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European Partnership in Pneumatic Project (EPIPP)

**Göteborgs Tekniska College
welcomes you today to the
EPAPP conference
Oktober 4th 2017**



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European Partnership in Pneumatic Project (EPIPP)

Program

09.00: Coffee, sandwich and check-in

09.20: Presentation of the project

10.20: Panel Discussions, experience from course, ICT and laboratories

10.50: Coffee and Workshop discussions ICT(WBL, CBL) in Pneumatics

11.15: Summing up ideas for improvement from network discussions

11.45: Conference end, lunch for invited guests



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European Partnership in Pneumatic Project (EPIPP)

Background

Facts:

The knowledge and use of pneumatics is equally important to the industry all over Europe. Pneumatic systems are used in all manufacturing industries in Europe in versatile areas as production, maintenance and construction.

The knowledge and teaching of pneumatics isn't tied to a specific country, brand or factory which means that the competence needs are the same all over Europe.

The Goal:

Develop a standard European Pneumatics course, based on CBL and vocational training on EQF level 4 that meets the needs of the industry.



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European Partnership in Pneumatic Project (EPIPP)

Participants

Denmark

Den Jydske Hantvaerkerskole, Hadsten

Italy

Apro Formazione, Alba

Spain

Goierri Eskola, Ordizia

Sweden

Göteborgs Tekniska College, Gothenburg



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European Partnership in Pneumatic Project (EPIPP)

Process

- First meeting
- Second meeting
- Third meeting
- Fourth meeting
- Fifth meeting



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European Partnership in Pneumatic Project (EPIPP)

First meeting

1-3 march 2016

Startup meeting Alba, Italy



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European Partnership in Pneumatic Project (EPIPP)

First meeting, Startup meeting Alba, Italy

1-3 march 2016

Presentation

Partners agreement

Goal

Overall objectives

Timetable

Train the trainer

Citrix

Fluidsim 5



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European Partnership in Pneumatic Project (EPIPP)

Second meeting
Odizia, Spain

13-14 september 2016



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European Partnership in Pneumatic Project (EPIPP)

Second meeting Ordizia, Spain

13-14 september 2016

Specify tasks

Framework

Webpage

One course

Gather course content from subject plans and syllabuses from schools

Basic level

Classroom manager, Festo CBL

Extended own material

Assessment



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European Partnership in Pneumatic Project (EPIPP)

Processing course content, each countries content

Content of pneumatics in country:

Sweden

20 hours

Theoretics:

- Names, markings and symbols, incl. relays.
- Connections of pneumatic circuit
- Functional descriptions and drawings.
- Common controlled units of measurement f.ex. 24 V circuit pressure, relays, contractors
- Fluidsim
- Sensors


Practice

wire up and try out functions:

- 3/2-valve, pm, el. contr.
- 5/2 - " -

Single act. double act. cyl.

Control the 1 valve solenoid with relays



if time over

- self holding circuit
- plc-control for pneum.
- wire up to electrical circuit.

SPAIN

30 hours (PL1) + 12 hours (PL2) + FINAL PROJECT 16 hours

- * FORCE, TIME, ... CALCULATIONS
- * ELECTROPNEUM (with electrical schemes) ...

PRACTICE - LEVEL 1 (PL1)

- 3/2, 5/2, ...
- single/double fluid cyl.
- Flow Regulations
- Pressure measurements...

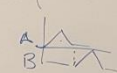
PRACTICE - LEVEL 2 (PL2)

- PLC Control Pneumatic Circuits...

ITALY (30hr)

THEORY:

- Physics of Fluids
- MEASURING UNITS
- SEQUENTIAL GRAPHICS (A+A- B+B-)
- SYMBOLS / NAMES
- FUNCTIONING PRINCIPLES OF VALVES
- CYLINDERS AND DIFFERET ACTUATORS



PRACTICE:

- CONNECTIONS → VALVES → ACTUATORS
- PURE PNEUMATICS CIRCUITS
- ELECTRO-PNEUMATIC CIRCUITS
- ELECTROPNEUMATICS CIRCUITS VS HYDRAULICS

Denmark

10 weeks "fluidsim"

H2

elementary: plc → pneumatics (proj)

20 hours

8 weeks

H3

10 hours

network ID

plc → pneumatics (proj)

feedback

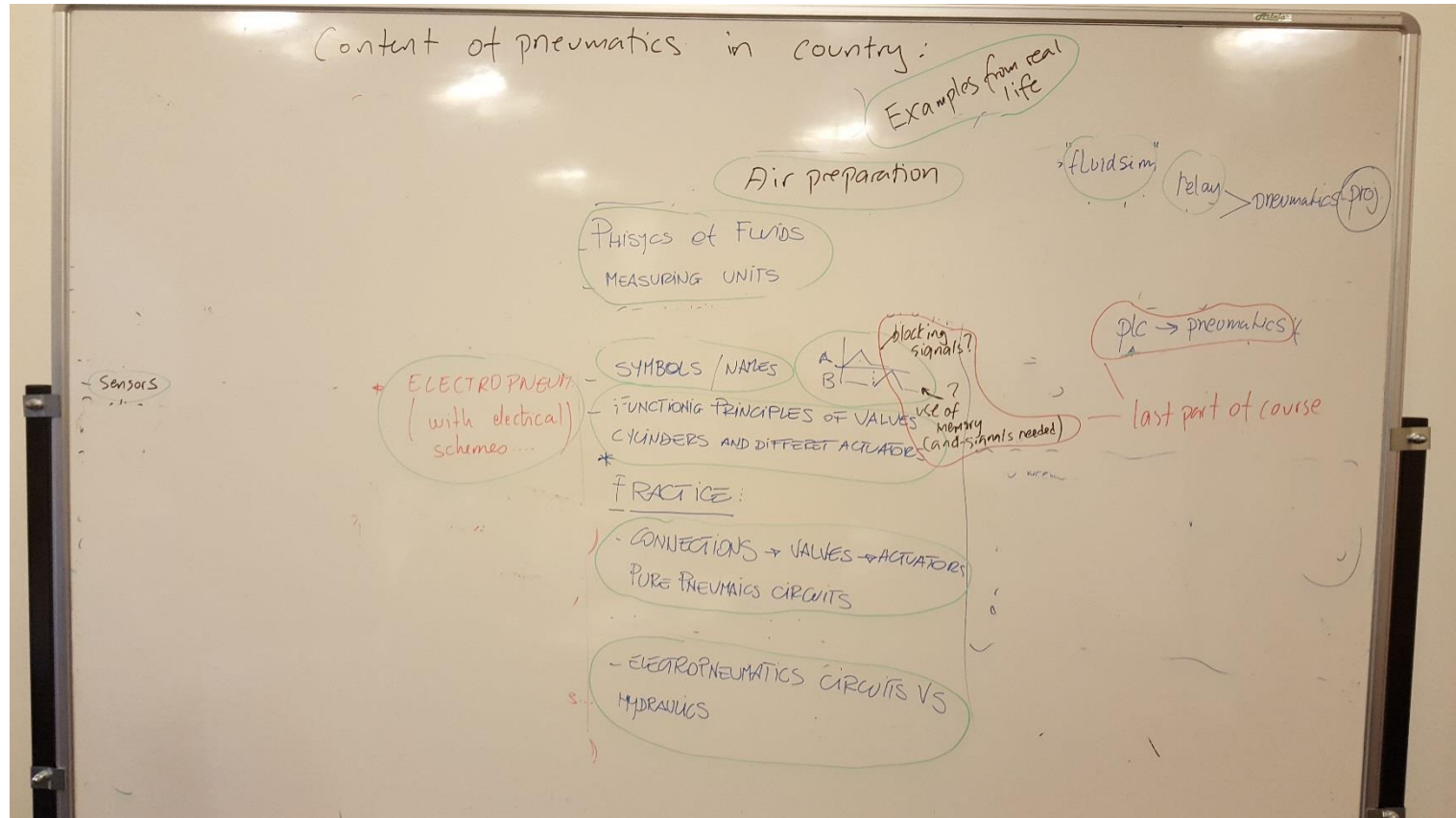
hydraulics

20 hours



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Processing course content, the common parts



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European Partnership in Pneumatic Project (EPIPP)

Processing course content, precised parts

Content of pneumatics

- Examples from real life
- Air preparation
- Physics of fluids
- Measuring units
- Symbols, names
- Functioning principles of valves, cylinders and different actuators
- sensors
- fluidsim
- Sequence diagram
- relay
- electro pneumatics, electrical schemes

Prerequisites

- Basic knowledge of electricity
- Basic knowledge of PLC handling, f.ex I/O, plc

Practize

- Connections → Valves → Actuators
- pure pneumatic circuits
- electro pneumatic circuits

Work tasks

- work with and complete the festo clg-course
- writing pneumatical schemas including symbols
- writing electrical schemas
- simulation of the system in fluidsim
- assembling pneumatical circuits
- assembling electrical circuits
- applying general safety rules
- Fault finding in the system

last part of course

- Blocking signals, use of memory, and signals
- PLC for controlling electro pneumatics

knowledge	skill	competence
He/she knows how to recognise pneum. technical symbols	He/she is able to use the correct component and make a correct connection	He/she is responsible for the correct functioning of the assembly



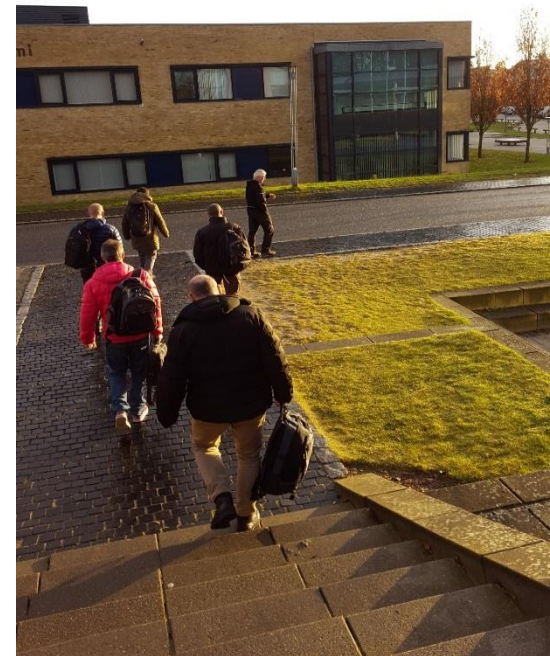
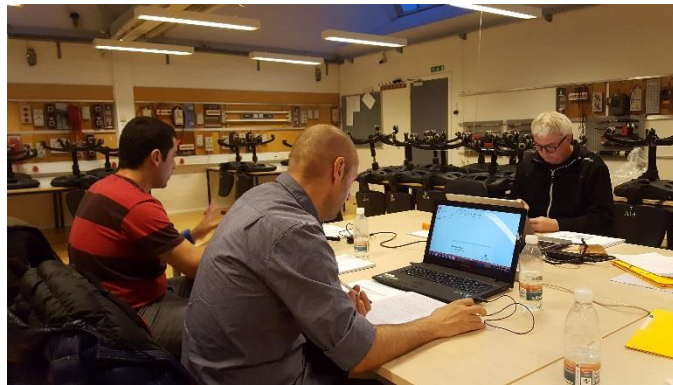
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European Partnership in Pneumatic Project (EPIPP)

Third meeting, Hadsten, Denmark

29-30 November 2016



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European Partnership in Pneumatic Project (EPIPP)

Third meeting, Hadsten, Denmark

29-30 November 2016

Lecture planning

Specifics

CBL Contribution

Course elements

Learning outcomes and assessment grid for the course

Webpage

Content



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European Partnership in Pneumatic Project (EPIPP)

CBL course start, at each home school

February-June 2017

Festo Classroom Manager

- Specific lesson parts, pinpointed to cbl
- Each countries extra material added, questionnaires, tasks
- Possibility for teacher guidance
- Time specific goals, when to finish the different parts



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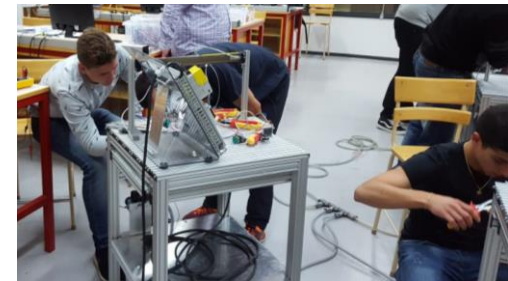
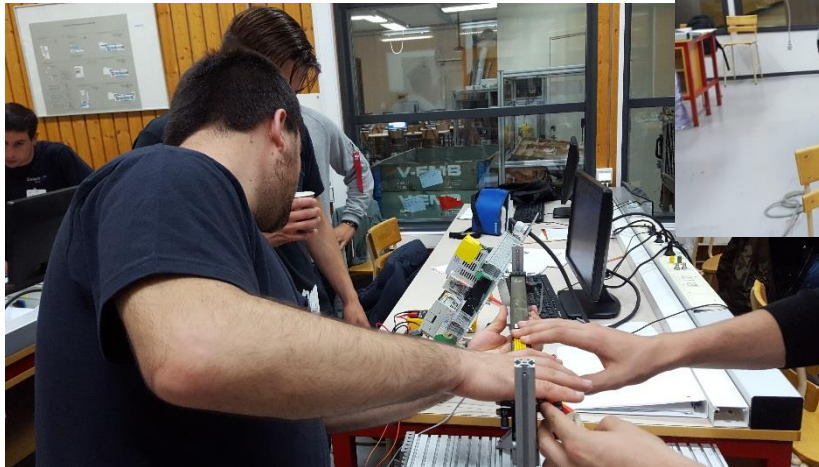


European Partnership in Pneumatic Project (EPIPP)

Fourth meeting

19-22 june 2017

Meeting Gothenburg, Sweden



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European Partnership in Pneumatic Project (EPIPP)

Laboratory part of the course

Guest lecture pneumatics (Rustan Wig)

Safety

Future

Visit Boilerroom,

Supplier of compressed air Volvo Car Corporation

Visit VCC body shop



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European Partnership in Pneumatic Project (EPIPP)

Common Activities Bowling

Students from different countries learning to get to know each other better while speaking English



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European Partnership in Pneumatic Project (EPIPP)

Fifth meeting, Conference Gothenburg, Sweden

Dissemination - Spreading information about the project



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European Partnership in Pneumatic Project (EPIPP)

Webpage

<http://www.goierrieskola.eus/en/epipp/>



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European Partnership in Pneumatic Project (EPIPP)

	Title of the Project: European Partnership in Pneumatic Project (EPIPP)		
Prerequisites:	<ul style="list-style-type: none"> - Basic knowledge of electricity, relay. - Basic knowledge about most common sensors (inductive, mechanical). - Basic knowledge of PLC handling, I/O. - Basic knowledge of computer handling. 		
Work tasks:	<ul style="list-style-type: none"> - Applying general safety rules according to the machinery Directive and annexes. - Work with and complete the FESTO CBL-Course - Writing pneumatic schemas - Writing electrical schemas - Simulation of the system in Fluid-Sim - Assembling pneumatic circuits - Assembling electrical circuits - Fault finding in the system and troubleshooting. 		
Learning Outcomes:	<i>Knowledge</i>	<i>Skills</i>	<i>Competence</i>
	<ul style="list-style-type: none"> - He/She knows to define the basic sequential automatic processes. - He/She knows how to adjust mechanical and pneumatic elements. - He/She knows to recognize pneumatic symbols and in which norm to find them. 	<ul style="list-style-type: none"> - He/She is able to analyse the process that has been controlled. - He/She is able to prepare tools and equipment. - He/She is able to check and measure the circuit using a pneumatical diagram. - He/She is able to diagnose the state of elements of pneumatic systems 	<ul style="list-style-type: none"> - He/She is responsible for defining phases of operations based on instructions received. - He/She is responsible for monitoring the functioning of tools and equipment and taking care of routine maintenance activities.
	<ul style="list-style-type: none"> - He/She knows to recognize electro technical symbols and knows in which nom to find them. 	<ul style="list-style-type: none"> - He/She is able to check and measure the circuit using a wiring diagram. 	<ul style="list-style-type: none"> - He/She is responsible for the correct functioning of the installation using the module's diagrams.
	<ul style="list-style-type: none"> - He/She knows how to recognize if a machine is working in proper conditions 	<ul style="list-style-type: none"> - He/She is able to decide if a component is broken or working properly. - He/She is able to use the program to monitor the process for fault finding - He/She is able to check and measure the circuit using a wiring diagram. 	<ul style="list-style-type: none"> - He/She is responsible for applying the right strategy to fix identified faults.
	<ul style="list-style-type: none"> - He/She knows how to describe the general safety rules. 	<ul style="list-style-type: none"> - He/She is able to point out when a machine does not meet with certain safety standards. - He/She is able to work in proper conditions by trying to avoid any kind of risk. 	<ul style="list-style-type: none"> - He/She is responsible for applying general and specific branch related safety rules and procedures in his/her work.
			<ul style="list-style-type: none"> - He/She is responsible for sharing knowledge, experience and insight.



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