Lifelong Learning Programme

LEONARDO DA VINCI

GREEN STAR
GREEN skills for enterprises Sustainable Training for Automotive suppliers clusteR

GREEN STAR

GREEN skills for enterprises Sustainable Training for Automotive suppliers clusteR

GT-VET

Greening Technical VET – Sustainable Training Module for the European Steel Industry

Automotive Intelligence Centre Basque Country

Antonius Schröder

29th of May 2015

Sozialforschungsstelle Dortmund
Zentrale wissenschaftliche Einrichtung

technische universität dortmund

Lifelong Learning Programme

LEONARDO DA VINCI

GREEN STAR
GREEN skills for enterprises Sustainable Training for Automotive suppliers clusteR

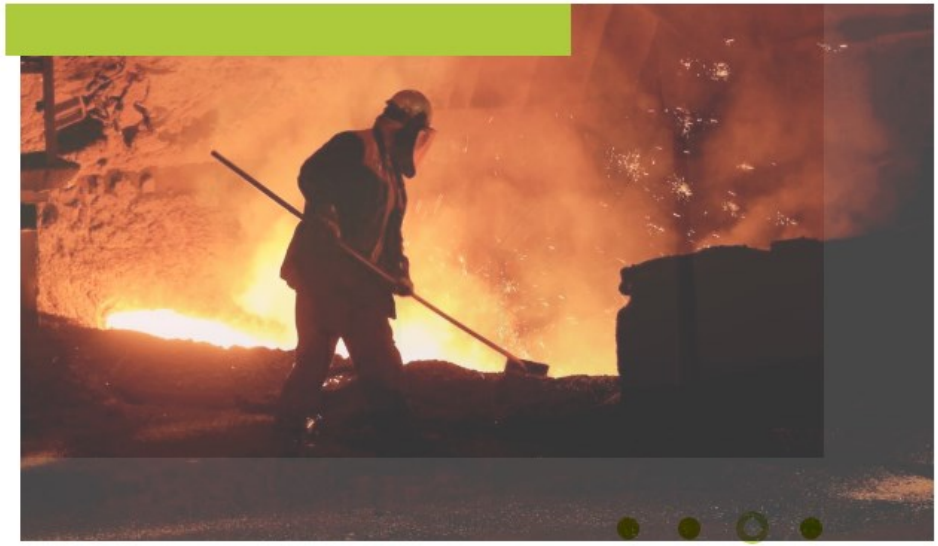
GT VET: Greening Technical VET

Sustainable Training Module for the European Steel Industry

Greening Technical-vet.com

objectives and activities | partners | associated partners | contact us | Final conference

multilanguage flyers | word package results



www.gt-vet.com

Project assumptions

There is a need for a European training module to empower green awareness and green skills in technical apprentices and skilled workers, because we assume

- greening of steel production will remain a mega-trend.
- similar skills required for steel workers, irrespective of the system and pathway of vocational training.
- in future national training systems for blue collar workers must comprise green skills.

GT VET Objectives

- match demands of steel industry with the VET system.
- develop a model of an industry-driven European training module, focusing on skills for environmental sustainability (for electric/electronic and mechanical technicians).
- use the example of electric/electronic and mechanical technicians to transfer results to other professions.
- use the example of the steel industry to transfer results to other production industries.

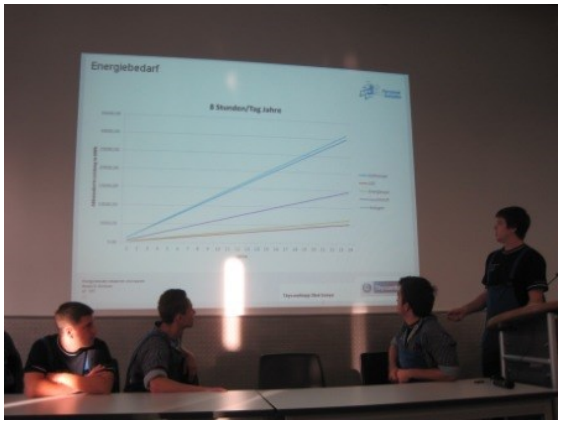
The GT VET Social Innovation Process

Launched by ESTEP WG5 and based on the demands of the Steel Industry

Cooperation between Research/Training Institutions and Steel Companies, accompanied by the Social Partners (EUROFER/industriALL)

Integration of trainees and experts of the companies right from the beginning of the innovation process:

- Identifying the needs of the company and the workers, the relevant topics and learning outcomes, didactics → first prototype
- Testing the prototypes by integrating them in the regular training programme of the companies → feedback from the trainees, teachers
- Optimisation and cross-national integration



GT VET Partnership

Germany	Poland	Italy	UK/Wales	Belgium	Greece
Technische Universität Dortmund (Coordinator)	Instytut Metalurgii Żelaza IMŻ, Gliwice	Instituto per la cultura e la Storia d' Impresa, Terni	Cardiff School of Social sciences, Cardiff University	The European Steel Association – EUROFER, Brussels	VFA – DEvelopment and Innovation Consultants, Athens
ThyssenKrupp Steel Europe AG, Duisburg	ArcelorMittal Poland S.A., Dąbrowa Górnicza	Acciai Speciali Terni S.P.A AST, Terni	TataSteel UK, Port Talbot	industriAll, The European Trade Union Federation for Industries, Brussels	

Lifelong Learning Programme

LEONARDO DA VINCI

GREEN STAR
GREEN skills for enterprises Sustainable Training for Automotive suppliers clusteR

The GT-VET Approach
STRUCTURE OF SUB-MODULES

Introduction of each issue: easy access to the very basics combined with examples of the steel industry

Exercises stronger linked to industrial issues/cases

Professional experience in industry to be reflected

	basic information	understand background and coherences	professional practical knowledge/ competencies	process know-how
Save and reduce input of resources: **Sub-module Energy**	GERMANY			
Save and reduce input of resources: **Sub-module Raw Material**	ITALY			
Prevent and reduce emissions pollution and noise: **Sub-module Noise**	POLAND			
Utilize store and dispose of waste materials: **Sub-module Waste**	UNITED KINGDOM			

Each level of each sub-module develops knowledge to a deeper (and more industry relevant) level.

SUB-MODULE ENERGY

	L.1: Basic information	L.2: understand background and coherences	L.3:professional practical knowledge/ competencies	L.4: process know-how
Title of the training unit	Forms and sources of energy	Energy sources, efficiency and saving	Calculate and measure energy consumption in a defined area and justify an economic solution	Saving energy at your workplace
Learning outcome	The apprentices/pupils distinguish between different forms of energy, esp. renewable and non-renewable sources, can explain their efficiency independently with a variety of presentation media	The trainees know different levels of energy and sort them to energy sources as well as they know possibilities to save energy	Apprentices could build a laboratory situation to measure several kinds of light, their energy consumption, their costs and the efficient way to use them. They could calculate capacity, efficiency and cost for a specific energy solution.	The apprentices / pupils could check possibilities to save energy at their workplace.
Background information required	No information required	Basic understanding of energy sources	Knowledge how to calculate and measure electricity.	Data sheets, company directives, practical industry experience
Approximate duration	90 minutes	90 minutes	3 Days	Depending on duration of internship/employment
Target group profiles	Pupils / starting apprentices	Apprentices	Apprentices	Professionals, professional apprentices
Learning process (didactical procedure)	Brainstorming, group discussion, group-work, individual work, own presentations	Raising awareness of use and saving energy	Complete work order: plan, realize, evaluate a project	Presentation reflecting industrial experience

SUB-MODULE ENERGY content and didactical measures

Level	Content	Didactical measures
L.1.	Definition of energy, energy conversion (with examples), sources of energy, renewable and non renewable energies, efficiency	1. **Trainer input**: lecture, lead discussion 2. **Trainee behaviours**: listening, active participation in exercises, looking up, collecting and filtering information, conclude agreements, team work, presentation of the results 3. **Methods**: tutor presentation; tutor led discussion, team and/or individual work, results presentation 4. **Exercises**: look up, work out, explain and present main notions; match the energy sources to pictures; what is energy conversion for you
L.2.	Different forms of energy and distinction of them, renewable and non renewable energies	1. **Trainer input**: lecture, lead discussion 2. **Trainee behaviours**: listening, active participation in exercises, looking up, collecting and filtering information, conclude agreements, team work, presentation of the results 3. **Methods**: tutor presentation; tutor led discussion, team and/or individual work, results presentation 4. **Exercises**: sorting levels of energy to energy sources; look up, work out, explain and present which energy sources are used where and for what purpose; saving resources – responsibility of trainees, politics, society and company
L.3.	Calculations of power, efficiency and costs	1. **Trainer input**: lecture, lead discussion 2. **Trainee behaviours**: listening, active participation in exercises, looking up, collecting and filtering information, implementation of the task, conclude agreements, team work, presentation of the results 3. **Methods**: tutor presentation; tutor led discussion, team and/or individual work, results presentation 4. **Exercises**: housing lighting installation with regard to the most economic solution (electrical technicians); optimize a hydraulic system with a pressure-controlled vane-type pump (mechanical technicians)
L.4.	Experience-related competences, examples of energy savings in the plant	1. **Trainer input**: lecture, lead discussion 2. **Trainee behaviours**: listening, active participation in exercises, looking up, collecting and filtering information, conclude agreements, to deliver and present information 3. **Methods**: tutor presentation; tutor led discussion, individual work, results presentation 4. **Exercises**: completing the form

SUB-MODULE ENERGY sample exercises

Power Calculation, Efficiency and Costs

Work assignment: lighting installation for a living area
(Electrical Technician Apprentices)

In a living area measuring 4 x 5 metres, a two-way connection with 5 lighting outlets is to be installed. For this, there are 3 junction boxes, 2 switches and 1 lamp available (simulation of the 5 lighting outlets). This circuit is to be simulated on a grid sheet. This is to be produced in accordance with the relevant regulations. All safety devices must be prepared independently.
This assignment is individual work planned by a group.
Furthermore, they should alternately use a **light bulb, a fluorescent lamp, an energy saving lamp, halogen lamp and an LED lamp.**
On the basis of a current measurement, a power calculation, a lighting calculation and a specification of costs, please determine the savings potential of the respective source of illumination.
The maximum time allowed for this work assignment is 3 working days, i.e. 21 hours. The results are then to be presented.

Optimise a hydraulic system with a pressure-controlled vane-type pump
(Mechanical Technician Apprentices)

Determine the actual effective power of the hydraulic system on the basis of a current measurement, volume flow measurement and a pressure measurement. Perform measurements before and after optimisation.

Provide proof mathematically.

The maximum time allowed for this work assignment is 2 working days, i.e. 16 hours. The results are then to be presented.

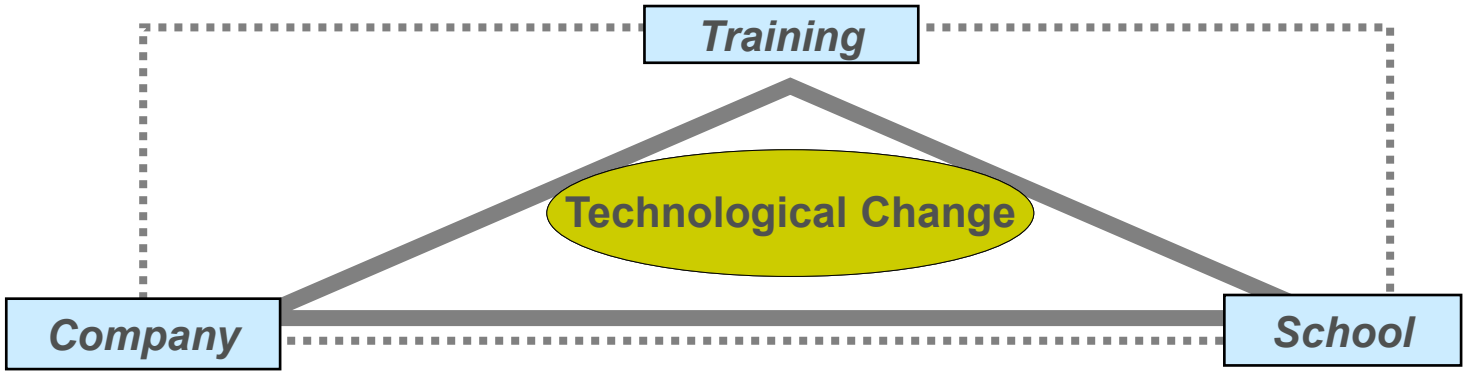
Added value of the training module

- Focus on the workplace experience, implications
- Own responsibility, own project planning and conducting
- Improvement of context knowledge, comprehensive approach for learning and training, generic understanding, identification of parameters for change
- Fostering workplace innovation (bottom-up)
- Improvement of the existing cooperation between company and vocational school (on the regular basis of cooperation: meetings twice a year, bilateral contacts)
- “Learn-learn-learn” situation for trainees, trainers/teachers, workers/management of involved production sites

General Assessment

The sub-modules fit to the training program of the companies and schools and create a clear added value:

- The module improves through its activity based approach the awareness and skills for self-reliant work and reduction of resources and saving of money.
- The trainees want green skills integrated in their traineeship.
- The trainers (steel company) and teachers (schools) will use (parts of) the training module in their regular training program.
- The developed GT VET training module is seen as a link for short-termed reaction to technological changes.



Lifelong Learning Programme

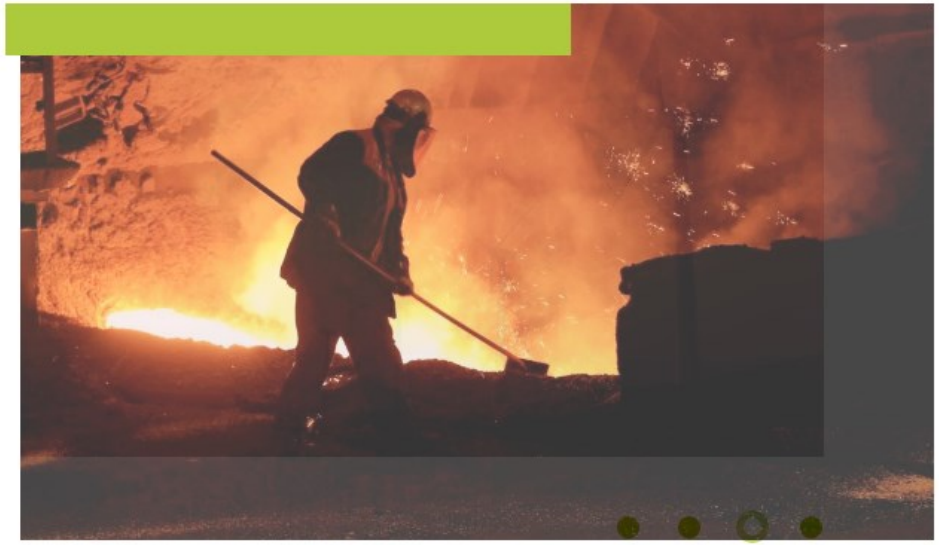
LEONARDO DA VINCI

GREEN STAR
GREEN skills for enterprises Sustainable Training for Automotive suppliers clusteR

If you are interested in more details…

….please visit our website: **www.gt-vet.com**

Greening Technical-vet.com

objectives and activities | partners | associated partners | contact us | Final conference

multilanguage flyers | word package results