Blueprint “New Skills Agenda Steel”: Industry-driven sustainable European Steel Skills Agenda and Strategy (ESSA)

Mid-term Conference of the European Steel Skills Alliance (ESSA)

„Industry Skills Requirements for a Future-proven Steel Industry“

27th of May 2021

Félix Bayón (Sidenor)
Aitor Goti (University of Deusto)
Tugce Akyazi (University of Deusto)
ESSA WP3 Task 3.1

Definition of skills needs (recent and future) and redefinition of professional profile.

- Identification of workforce gaps that will be set as a basis for next tasks, particularly WP4

Focus of the Task:

- Analysis of existing professional profiles within steel companies and the skills that are related to them.
- Definition of the skills that will be required by steel companies to be more competitive in the future.

The phases of the Task:

Reflection of technological and economic scenarios on the background of concrete company demands

Review of the current professional profiles and unification (ESCO)

Identification of current and future level of skills for each profile

- An identification of workforce gaps
- A common database of professional profiles
Methodology

Definition of skills needs (recent and future) and redefinition of professional profiles

A. Create, analyze and standardize the job profiles of the steel sector
   - European Steel Profile Family tree
   - Steel Professional Role Profile Descriptions
     - ESCO approach: data from ESCO database
     - Generation of - ESSA skill categories (3 levels)
       - Current/future proficiency levels
     - ESCO Occupation titles STEEL SECTOR Job Profiles
   - Aim: influence on VET, other trainings and university education system

B. Identify the most relevant/needed future skills and skill gaps
   - Skills Assessment and Foresight Questionnaire
     - Based on the "Professional role profile description"
     - Selection of the most representative 9 STEEL SECTOR job profiles
   - Develop "Pipeline for Learning Outcomes"
     - Connect functions-skills-knowledge (ESCO & ESSA)
     - Develop learning outcome for each skill & knowledge
     - Validate the results by companies and Connect with training offers
   - Aim: development of ESSA Online Training Ecosystem (ESSA OTS) (by Steel University) and direct connection with EQF

C. Generate an automated/common job profile database
   - Automation and combination of the steel professional job profile descriptions
     - based on ESCO and data integration from other sources (other European frameworks, scientific reports/papers and feedback of industrial WP3 partners)
   - Aim: A common and interactive professional database for industry & training centers
A. Create, Analyze and Standardize the job profiles of the steel sector

✓ European Steel Profile Family Tree

“European Steel Profile Family Tree”:
✓ 26 main families (Level 1)
✓ more than 200 professional role profiles (Level 2) belonging to each family

Job profile family tree*:

✓ analogous to a human family
✓ from one generation pass to the next one incorporating new characteristics.

• to facilitate navigation and to demonstrate relationships between job profiles.
• to understand the organizational structure that the family belongs to.
• to use the profiles for reference or as a base to develop further profile levels.

A. Create, Analyze and Standardize the job profiles of the steel sector
A) Create, Analyze and Standardize the job profiles of the steel sector

✓ **Steel Professional Role Profile Descriptions**

The European STEEL SECTOR Professional Role Profiles aim:

✓ to provide a common/standard template

✓ to compare different profiles more easily

✓ to provide a fast start for developing new profiles or contributing to designing new job descriptions.

Main source for the STEEL SECTOR Professional Profiles → ESCO Database
A. Create, Analyze and Standardize the job profiles of the steel sector

- Steel Professional Role Profile Description

## ESSA Skills Categories

<table>
<thead>
<tr>
<th>Level 1</th>
<th>Technical skills</th>
<th>Transversal skills</th>
</tr>
</thead>
<tbody>
<tr>
<td>Level 2</td>
<td>Physical and Manual</td>
<td>Digital</td>
</tr>
<tr>
<td>Level 3</td>
<td>General equipment operation</td>
<td>Basic digital skills</td>
</tr>
<tr>
<td></td>
<td>General equipment repair and mechanical skills</td>
<td>Advanced data analysis and mathematical skills</td>
</tr>
<tr>
<td></td>
<td>Craft and technician skills</td>
<td>Cybersecurity</td>
</tr>
<tr>
<td></td>
<td>Gross motor skills and strength</td>
<td>Use of complex digital communication tools</td>
</tr>
<tr>
<td></td>
<td>Inspecting and monitoring skills</td>
<td>Advanced IT skills &amp; Programming</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- Personal experience
- Adapt to change
- Work autonomously
- Active listening
A. Create, Analyze and Standardize the job profiles of the steel sector

✓ Steel Professional Role Profile Description
A. Create, Analyze and Standardize the job profiles of the steel sector

✔ Steel Professional Role Profile Description
B. Identify the most relevant/needed future skills and skill gaps

Skills Assessment and Foresight Questionnaire, objective

**Aim:** To find out the most relevant skill needs and most outstanding skills gaps for each profile/hierarchical group/ for the steel industry.

Skills Assessment Survey, Key Facts

- Based on the “Professional role profile description”
  - Online questionnaire on the future developments of skill requirements and the relevance of key technologies within jobs in the steel industry
  - ESSA skills categories and 5 current/future proficiency levels
  - Period of survey: November 2020 – January 2021
  - Participants: 33 and in total 113 job profiles assessments (~ 3.4 job profile assessments per participant)
### B. Identify the most relevant/needed future skills and skill gaps

#### Skills Assessment Survey Results

<table>
<thead>
<tr>
<th>Skill Area</th>
<th>Strong decline in relevance</th>
<th>Decline in relevance</th>
<th>Constant relevance</th>
<th>Increase in relevance</th>
<th>Strong increase in relevance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virtual/ Augmented Reality</td>
<td>28%</td>
<td>55%</td>
<td></td>
<td></td>
<td>17%</td>
</tr>
<tr>
<td>Mechatronics and Advanced Robotics</td>
<td>33%</td>
<td>51%</td>
<td></td>
<td></td>
<td>17%</td>
</tr>
<tr>
<td>Cloud Computing</td>
<td>33%</td>
<td>51%</td>
<td></td>
<td></td>
<td>17%</td>
</tr>
<tr>
<td>Big Data and Analytics</td>
<td>33%</td>
<td>45%</td>
<td></td>
<td></td>
<td>22%</td>
</tr>
<tr>
<td>New generation of sensors</td>
<td>34%</td>
<td>49%</td>
<td></td>
<td></td>
<td>17%</td>
</tr>
<tr>
<td>Internet of Things</td>
<td>37%</td>
<td>48%</td>
<td></td>
<td></td>
<td>15%</td>
</tr>
<tr>
<td>Internet-of-Services</td>
<td>38%</td>
<td>47%</td>
<td></td>
<td></td>
<td>15%</td>
</tr>
<tr>
<td>Artificial Intelligence</td>
<td>39%</td>
<td>45%</td>
<td></td>
<td></td>
<td>17%</td>
</tr>
<tr>
<td>Cybersecurity</td>
<td>40%</td>
<td>45%</td>
<td></td>
<td></td>
<td>15%</td>
</tr>
<tr>
<td>Machine Learning</td>
<td>1%</td>
<td>43%</td>
<td></td>
<td></td>
<td>46%</td>
</tr>
<tr>
<td>Additive Manufacturing</td>
<td>42%</td>
<td>45%</td>
<td></td>
<td></td>
<td>12%</td>
</tr>
<tr>
<td>Predictive Maintenance</td>
<td>45%</td>
<td>49%</td>
<td></td>
<td></td>
<td>5%</td>
</tr>
</tbody>
</table>
## B. Identify the most relevant/needed future skills and skill gaps

### Skills Assessment Survey Results

*Top 3 required skills per job profile*

<table>
<thead>
<tr>
<th></th>
<th>Metallurgical managers</th>
<th>Process engineer</th>
<th>Maintenance and repair engineer</th>
<th>Process engineer supervisor</th>
<th>Production supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2. Personal skills</td>
<td>skills</td>
<td>skills</td>
<td>2. Methodological skills</td>
<td>2. Personal skills</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2. Personal skills</td>
<td>3. Green skills</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>3. Green skills</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Industrial electrician</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Digital skills</td>
<td>2. Personal skills</td>
<td>2. Personal skills</td>
<td>2. Personal skills</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>plant operator</td>
<td>2. Digital skills</td>
<td>2. Personal skills</td>
<td>2. Personal skills</td>
<td>2. Personal skills</td>
<td></td>
</tr>
<tr>
<td>Factory Hand</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Metal working</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>machine tool setters and</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>operators</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
B. Identify the most relevant/needed future skills and skill gaps

Development of “pipeline for learning outcomes”

Connecting function(tasks)-skills-knowledge (ESCO & ESSA skill categories)

- Identify the functions of the occupation scope
- Capture the knowledge, skills and competences that are needed to successfully perform the functions.
B. Identify the most relevant/needed future skills and skill gaps

Development of “pipeline for learning outcomes”

Develop “learning outcome” for each skill & knowledge

Learning outcome

✓ is systematically promoted in the EU policy agenda for education, training and employment.
✓ binds together important European tools developed during the last decade, notably the European Qualification Frameworks (EQF).
✓ Increasingly influences the definition and writing of qualifications and curricula as well as the orientation of assessment and teaching and training.
✓ Connects the world of employment (industry) and of education and training: (a) talent management & recruitment purposes (b) development of training courses, tools and activities

Validate the results by companies and match them with training offers
B. Identify the most relevant/needed future skills and skill gaps

Development of “pipeline for learning outcomes”

Function 2

(b) planning details of production activities in terms of output quality and quantity, cost, time available and labour requirements;

Metallurgical manager

Metallurgical managers coordinate and implement short and medium term metallurgical or steel-making production schedules, and coordinate the development, support and improvement of steel-making processes, and the reliability efforts of the maintenance and engineering departments. They also partner with ongoing remediation initiatives.

Skill

- control financial resources
  - Monitor and control budgets and financial resources providing capable stewardship in company management.

Knowledge

- personnel management
  - The methodologies and procedures involved in the hiring and development of employees in order to ensure value for the organisation, as well as personnel needs, benefits, conflict resolution and ensuring a positive corporate climate.

Direct link for the example graph
C. Generate an automated/common job profile database

The potentiality for the equivalence between ESCO and the titles in the STEEL SECTOR

The automatization of the description of the European Steel Sector Professional Role Profiles

(taking ESCO description of occupations as the basis)

Aim: A common database of professional profiles related with steel sector, which is interactive for continuous updating

How? : integration of the data and automation
Thanks for your attention

ESSA website: https://www.estep.eu/essa

Follow us on LinkedIn and Twitter