



TRANSNATIONALE MODULES



Federal Ministry
of Education
and Research

BILDUNG FÜR EUROPA
Nationale Agentur beim



GD Bildung und Kultur

Programm für lebenslanges Lernen

ABOUT MOVET

Modules for Vocational Education and Training for Competences in Europe (MOVET) is an EU-Project in Leonardo da Vinci, Lifelong Learning Program.

OBJECTIVES

MOVET focuses on transparency of learning outcomes and recognition of competences in vocational education and training. Learning outcomes acquired within transnational (geographical mobility) modules are going to be assessed in the hosting institution, validated and recognized in the sending institution by the European partners. The Transfer of Innovation (TOI) project explores a practical approach to the system ECVET.

IMPLEMENTATION

VET schools, companies, competent bodies and other protagonists of vocational education and training validate the acquired learning outcomes as relevant for qualifications in the field of industrial engineering and electronics.

3 WEEKS MODULES

The six modules for students in the field of industrial engineering and electronics are well-matched to the content of curricula, for example, for mechatronics, industrial mechanics, and automation technicians:

- 1 E-Pneu (Electro-Pneumatics)
- 2 PLC (Programmable Logic Controller)
- 3 IT bus-systems
- 4 Hydraulics
- 5 CNC (Computerized Numerical Control)
- 6 CAD/CAM (Computer-Aided Design/Manufacturing)

PARTICIPATING COUNTRIES



Denmark



Finland



Germany



Slovakia



CONTENT

- Automation technology planning, simulating and realizing with pneumatic actuators and relay technology
- Planning and simulating with Festo FluidSIM
 - Working safely with electro-pneumatic equipment
 - Production of compressed air
 - Get to know electro-pneumatic actuators, valves, sensors
 - Developing, simulating and realisation of electro-pneumatic circuits e.g. with sequence chain
- The students write a general work report and present one detail demonstrating her/his skills using circuit diagrams, photos etc. The presentation will be discussed with company experts/teachers
- Students should be in their 2nd year of training

EDUCATIONAL SETTING

- 8-12 foreign plus 8 local students (max. 20 persons)
- In the module the student work mostly in pairs or groups
- The students take part in the module as part of their training in a foreign country in English language

OPERATIONAL STRUCTURE

- 1 week training at school with paper and pencil test
- 2 weeks at companies BMW, SWM, Seidenader
- Week 3 training on the job: real work order in company environment in automation technology



CONTENT

- Basic knowledge of PLC programming with Siemens S7-300
- Programming, simulating and testing of programs on industrial mechatronic systems
 - Analysing of the mechatronic system
 - Developing documents e.g. Symbol Table
 - Hardware Configuration: choose the appropriate modules for the mechatronic system
 - Programming, simulating and troubleshooting using the programming language Function Block Diagram (FBD)
 - Troubleshooting and optimisation of the program
 - Bringing the mechatronic system into operation
- Students should be in their third year of training and should have good knowledge in electro-pneumatics

EDUCATIONAL SETTING

- 8-12 foreign plus 8 local students (max. 20 persons)
- In the module the student must work mostly in pairs or groups, so good teamwork skills are needed
- The students take part in the module as part of their training in a foreign country in English language

OPERATIONAL STRUCTURE

- 2 weeks training at school with a paper and pencil test
- 1 week company training with a skills demonstration
- Participating companies: BMW, SWM, Seidenader

IT BUS-SYSTEMS

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CONTENT

- The students learn what is the main idea of industrial bus-systems and how some of those are configured and build up
- The bus-systems module is designed for students which have automation technology as an essential part of their curriculum
- In the module there are also fault finding and diagnostic lessons
- Students that take part in module should have basic knowledge of PLC programming

EDUCATIONAL SETTING

- 8-10 foreign plus 2 local students (max. 12 persons)
- In the module the student must work mostly in pairs or groups, so good teamwork skills are needed
- Course language is English

OPERATIONAL STRUCTURE

- During the training the students can also see how industrial bus-systems are used in local industrial companies and they also have some work to do there

HYDRAULICS

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CONTENT

- General knowledge about the most common hydraulic components and their function
- Knowledge of how to mount and put in to action the hydraulic components like valves of different kinds, cylinders and motors
- Knowledge of hydraulic pumps and motors with fixed displacements.
- Function diagrams for smaller hydraulic systems
- Diagrams, nomograms and documentation; dimension and mount pipes, hoses and fittings on hydraulic systems
- Different filters' importance in hydraulic systems

EDUCATIONAL SETTING

- 9 foreign plus 3 local students (max. 12 persons)
- In the module the student must work mostly in pairs or groups, so good teamwork skills are needed
- The students take part in the module as part of their training in a foreign country in English language

OPERATIONAL STRUCTURE

- 2 weeks training at school with a paper and pencil test and skills demonstration
- 1 week company training
- Participating companies: Vest Forbrændingen, AVN, NUNC and SAW

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CONTENT

- Basic knowledge about CNC lathe programming and mill programming with Mikroprog-S
- The students are able to use basic commands for lathe programming and they are able to create a simple rotary part
- Basic knowledge of programming of cycles – roughing, drilling, recessing, threading, etc.
- The students are able to solve tasks using the cycles for lathe-turning and cycles for milling
- The students are able to use basic commands for mill programming and they are able to create a simple linear part

EDUCATIONAL SETTING

- 12 foreign plus 3 local students (max. 15 persons)
- Mixed nation teams – pairs or groups – good teamwork skills are needed
- Course language is English

OPERATIONAL STRUCTURE

- 2 weeks training at school with a paper and pencil test
- 1 week company training with a skills demonstration
- Participating company: Embraco

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CONTENT

- Create models (3D) and drawings
- Strategies for single part and assembly drawing
- 2,5 D milling program in Inventor CAM
- CAM part definition in Inventor CAM
- Define Geometries
- Create Jobs (tools and strategies)
- Milling programmed workpieces

EDUCATIONAL SETTING

- 10-12 foreign plus 4 local students (max. 16 persons)
- Mixed nation teams of two
- Course language is English

OPERATIONAL STRUCTURE

- During the training the students can also see how industrial CAD/CAM is used in local industrial companies
- Participating companies: Constantia Hueck Folien, Kennametal, Leistritz

PARTNER

-  Technische Universität München (TUM) Lehrstuhl für Pädagogik (Coordinator) www.paed.edu.tum.de
-  Berufsschule für Fertigungstechnik München (BSFT) www.ft-deroy.musin.de
-  IHK München und Oberbayern www.muenchen.ihk.de
-  BMW Group www.bmw.de
-  Stadtwerke München (SWM) www.swm.de
-  MTU Aero Engines www.mtu.de
-  Europa-Berufsschule Weiden www.eu-bs.de
-  Seidenader Maschinenbau GmbH www.seidenader.de
-  Teknisk Erhvervsskole Center København (TEC) www.tec.dk
-  National Centre for Vocational Education (NCE) www.phmetropol.dk
-  Industriens Uddannelser www.industriensuddannelser.dk
-  WinNova, Länsirannikon Koulutus Oy www.winnova.fi
-  Stredná priemyselná škola strojnícka (SPŠS) www.strojsnv.sk
-  Košický samosprávny kraj www.vucke.sk
-  European Forum for Technical and Vocational Education and Training (EfVET) www.efvet.org

CONTACT

OTHER INFORMATIONAL MATERIALS OF MOVET



Research report of TOI MOVET



Informational Folder about MOVET



Informational Folder about Taxonomy Table

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