transfer Industry 4.0 to small- and medium-sized enterprises **A.Wank*,** S.Adolph, O.Anokhin, A.Arndt, R.Anderl, J.Metternich	BERTHA - A flexible learning factory for manual assembly **S.Schreiber*,** L.Funke, K.Tracht	Lean Learning Patterns. (CPD)nA vs. KATA. **J. Villalba-Diez*,** J.Ordieres-Meré, S.Rubio-Valdehita
13:30	Learning factories for the operationalization of sustainability assessment tools for manufacturing: bridging the gap between academia and industry **A.Moldavska*,** J.V.Abreu-Peralta	Extending the scope of future learning factories by using synergies through an interconnection of sites and process chains **M.Weeber*,** C.Gebbe, M.Lutter-Günther, J.Böhner, J.Glasschroede, R.Steinhilper, G.Reinhart	Using Marker-less Motion Capture Systems for Walk Path Analysis in Paced Assembly Flow Lines **P.Agethen*,** M.Otto, S.Mengel, E.Rukzio
13:50	Combining learning factories and ICT-based situated learning ***N.Tvenge****, *K.Martinsen, S.Kolla*	Simulation Game for Intelligent Production Logistics - The PuLL® Learning Factory **J.S.Blöchl*,** M.Schneider	Transfer of Model of Innovative Smart Factory to Croatian Economy using Lean Learning Factory N.Gjeldum, M.Mladineo, **I.Veza***
14:10	Creation of a Learning Factory for Cyber Physical Production Systems **A.Pöhler*,** I.Gräßler, J.Pottebaum	Integrated and Modular Didactic and Methodological Concept for a Learning Factory *G. Lanza, S.Minges, J.Stoll,* ***E.Moser****, B.Häfner*	Case study: Development of social relations for management, learning and creation of social learning models **K.Nordskogen*,** J.Sterten
14.30	Learning Factory modules for smart factories in Industry 4.0 C.Prinz, F.Morlock, **S.Freith***, N. Kreggenfeld, D. Kreimeier, B.Kuhlenkötter	Educational Learning Factory of a holistic product creation process I.Gräßler, P.Taplick, **X.Yang***	Adaptation and implementation of modern learning techniques in master of sustainable manufacturing: cultural challenges, effects and potential for improvement ***J. Sterten****, *K.Nordskogen, A.Verlan*

14:50	**Coffee Break** - *Atrium A-building*

15:10	**Parallel session 3**		
	3A - Room K105 *Chair: Sverre Gulbrandsen-Dahl*	*3B - Room K102* *Chair: In Seong Yoo*	*3C - Room K109* *Chair: Pierre Johansson*
	SFI Manufacturing	**Research Based Innovation and Learning**	**Cooperation, Flexibility and Transparency in Manufacturing Education and Learning**
15:10	Handling of Frequent Design Changes in an Automated Assembly Cell for Electronic Products **A.Capellan*,** O.Roulet-Dubonnet	EtherCAT-integrated processing machine with full local task redundancy **M.Lind*,** E.Morset, M.Bredeli	A seamless convergence of the digital and physical factory aiming in personalized Product Emergence Process (PPEP) for smart products within ESB Logistics Learning Factory at Reutlingen University. **B.Brenner*,** V.Hummel
15:30	Industrialization of Metal Powder Bed Fusion through Machine Shop Networking ***V.Brøtan****, *J.Fahlstrøm, K.Sørby*	Model factory for additive manufacturing of mechatronic products: Interconnecting world-class technology partnerships with leading AM players **I.S.Yoo*,** T.Braun, C.Kaestle, M.Spahr, J.Franke, P.Kestel, S.Wartzack, J.Bromberger, E.Feige	Prototyping to Leverage Learning in Product Manufacturing Environments **J.A.B.Erichsen*,** A.L. Pedersen, M.Steinert, T.Welo
15:50	Additive manufacturing for enhanced performance of molds ***V.Brøtan****, *O.Å.Berg, K.Sørby*	Method for configuring product and order flexible assembly lines in the automotive industry **C.Küber*,** E.Westkämper, B.Keller, H-F.Jacobi	Integrating Intralogistics into Resource Efficiency Oriented Learning Factories C.Lehmann**, M. Scholz***, S.Kreitlein, J.Böhner, J.Franke, R.Steinhilper
16:10	Distributed, Autonomous Control in Production of Jet Turbine Parts *P.A.Nyen,* ***E. Polanscak****, *O.Roulet-Dubonnet, M.Lind*	Enhancing Integrative Capabilities through Lean Product and Process Development **E.Synnes*,** T.Welo	Multi-variant truck production - Product variety and its impact on production quality in manual assembly. **P.E.C.Johansson*,** S.Mattsson, L.Moestam, Å.Fast-Berglund
16:30	Atomistic modelling of interfaces in cold welded joints **P.H.Ninive***		
16:50	**Conference Summary** *Room K105 – official end at 1720*		