LIST OF EXISTING SKILLS

DELIVERABLE 2.1.1

METVET

JOINT HIGHER VET COURSE IN THE METAL SECTOR

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1. INTRODUCTION

This list of existing skills is set up to get an overview about the skills in metal construction engineering shall have when they have passed an education oder apprenticeship. It is a collection of skills described in Italian, German and Greek vocational educational programs. For to use the entity of "existing skills" for to create a questionnaire about missing skills and future skills need, they will be categorized in some clusters. The questionnaire will use these clusters to ask for feedback about skills needed.

These clusters will also be helpful to find out, which will be the special needs in the different concerned countries.

2. LIST OF EXISTING SKILLS PER CATEGORY

1. Theoretical Skills	• Understand the legal and regulatory requirements for aluminum constructions (CE marking, Regulations for Energy Saving in Buildings etc.) • Organize collaboration with external partners (specifications, times, costs, etc.) • Organize and select the appropriate legal and regulatory requirements for each construction • Handle technical catalogs and profile specifications • Procure information • Realization of workmanships on metal sheets
2. Practical Skills	• Organize and apply the appropriate measurement and construction techniques • Choose the right combinations of materials (profiles, glass, etc.) • Recognize and apply the requirements of the system designer's technical manuals when assembling frames, in order to achieve maximum energy outcomes • Recognize and apply the requirements of technical guidelines during product installation, in order to achieve maximum energy outcomes • Handle equipment properly (machine tools, presses, pantographs, hand tools) • Handle the measuring equipment correctly • Calculate dimensions from construction drawings, sketches • Handle welding machines and hand tools • Implement the appropriate measurement techniques for quality control • Apply good practices for raw materials and final products storage • Handle technical manuals for the manufacture of aluminum systems • Measure and test mechanical and physical values • Make separable and inseparable connections • Manufacture workpieces and components using various manual and machine production processes • Treat and protect surfaces • Secure loads, transport components and sub-assemblies and use lifting gear • Produce components and construction elements and assemble and dismantle metal and steel constructions

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	• Plan and control work processes, check, protocol and evaluate work results • Maintain metal and steel constructions • Dismantle and assemble components and sub-assemblies; check, monitor and remedy errors and malfunctions; carry out routine repairs to control systems and components and document results • Apply standards and guidelines to ensure product quality and continuous improvement of work processes in the company • Manufacture parts, assemblies, and metal constructions from sheets, tubes or profiles by means of manual and mechanical production methods • Carry out welding processes, taking work safety and environmental protection into account • Install and uninstall metal constructions and use various jointing techniques • Create auxiliary structures, devices, templates and flat patterns • Select testing devices and methods and apply the company's quality assurance system • Carry out required maintenance work on systems, machines and tools • Identification, cut and steel shaping for reinforcement points • Positioning and assembling of steelwork for reinforcement points • Cutting and welding of steel constructions for reinforcement points • Carrying out manual metal arc (MMA) welding with coated electrode • Carrying out metal arc welding in Metal Inert Gas (MIG) or Metal Active Gas (MAG) • Carrying out manual metal arc (MMA) welding with Tungsten Inert Gas procedure (TIG) • Welding of metal materials with flame processes (i.e. oxy-acetylene welding, brazing) • Assembling welded structures of metal carpentry
3. Green Skills	• Understand and choose the most appropriate techno-economic & energy-efficient solution • Understand the requirements for energy saving in buildings through aluminum constructions • Manage the recyclable materials correctly
4. Transversal Skills	• Implement good working practices (working field, equipment, etc.) • Implement good working practices (suitable vehicle, appropriate means of support, customer loyalty etc.) • Explain the operating and maintenance instructions for the products, the rules of the warranty and its obligations as a manufacturer • Handle software for calculating thermal properties • Handle software to calculate constructions cost • Implement health and safety rules at work • Explain the information contained in the Declaration of Performance and CE products Marking • Organize the file of each completed project • Carry out work assignments autonomously and work as part of a team according due consideration to the relevant regulations and safety provisions and on the basis of technical documentation and work orders • Plan coordinate and agree work with line managers, with colleagues and with other work divisions using German and English language technical terminology • Document work and initiate quality assurances measures and measures for health and safety at work and environmental protection • Set up workplaces at building sites • Use IT systems, including in digitalized processes • Apply regulations relating to data protection and information security

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	• Being able to organize the steel workings for reinforcement points

3. CONCLUSIONS

There is a lack of green skills in the existing professional profiles in all the countries

4. CLUSTERS OF SKILLS

Basic technical skills in metal construction

Examples:

- Choose the right combinations of materials (profiles, glass, etc.)
- Appropriate use of tools and machines at work
- Organize and apply the appropriate measurement and construction techniques
- Install and uninstall metal constructions and use various jointing techniques
- Manufacture parts, assemblies, and metal constructions from sheets, tubes or profiles by means of manual and mechanical production methods
- Handle technical manuals for the manufacture of aluminum systems
- Recognize and apply the requirements of the system designer's technical manuals when assembling frames, in order to achieve maximum energy outcomes

Special technical skills for metal construction

Examples

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- Realization of workmanships on metal sheets
- Set up workplaces at building sites
- Cutting and welding of metal constructions for reinforcement points
- Carry out welding processes practising different technical solutions
- Dismantle and assemble components and sub-assemblies; check, monitor and remedy errors and malfunctions; carry out routine repairs to control systems and components and document results

Use of ICT-, CAD- and 3D-Equipment

Examples

- Use IT systems, including in digitalized processes
- Apply regulations relating to data protection and information security
- Handle software for calculating thermal properties
- Handle software to calculate constructions cost
- Read, understand and apply CAD-produced and presented descriptions and work orders

Green Skills – Environment protection

Examples

- Understand and choose the most appropriate techno-economic & energy-efficient solution
- Understand the requirements for energy saving in buildings through aluminum constructions
- Calculate thermal properties (e.g. U-value) for various construction products by using appropriate software tools
- To assembly products in energy-efficient ways according to the assembly designer's requirements
- To identify critical check-points, pertinent to construction quality which can affect thermal energy losses
- Manage the recyclable materials correctly

Transversal skills

Safety and Health protection

Examples

- Implement health protective and safety rules at work
- Use safety and health protection equipment properly

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	Practizing quality insurance Examples • Implement good working practices (working field, equipment, etc.) • Carry out required maintenance work on systems, machines and tools • Select testing devices and methods and apply the company's quality assurance system • Organize the file of each completed project **Organisational and technical communication** Examples • Understand the legal and regulatory requirements for aluminum constructions (CE marking, Regulations for Energy Saving in Buildings etc.) • Plan coordinate and agree work with line managers, with colleagues and with other work divisions • Organize collaboration with external partners (specifications, times, costs, etc.) • Explain the operating and maintenance instructions for the products, the rules of the warranty and its obligations as a manufacturer • Organize and select the appropriate legal and regulatory requirements for each construction • Handle technical catalogs and profile specifications • Handle the measuring equipment correctly • Calculate dimensions from construction drawings, sketches • Procure information

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