SKILLMAN

Sector Skills Alliance
for Advanced Manufacturing
in the Transport Sector

WP5.7
REPORT ON TESTING OF THE RECOGNITION STANDARDS

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EQF/NQF (European Qualification Framework and National Qualification Framework)

The EQF for lifelong learning is a common European reference framework which enables European countries to compare and their different qualification systems and link them to one another. The history of the EQF has been one of rapid development. Thirteen years ago, only three countries had this system, namely Ireland, France and the UK – now over 140 countries are currently developing NQFs.

The main aim is to help learners and workers who wish to move between EU countries, change jobs or switch between educational institutions. It also helps to promote the life-long learning philosophy by opening up pathways for the EU's citizens, and more generally to make the education and training system more transparent and to promote access, transfer and progression into, within and between programmes of learning and lifelong learning.

The EQF works to provide the best possible levels of opportunity by helping promote the mobility of learners and employees between countries. The EQF can only work if NQFs are in place nationally. Apart from purposes of mobility (for a limited number of people), the objectives of NQFs are much broader and wider, namely to foster and enhance access to and participation in lifelong learning and use of qualifications for everyone, including those who are disadvantaged or affected by unemployment.

As a reference structure for qualifications, the NQF is in the first place a tool for classifying qualifications (described in terms of learning outcomes) transparently. To achieve its various objectives, it needs to be combined with a number of change processes.

An NQF introduces a common language for learning outcomes, levels, types of qualifications (awards), credit transfers etc. This language is used for developing qualification standards (occupation, education, assessment) and needs to be applied and elaborated on the general level down to the individual qualification. It also provides conceptual tools for planning and coordinating learning to make the system more coherent and unified. The common language for learning outcomes supports permeability between VET and HE. The use of levels clarifies where potential overlaps exist between qualifications. Mapping qualifications against the same set of descriptors makes it apparent where two (or more) qualifications lead to comparable learning outcomes and what learners might need to achieve in addition.

Permeability

The adoption and implementation of comprehensive NQFs across Europe influences the relationship between (higher) education and training subsystems.

For both VET and HE outcomes-based qualifications are developed, even though differences exist in the benchmarks on which outcomes are formulated, namely occupational standards in VET qualifications and programs and curricula for HE qualifications. VET and HE qualifications focus on employability and the required knowledge, skills and competence, but in the case of HE they are understood in broader terms than just preparation for a specific profession or group of professions. Improving the links and bridges between levels and types of qualification, eliminating dead-ends and promoting vertical and horizontal progression is considered a key task of most of the new frameworks.

Unitization

In many NQFs, qualifications are structured in units of assessment, with programs being structured accordingly in modules of learning, which can be combined and accumulated in different ways and used for credit transfer and progression. Unitization is claimed to provide opportunities for learners or end-users to exercise choice and increase their power in the learning market. Transfers between VET and HE can be made possible by unitization or modularization, making it easier to identify overlaps and to exempt learners from a module and its assessment. Modules or units also enable the delivery of pathways once the learner has obtained recognition and been exempted from certain units or modules.

Stakeholder engagement and coordination

The process of developing and implementing an NQF, and the institutional arrangements for maintaining and supporting it, are contexts in which different stakeholders in education and training may come together to identify mutual interests and coordinate their activities. Stakeholders include a range of actors, such as ministries, education and VET agencies, providers, employment services, employers, trades unions and civil society. This, it is claimed, enables standards to be updated and made more relevant and the learning system to become more coherent and demand-driven. The involvement of the private sector and social partners is of critical importance for the relevant qualifications. NQFs can provide a platform for social dialogue.

Regulation

An NQF may be an instrument for regulating qualifications and thereby mandate reforms in education and training. Qualifications within a framework may have to meet the requirements for standards development (procedure, content and structure); delivery (provision of programs and rules for access, transfer and progression); and assessment and certification (including the recognition of non-formal/informal learning), all of which are aspects of quality assurance. The formal basis of the NQF thus varies according to the national context and the 'policy-making culture', as well as existing governance arrangements: it can consist of one (integrative) new law, creating new institutions, of a number of laws or of by-laws or orders making reference to the NQF and assigning new tasks to existing institutions. However, the legal basis alone is insufficient – reaching an agreement between key stakeholders on how to implement the framework after adoption is crucial. The most important criterion for deciding whether an NQF has reached the operational stage is whether there is an agreement on sharing responsibilities and roles between the different stakeholders.

A crucial issue to be addressed in implementing an NQF is to decide the roles and responsibilities involved in the management of the framework. An NQF needs national co-ordination, or in EU terminology national coordination point'. In fact, there is a great variety of solutions for this in European countries. While the majority of these 'coordination points' are with institutions of the education system, some countries have chosen institutions which fall under the Ministry of Labour. Most of these institutions are well integrated into the national qualifications structures and, at the minimum, are able to support framework implementation at the technical and administrative levels.

Accreditation of prior learning and recognition of non-formal learning

One of the more important aspects of qualification frameworks is that they encourage and facilitate the validation of non-formal and informal learning. Informal learning is especially important because many unskilled and semi-skilled workers have a lot of qualifications that are not formal, but can be recognized and used as part of an adult VET.

In accordance with the principle of lifelong learning, it should be possible for older workers with no formal qualifications to enter the vocational training system and obtain qualifications, thereby improving their employment prospects and expanding the pool of skilled labour available for industry. Older workers often come with substantial practical experience (non-formal learning) from the sector in which they are now seeking a qualification, and in order to avoid repetitive learning and shorten the time spent in training, most EU countries have now implemented opportunities for the accreditation of prior learning (APL) as part of their VET systems. As well as practical experience, APL also takes into account theoretical learning achieved in other contexts, such as other courses or educational programmes (e.g. evening classes).

Report on testing of the recognition standards

Starting from the methodological basis defined by CEPAS, which complies with the international standard ISO 17024 (see WP5 CEPAS), the following professional profiles have been elaborated and the related curriculum and training needs identified. Each country has defined the competences of the following professional profiles. The recognition of the same, follows the rules of each country.

Start up of the recognition standards:

1. Joint curricula standard (agreement among all SKILLMAN Partner)

2. Development of single curriculum based on the industrial partner needs

Curriculum	ITALY	UK	DK
INDUSTRY & PRODUCTION 4.0 MANAGER INDUSTRY & PRODUCTION 4.0 SPECIALIST INDUSTRY & PRODUCTION 4.0 ENERGY MANAGER	CEPAS is a certification body that operates in compliance with ISO17024. The certification scheme was approved for the INDUSTRY & PRODUCTION 4.0 MANAGER. Certification is voluntary		
ROBOTICS AND AUTOMATION		The qualification has been submitted and approved to the UK regulator and is listed on the Register of Regulated Qualifications https://register.ofqual.gov.uk/	
COMPOSITE MATERIALS			The awarding body Industriens Uddannelser is in the process of accrediting the composite units as AMU (The adult vocational training programmes (in Danish "arbejdsmarkedsuddannelser" or "AMU") courses. All joint competence descriptions are developed by social partners and approved by the Ministry of Education. The social partner relevant for this project is Industriens Uddannelser, which has documented with this letter that they expect to accredit the units on composite for Aviation Technicians

3. Mutual recognition among the skillman partners

Report on testing of the recognition standards Italy

Report on testing of the recognition standards Italy

CEPAS SRL

CEPAS Srl, Italian Personnel and Training Courses certification body, certifies personnel in accordance with ISO/IEC 17024 "Conformity assessment -- General requirements for bodies operating certification of persons" and is accredited by ACCREDIA (the national accreditation body) to operate as Personnel Certification Body in conformity with CEI EN ISO/IEC 17024:2012 (certificate nº 031C). www.cepas.it

CEPAS' mission is to guarantee the market with an high quality of both personnel and training in the sectors where the demand is the highest. To this end, the "interested parties" are involved in the definition of requirements and certifications.

As part of the SKILLMAN project, CEPAS has provided Italian partners CNR and FIAT with the reference methodology for the definition of professional profiles according to ISO / IEC 17024 standards.

The design of the certification scheme has been build according to the CEN GUIDE 14 "Common policy guidance for addressing standardization on qualification of professions and personnel":

To develop the certification scheme, according to this ISO methodology, a **job task analysis** was made.

This important step involved the identification of professional competence (Key competence) to be evaluated and they were identified in

- **Tasks**
- **Knowledge and skills related to the tasks (general and specific)**
- **Personal attributes related to the tasks**
- **Ethical principles**

After the job task analysis, CEPAS established:

- the **evaluation process** of the competence of INDUSTRY & PRODUCTION 4.0 MANAGER that contains description of:
  1. Evaluation methods (written and oral test, practical test etc..)
  2. Conduct of evaluation
  3. Re-evaluation *and*

- **Candidate eligibility requirements** for evaluation of copmpetence

1. Specific requirements

In order to verify whether these requirements had already been defined, CEPAS on March 20, 2017 carried out a survey with the members of the IPC www.ipcaweb.org to verify if in countries they represented there existed a certification scheme for the professionalism defined by the SKILLMAN project.

This survey showed that, to date, no certification schemes had been presented in any of the IPC countries for the professions identified by the project (see result survey below).

SKILLMAN - SECTOR SKILLS ALLIANCE FOR ADVANCED MANUFACTURING IN THE TRANSPORT SECTOR

CEPAS international Survey results

On March 20, 2017 CEPAS sent to all IPC members (International Personnel Certification Association - http://www.ipcaweb.org) the questionnaire for the survey on the international system of certification /qualification for maintainers' in the 3 sectors of activity of the project's partner (robotics, wireless and Internet, production engineers / maintenance of composites) (see attached document).

FULL MEMBERS (and countries)

1. ABENDI - Associaçao Brasileira de Ensaios Nao Destrutivos e Inspeçao - **Brazil**
2. China Certification & Accreditation Association - **China**
3. CEPAS S.R.L. - **Italy**
4. DGQ - Deutsche Gesellschaft fur Qualitat e.V. - **Germany**
5. Exemplar Global - **United States**
6. GPC - Global Personnel Certification Body - **Korea, South**
7. Norsk Sertifisering AS - **Norway**
8. PECB - Professional Evaluation and Certification Board - **Canada**
9. Quality Austria - Trainings, Zertifizierungs und Begutachtungs - **Austria**
10. STAREGISTER - **United States**
11. Thai Industrial Standards Institute - **Thailand**
12. TRA Certification Int'l - **United States**
13. EOQ - European Organisation for Quality - **Belgium**

Out of a total of 13 questionnaires submitted, they were returned 6.

From the analysis of these, it has emerged that none of the above mentioned Certification Bodies certifies professional figures related to the field of application / professional profile of skillman project..

CEPAS, thanks to this result, continued to the analysis of the requirements in terms of knowledge, skills and competences for these professional profiles, in particular in terms of human capital modality in EU and EXTRA EU.

With the Italian partners CEPAS took part in the Italian Piloting (Sesto Fiorentino (FIorence) on 3-4-5 April 2017.

In this context CEPAS provided methodological support and developed the themes of Risk management and Soft skills.

CEPAS CONTRIBUTION

CEPAS is now collaborating with CNR and FCA for the organization of piloting WP5 (3 and 4 of April) based in CNR in Florence.

CEPAS has identified three topics will develop its own experts (related to industry & Production Manager 4.0 curriculum):

1. Risk Management
2. Relationship Management
3. Interpersonal Skills

In particular the focus will be on the following competences

a) to implement the management of risk across information systems through the application of the enterprise defined risk management policy and procedures
b) to assess, risk to the organization's business, including web, cloud and the mobile resources.
c) to document potential risk and containment plans.

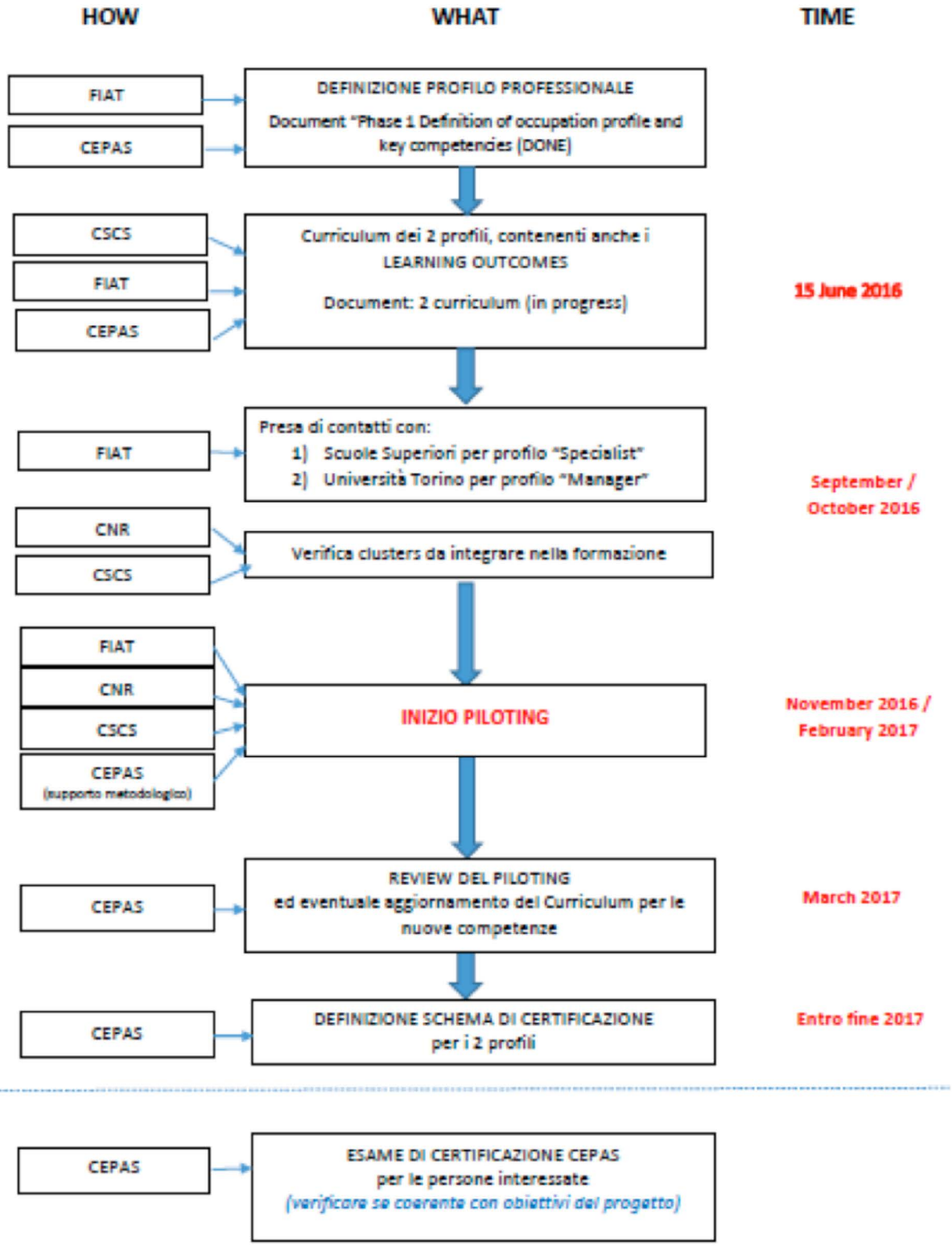
And the knowledge which will be transfered are:

1. apply risk analysis taking into account corporate values and interests
2. the return on investment compared to risk avoidance
3. good practices (methodologies) and standards in risk analysis.

FLOW CHART

Italy Group
(CNR, CSCS, FIAT, CEPAS)

Period: June 2016 – December 2017



Following the piloting review, CEPAS presented on 25.10.2017 to its Committee for Safeguarding the Impartiality, the certification scheme for the professional figure of "INDUSTRY & PRODUCTION 4.0 MANAGE" (see document "SH258" attached).

The CEPAS Committee is made up by Interested Parties (see "Composition of the committee") and their main tasks and responsibilities are:

- acknowledges the needs of interested parties towards voluntary certification;
- provides suggestions on aspects that may influence the trust of the market towards certification;
- oversees the application of the CEPAS Regulations
- monitor the application of certification schemes and criteria for identifying examiners
- monitor the activities of the examiners;
- re-examines the certification schemes in a continuous and systematic way;

Composition of the committee

Subdivision of the interested parties present in the CEPAS Scheme Committee of Impartiality:

1) Producers of goods and service: CNA National confederation of crafts and small and medium Enterprises, CONFAPI Italian Confederation of Small and Medium Private Industry;
2) Clients, users of services: ADICONSUM Association of consumers, ASSOVIB Association of Real Estate Valuations for Banks;
3) Public organizations research and standardization bodies: CUNA Technical Commission for Unification in Automotive, INAIL National Institute for Insurance against Accidents at Work, CNR National Research Council, INVG National Institute of Geophysics and Volcanology;
4) Category representatives of certified persons: ANGQ National Association for Quality Assurance, AIPSA Italian Association of Business Security manager, ASSORECA- Association of Environmental Auditing and Consulting Companies, ACI Automobile Club of Italy

After their approval, the CEPAS certification scheme "Industry and Production 4.0 manager" has been presented at the Final Conference held in San Sebastian - Spain - 7 and 8 November 2017.

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SCHEME FOR THE CERTIFICATION OF INDUSTRY & PRODUCTION 4.0 MANAGER

0	25.10.2017	1ª Emissione	*Presidente CSI/Schema*	*Amministratore Delegato*
Rev.	**Data**	**Motivazioni**	**Convalida**	**Approvazione**

CEPAS srl	SCHEME FOR THE CERTIFICATION OF INDUSTRY & PRODUCTION 4.0 MANAGER	sigla: SH258 Rev.: 0 Pag. 2 di 5

MINIMUM REQUIREMENTS

PROFILE	Industry & Production 4.0 Manager will be the responsible for the new 4.0 line management having some resources as specialist to assist him in the direct line managing execution. In particular, will be responsible of: • Product planning according to the business line targets and to the daily production planned • Manage critical situation with respect to the production planned in order to • Evaluate and manage the process change request in according to the production planned • Evaluate the maintenance • Scout potential process line improvement to be implemented on the line to keep it on state of the art • Produces documents describing products, services, components or applications to establish compliance with relevant documentation requirements.
school background	• Degree of 1° level or 2° level. N.B. All the titles of study are approved recognized equivalent to those Italian, to the senses of the in force dispositions of law.
SPECIFIC TRAINING	To have attended a course on Industry & Production 4.0 Management of 320 hours. at least
KNOWLEDGE	**1. Planning ICT solutions** 1.1 Product and project planning 1.2 - Technology Trend Monitoring **2. Building ICT solutions** 2.1 - Solution Deployment 2.2 - Documentation Production **3. Running ICT solutions** 3.1 - Problem Management **4. Managing ICT solutions** 4.1 Project and Portfolio Management 4.2 Risk Management 4.3 Relationship Management 4.4 Process Improvement 4.5 Business Change Management **5. Robot programming** 5.1 - Programs used to control an industrial robot 5.2 - Create new software to safely operate an industrial robot. **6. Automated Control Systems** 6.1 - Elements of control theory 6.2 - Application of control theory to industrial automation **7. Machine Software Design principles** 7.1 - Software design methodologies 7.2 - modification of programs and the synthesis of new programs **8. ICT in automated production lines** 8.1 Analysing data 8.2 Improving the production 8.3 Implementing E-security 8.4 Planning new production lines **9. Automation validation** 9.1 - Factors that influence the decision to automate a process. **10. Collaborative robotics** 10.1 Programming and computing language 10.2 HMI – Human machine interaction 10.3 Mechatronics

CEPAS srl	SCHEME FOR THE CERTIFICATION OF INDUSTRY & PRODUCTION 4.0 MANAGER	sigla: SH258 Rev.: 0 Pag. 3 di 5

SKILLS	The Candidate shall demonstrate ability in the use of the following methodologies: 1. Identify all potential targets for the product or service 2. Define the communication plan; identify key users and create related documentation 3. Manage the change request process 4. Monitor sources of information and continuously follow the most promising 5. Identify business advantages and improvements of adopting emerging technologies 6. Organize population of data bases and manage data migration 7. Organise and control content management workflow 8. Keep publications aligned to the solution during the entire lifecycle 9. Allocate appropriate resources to maintenance activities, balancing cost and risk 10. identify project risks and define action plans to mitigate 11. define a project plan by breaking it down into individual project tasks 12. delegate tasks and manage team member contributions appropriately 13. optimise project portfolio timelines and delivery objectives by achieving consensus on stakeholder priorities 14. Apply mitigation and contingency actions 15. Deploy empathy to customer needs 16. Monitor ongoing commitments to ensure fulfilment 17. Compose, document and catalogue essential processes and procedures 18. Propose process changes to facilitate and rationalise improvements 19. Implement process changes 20. Select appropriate ICT solutions based upon benefit, risks and overall impact 21. Demonstrate adherence to H&S requirements for industrial robots 22. Competently operate an industrial robot 23. Be able to modify an existing program and test against a defined specification 24. To be able to archive/restore programs 25. Demonstrate adherence to H&S requirements for industrial robots 26. Competently operate an industrial robot 27. Calibrate tool, load and base systems 28. Be able to modify an existing program and test against a defined specification 29. To be able to create new programs and test against a defined specification 30. To be able to archive/restore programs 31. Currently a theory-only module 32. Demonstrate computer skills 33. Demonstrate data analysis techniques 34. To demonstrate good Maths, English , ICT skills 35. To demonstrate ability to devise a program using a logical structure 36. To demonstrate data analysis and collection techniques 37. Demonstrate the ability to understand a computer program 38. Demonstrate the ability to change a computer program 39. Demonstrate fault-finding techniques 40. Computer skills, iCT 41. Ability to monitor and collect research data 42. Ability to assess accuracy, validity, and integrity of data 43. Ability to analyze statistics and other data 44. Ability to interpret and evaluate results 45. Ability to create reports and/or presentations. 46. Process engineering 47. Software engineering 48. Monitoring and control of the information flow and data from the production line, against pre-defined parameters and indicators 49. Using statistical tools for quality control and cause-effect diagrams 50. Apply measures to ensure integrity, availability and confidentiality of ICT systems, networks and data 51. Apply security policy of the organization, interacting with other departments and e-security

CEPAS srl	SCHEME FOR THE CERTIFICATION OF INDUSTRY & PRODUCTION 4.0 MANAGER	sigla: SH258 Rev.: 0 Pag. 4 di 5

	experts 52. Implement, with the involvement of e-security specialists, business continuity, disaster recovery and crisis management 53. Identify vulnerabilities of ICT systems 54. Operate simulation systems for the conception of new production lines 55. Provide data and technical specifications for new production lines 56. Monitor and test the appropriate configuration of new production lines 57. To be able to produce a technical and financial justification for automating a process 58. Ability to modify job routines via programming language of the robot 59. Using cameras and equipment for monitoring safety and efficacy of HMI working environments 60. Configurating logic control options with PLC, sequences and industrial processes 61. Commissioning control systems
SPECIFIC WORK EXPERIENCE	Work experience of at least 3 years as Industry & Production Manager.
ADMISSION REQUIREMENT FOR CERTIFICATION EXAMINATION	Are admitted to take the certification examination all those who, having placed request through module MD08 (demand for certification) and having documented the possession of minimum requirements demanded, have been declared suitable (PGXX in force procedure).
RELEASE OF CERTIFICATION	For Candidate who has passed positively the examination and in possession of all requirements required, CEPAS releases the certification. The certified person is therefore enrolled in Registry of CEPAS and receives the related certificate.
DEONTOLOGICAL CODE	The Industry & Production 4.0 Manager certified and/or in the process of certification engage themselves, to respect the following ethical and deontological aspects: - to render you notice to own Customers (inner and external) the contents of the this deontological code; - to respect the this Regulations and all applicable procedures CEPAS; - not to complete harmful actions, of any nature, in the comparisons of the image and/or interests of the Persons, Companies, Agencies and Customers, also upgrades them, interested from the professional performance, let alone in the comparisons of the CEPAS; - to upply flood collaboration to any formal inquiry on infractions of the this Code started from the Organisms of accreditation and certification or in order to resolve specific cases of claims; - to satisfy all the engagements taken with assignment letter; - to hold a recording of all the claims introduced against of they for activities carried out in the within of the validity of the Certification/Qualification CEPAS and to allow to CEPAS the access to said recordings; within 10 days from the reception of the claim, to send to written communication and copy of the same claim to CEPAS; - to upply to the Customers a module to compile in case of eventual relative claims to the supplied performances, to forward or to the certified person/Organization interested from the claim, or to the CEPAS; - not to carry out advertising activities (publicity, informative material, and other) that they can induce the Customers to not corrected interpretation of the meaning of the certifications or qualifications CEPAS and, moreover, to induce expectations, in the customer, not answering to the real situations in existence; - not to take to part to relative fraudulent praxes to the removal and/or spreading of examination material; - not to carry out direct or indirect competitive activity regarding CEPAS; - to behave itself regarding Persons, Companies, Agencies and Customers (inner and external), in loyal and scrupulously independent way from conditionings of any nature that can influence own acts and that one of the personnel of which he is himself, eventually, responsible; - not to accept parcels, gifts or favours of any nature from Persons, Companies, Agencies and Customers (inner and external) or of they representatives; to control moreover that also the

CEPAS srl	SCHEME FOR THE CERTIFICATION OF INDUSTRY & PRODUCTION 4.0 MANAGER	sigla: SH258 Rev.: 0 Pag. 5 di 5
	personnel, of which is eventually responsible, does not complete actions of this type; - to make this to own Customer any conflict of interest that can exist in order to relative the professional performance to the certification, before assuming the professional assignment; -to maintain the absolute confidentiality towards thirds party (secret professional) on the entraining of any nature obtained during the professional performance and blank facts however law requirement; - to respect all the enforced laws, with detail reference to the performance of services.	
VALIDITY AND MAINTENANCE OF THE CERTIFICATION (SURVEILLANCE)	The validity of the certification during the contractual period of 5 years (from the date of the release of the certificate) is subject to the positive result of the annual surveillance activities, carried out by CEPAS. For this purpose the certified person has to give a yearly declaration, according to Italian DPR 445/2000, about the activity carried out in the last year of reference, relating to these aspects: - declaration of specific work activity within one year with reference to the field provided under the certificate; - participation in training programse of at least 8 hours every year - absence of claims by interested parties The maintenance of the certification is however subject to the payment of the stipulated annual fees.	
RENEWAL OF THE CERTIFICATION	The certificate is renewable as a result of specific request and under re-valuation of competence The renewal requirements are : - the positive outcome of a oral examination; - the participation of at least 40 hours of specific training in the five years for the qualification of Industry & Production Manager; - the declaration of professional continuity. It is possible to proceed with renewal only in the event in which the certificate is in validity period. The process of renewal must be done within the expiration period of the certificate in course.	

The methodology represented by CEPAS is identified as "voluntary system " of recognized international standards for competence assessment (ISO / IEC 17024)

In fact in Italy there is a compulsory system of qualifications and professional orders to which a new figure like Industry 4.0 Manager can not immediately be recognized.

In the following pages we illustrate the Italian scenario on profesisoni and the main legislative references

THE ITALIAN SYSTEM OF COMPETENCE CERTIFICATION

ITALIAN LAW on professional qualification.

- **Agreement of 19 Aprile 2012** for definition of a national system of certification of competence
- REFORM OF THE LABOUR MARKET (art. 4, commi 51-68 Law **92 del 28 giugno 2012**)
- Agreement signed in December 2012 at the Unified Conference on Lifelong Learning
- LAW (Legislative Decree)) No. 13 of 16 January 2013, containing definitions of the general rules and the LEP for the identification and validation of the learning and minimum standards of service of the national system of certification of skills, pursuant to art. 4, paragraphs 58 and 68 of Law 92/2012

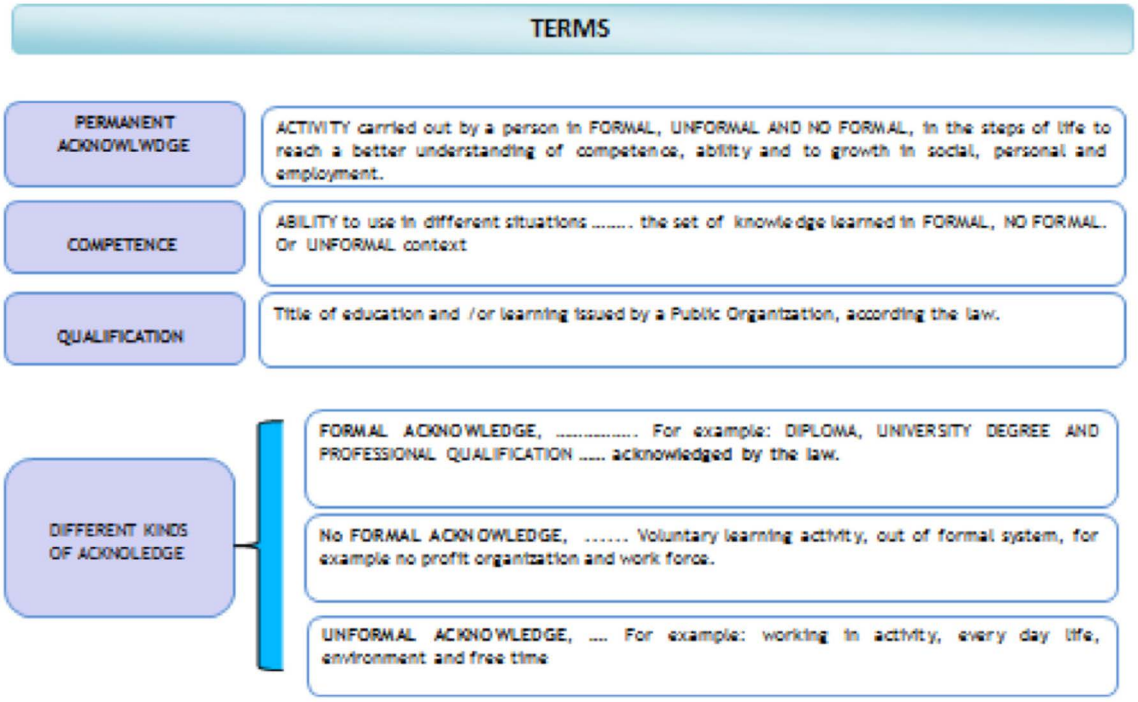
The Law. 13/2013 defines the General Rules and the essential levels for the validation of NO FORMAL and INFORMAL understanding and the minimun standards of service of National System of certification of Competence, refers to places of competence of State, of Regions and indipendent Provinces of Trento and Bolzano, also in function of acknowledging in terms of learning credits according EQF.

The Italian Law (D.lgs) 13/2013 established the national system of competence certification with the scope to integrate the services of Education, Professional learning and Job

The law has 2 lines of interests :

- Definition of minimun standards of the certification service
- Implementation of National Repertory of titles and professional qualifications

Refering to ITALIAN SYSTEM OF COMPETENCE CERTIFICATION



Refering to ITALIAN SYSTEM OF COMPETENCE CERTIFICATION - STAKEHOLDERS

REGIONS AND INDEPENDENT PROVINCES **

KIND OF ORGANIZATIONS	PLACES OF COMPETENCE Individuazione and validation of certification of competence referred to:	TASKS OF EACH PUBLIC TITOL HOLDERS
PUBLIC TITOL HOLDERS		
UNIVERSITY AND RESEARCH MINISTRY	Diploma and University Degrees	· HOLDER OF REGULATION OF SERVICES OF: a. IDENTIFICATION AND VALIDATION OF COMPETENCE b. CERTIFICATION OF COMPETENCE · Ensure : + STANDARD OF PROCESS + MINIMUN STANDARDS OF CERTIFICATION + MINIMUN STANDARDS OF SYSTEM · AUTHORIZE OR ACCREDIT THE TITOL HOLDERS (ORGANIZATIONS) TO PROVIDE SERVICE
REGIONS AND INDEPENDENT PROVINCES **	Qualifications considered in the environment of their competence	
LABOUR AND SOCIAL POLICIES ministry (WEIFARE)	Qualifications of professional not organizes in ORDINI O COLLEGI (ad eccezione di quelle afferenti alle autorità competenti ex Dlgs. 206/2007)	
ORGANIZATION ACCORDING TO ART. 5 DLGS. 206/2007	Professional work regulated by the law	

MONITORING AND EVALUATION

Refering to ITALIAN SYSTEM OF COMPETENCE CERTIFICATION STAKEHOLDERS

ORGANIZATION	WHO THEY ARE	TASKS
Organization authorized by public title holders	Public or private organization authorized or accredited by a PUBLIC title Holder	- PROVIDE SERVICES OF IDENTIFICATION, VALIDATION AND CERTIFICATION OF COMPETENCE - IT CAN CERTIFICATE THE COMPETENCE RELATED TO THOSE QUALIFICATIONS INCLUDED THE NATIONAL REPERTORY (REGIONAL OR NATIONAL), ACCORDING TO THE CRITERIA OF EUROPEAN QUALIFICATION FRAMEWORK (EQF)
NATIONAL ACCREDITATION BODY	ACCREDIA (national accreditation body for accreditation of Certification Bodies according to International voluntary standards series ISO 17000 and harmonized european guide lines EN 45000)	

The Italian Conference State - Regions on the 20 of december 2014 - established the Agreement for the referentiation of national system of qualifications to the (EQF) - Raccomandation of europen Parliament and Counsil (23 april 2008)

WWW.ACCREDIA.IT ..... Is an attestation or certification by the national accreditation body certifying that a conformity assessment body satisfies the criteria established by harmonised standards and, where appropriate, any other supplementary requirements including those defined in the relevant sector programmes, for conducting specific conformity assessment activities".
REG. (EC) N°765/2008 .....

THE NATIONAL REPERTORY OF TITLES OF EDUCATION AND PROFESSIONAL QUALIFICATION ACCORDING BY LAW (L. 92/2012)

The national repertory represents the framework for the certification of competence, through standarditation of titles of education (diploma, university degree and qualifications), also through a shared system of recognition of credits according to eqf.

The Ministry of Labour and Social Policies (Welfare) and the Ministry of Education, University and Research, according to criteria defined by the guidelines set by the National Technical Committee, make it accessible to the public.

Report on testing of the recognition standards Denmark

Report on testing of the recognition standards Denmark

TEC Accreditation

Regarding Joint European Curriculum on Composite

Since the Danish education for Aviation Technician is currently in the process of being new developed and changed, it is pre-mature to implement the four units in the present educational training programme.

The European Aviation Safety Agency is an umbrella for all European Aviation related educational programmes, and they all have to follow the framework of this organisation in order to recognized https://www.easa.europa.eu/.

Therefore, the Joint European Curriculum on composite must be developed as:

The adult vocational training programmes (in Danish "arbejdsmarkedsuddannelser" or "AMU") and they have to serve a triple purpose:

- To contribute to maintaining and improving the vocational skills and competences of the participants in accordance with the needs on the labour market and to furthering competence development of the participants
- To contribute to solving labour market restructuring and adaptation problems in accordance with the needs on the labour market in a short and a long term perspective
- To give adults the possibility of upgrading of competences for the labour market as well as personal competences through possibilities to obtain formal competence in vocational education and training.

The AMU programmes primarily provide skills and competences directed towards specific sectors and job functions like the units in the composite curriculum. It is a flexible system, which aims at meeting current changes and needs for new skills and competences on the labour market. Employees may acquire new and updated skills and competences to keep their job or acquiring a better job and higher salary at the workplace.

Employees may also improve their possibility of getting another job prior to becoming unemployed. The adult vocational training programmes ensure that employers have staff with updated and relevant skills and competences.

Structure and duration

To give an overview for providers, institutions, guidance staff etc. of all adult vocational training programmes and affiliated single subjects the programmes have been organized in approximately 150 joint competence descriptions (FKB) equivalent to 150 job areas. A competence description consists of:

- A description of the typical workplaces
- Relevant competences within the job area
- A list of adult training programmes or single subject courses leading to those competences.

A joint competence description groups the programmes relevant for up-skilling and qualifying in one specific job area. It is possible to choose one or a number of programmes fitting the individual needs for further competences. If relevant the same programme can be included on the list in several joint competence descriptions. All joint competence descriptions are developed by social partners and approved by the Ministry of Education.

The social partner relevant for this project is Industriens Uddannelser, which has documented with this letter that they expect to accredit the units on composite for Aviation Technicians.

Content – the training programme
The specific content of the programmes reflect development and demands from sectors with many low skilled and skilled employees. About 200 new programmes are developed every year. All programmes are developed by social partners and approved by the Ministry of Education.

The training programmes listed in a competence description are mainly vocational programmes, but also programmes in general subjects may be included, i.e. in vocational Danish, vocational mathematics or vocational foreign languages. The programmes may be specifically developed adult vocational training programmes or relevant single subjects selected from mainstream vocational education training programmes.

In general there are three main types of programmes directed at:

- Specific job/sector related competences, e.g. crafts, technical insight and knowledge of materials
- General competences, e.g. ICT, job relevant languages
- Personal competences, e.g. social communication, organization and management.

Controlling and financing
The social partners play a major role in the management, priority setting, development, organisation and quality assurance of adult vocational training programmes, and at local level through representatives in school boards and education committees.

At the national level there are set up an advisory National Council for Adult Education and Continuing Training (VEU-rådet) for the Minister of Education and 11 continuing training and education committees, each responsible for a specific sector of the labour market. At local level providers of adult vocational training programmes are in close dialogue with local trade committees and business life in the implementation of new programmes.

Each provider of adult vocational training programmes sets up one or several local education boards for adult vocational training programmes directed at specific local job areas, e. g. job areas corresponding to the joint competence description/-s that the school has permission to provide.

The adult vocational training programmes are publicly financed. The providers operate

within a decentralized framework based on taximeter funding (taximeter grant per full-time equivalent participant, a fixed rate per programme) provided by the state (the Ministry of Education). Once a year the school has to present and negotiate activity and budget targets with the Ministry.

There are user fees on technical, commercial, ICT, language and social communication, management etc. adult vocational training programmes. On average, the user fee for adult vocational training programmes is about 15 per cent of the total expenditure. The expenditure for user fee is normally paid by the employers. Courses in the social and health service, individual competence assessment and participation by the unemployed who attend individually selected programmes for 6 weeks are free of user fees.

Low skilled and skilled participants are entitled to a fixed allowance financed by the state, the State Grant System for Adult Training (VEU-godtgørelse) corresponding the level of maximum unemployment benefit rate. Companies paying regular wages to employees participating in adult vocational training programmes are entitled to receiving the grant instead. Expenditures for the allowances are covered by the employer's en bloc (AER Arbejdsgivernes Elevrefusion).

There are about 100 schools approved by the Ministry of Education to providing adult vocational training programmes all over the country - the principle being to offer training programmes in all regions. Mainly public, but also a number of private schools provide adult vocational training programmes. The providers are adult vocational training centres, vocational technical colleges, commercial colleges, agricultural colleges, social and health service schools etc. Most of the schools provide both education programmes for adults and for young people. All providers of adult vocational training are associated with one of the 13 centres for adult education and continuing training (VEU-centres), each coordinating guidance activities, contact to enterprises and employees etc. for a specific geographical area.

Public employment service or other relevant authorities may buy courses from the providers, e.g. relevant courses for people not part of the labour force. Enterprises may as a supplement to adult vocational training programmes buy specifically developed programmes from providers for their own use, i.e. programmes not adopted by the Ministry of Education.

The document above shows that the awarding body Industriens Uddannelser is in the process of accrediting the composite units as AMU courses.

METALINDUSTRIENS UDDANNELSESUDVALG
mi@iu.dk

INDUSTRIENS UDDANNELSER

1. September 2017

Skillman – letter of intent

Metalindustriens Uddannelsesudvalg confirms the interest in implementing the newly developed composite courses designed under the Skillman project in to the Aircraft Mechanic Education in the Danish VET system.

Composite courses:

- Basic Composite Repair" (EQF 3)
- Advanced Composite Repair, Technician (EQF 5)

Vesterbrogade 6 D, 4.
DK-1780 København V

Tlf. +45 3377 9111
info@iu.dk

iu.dk

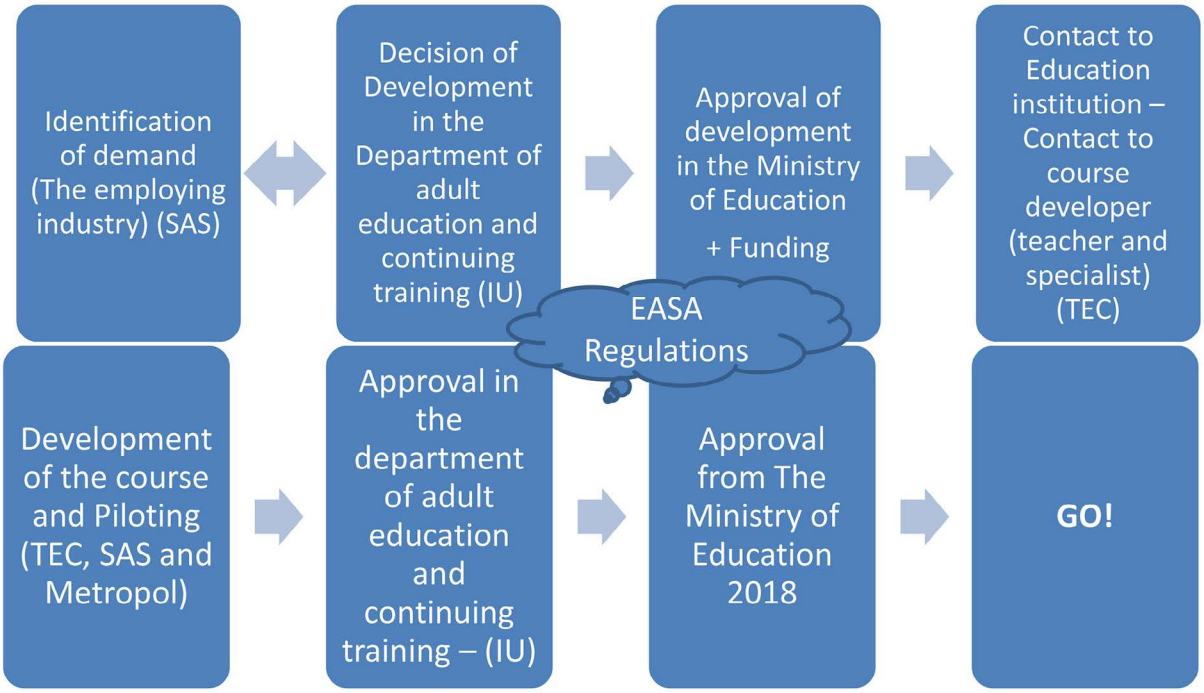
Please do not hesitate to contact me if you have any questions.

Best regards

Anders Hiort Hansen
Metalindustriens Uddannelsesudvalg

METALINDUSTRIENS
UDDANNELSESUDVALG
VESTERBROGADE 6 D, 4
1780 KØBENHAVN V.

Development Process of
Advanced Composite repair training Course -
Adult Vocational Training Programs course in Denmark



Accreditation process of the SKILLMAN Curriculum on Composite

Application, at the moment processing in the ministry of Education in Denmark:

Nummer: XX
Title: Fly-Aluminium Struktur reparation I, PART 66, Level II
Kort titel:
Varighed: 10,0 dage.
Godkendelsesperiode:
Status (EUU):
Status (UVM):

Handlingsorienteret målformulering for arbejdsmarkedsuddannelserne

Deltageren kan efter gennemført uddannelse udføre reparationsarbejde på fly og fly-struktur-dele. Deltageren kan evaluere og udføre basis-arbejdsopgaver vedrørende flytekniske reparationer. Deltageren har viden om fly-strukturens enkelte dele og deres sammenhæng. Deltageren er introduceret i brugen af relevante manuals i relation til nødvendige vedligeholds-, forholdsregler og værkstedsetik ved reparationsopgaver på struktur-dele og kan endvidere lokalisere struktur skader og bedømme reparations opgavens omfang.

Bestemmelser om bedømmelse som forudsætning for opnåelse af bevis

Der udstedes uddannelsesbevis til de deltagere, som efter underviserens vurdering har gennemført uddannelsen med tilfredsstillende resultat og erhvervet de kvalifikationer, der er indeholdt i målformuleringen.

Spørgsmål www.viskvalitet.dk

Til deltageren
Hvor tilfreds er du med uddannelsens faglige indhold vedrørende:
- Flyets struktur-opbygning.
- De enkelte deles reparations-muligheder.
- Flyets reparations manualer.
- Dokumentationsprocedurerne for de enkelte reparations-opgaver.

Hvor stor betydning har det for dig at lære noget om:
- Flyets struktur-opbygning.
- De enkelte deles reparations muligheder.
- Flyets reparations manualer.
- Dokumentationsprocedurerne for de enkelte reparations opgaver.

Til virksomheden
Hvor tilfreds er virksomheden med uddannelsens faglige indhold vedrørende:
- Flyets struktur-opbygning.
- De enkelte deles reparations-muligheder.
- Flyets reparations manualer.
- Dokumentationsprocedurerne for de enkelte reparations-opgaver.

Hvor stor betydning har det, at medarbejderen på uddannelsen har lært noget om:
- Flyets struktur-opbygning.
- De enkelte deles reparations-muligheder.
- Flyets reparations manualer.
- Dokumentationsprocedurerne for de enkelte reparations-opgaver.

Eventuelt yderligere bestemmelser for certifikatuddannelser

Arbejdsmarkedsuddannelser med relevans for uddannelsesmål:

Målet indgår på nuværende tidspunkt i følgende fælles kompetencebeskrivelser:

Tekster til Uddannelses Guiden

WEB-søgetekst:

Uddannelsen giver flymekanikere kvalifikationer i henhold til EASA Part-66 standard beskrevet i SRM (struktur reparation manual) som er nødvendige for, at deltageren kan udføre struktur-reparationer på fly. Deltageren har viden om Strukturens enkelte dele og deres sammenhæng. Deltageren er introduceret i brugen af relevante manuals i relation til nødvendige vedligeholds-, forholdsregler og værkstedsetik ved reparationsopgaver på strukturdele og kan endvidere lokalisere struktur skader og bedømme reparations opgavens omfang.

Målgruppe:
Uddannelsen henvender sig til personer der arbejder med reparation og vedligeholdelse af fly.

Mål:
Deltageren kan efter gennemført uddannelse udføre reparationsarbejde på fly og fly-struktur-dele. Deltageren kan evaluere og udføre basisarbejdsopgaver vedrørende flytekniske reparationer. Deltageren har viden om aluminiums-Strukturens enkelte dele og deres sammenhæng. Deltageren er introduceret i brugen af relevante manuals i relation til nødvendige vedligeholds-, forholdsregler og værkstedsetik ved reparationsopgaver på strukturdele og kan endvidere lokalisere struktur skader og bedømme reparations opgavens omfang.

Varighed:
10 dage

Eksamen:
Uddannelsesbevis udstedes af uddannelsesinstitutionen til de deltagere, som efter underviserens vurdering har gennemført uddannelsen med tilfredsstillende resultat.

Den danske kvalifikationsramme for livslang læring

Niveau i den danske kvalifikationsramme for livslang læring: 5

Indhold:
Uddannelsen giver flymekanikere kvalifikationer i henhold til EASA Part-66 standard som er nødvendige for, at deltageren kan udføre Struktur-reparationer på fly. Deltageren har viden om Aluminium struktur enkelte dele og deres sammenhæng. Deltageren er introduceret i brugen af relevante manuals i relation til nødvendige vedligeholds-, forholdsregler og værkstedsetik ved reparationsopgaver på strukturdele og kan endvidere lokalisere struktur og Corrosion skader og bedømme reparations opgavens omfang.

Jobmuligheder og videre uddannelse:
Uddannelsesbeviset giver mulighed for at varetage jobfunktioner i virksomheder/organisationer, som beskæftiger faglærte og/eller ufaglærte medarbejdere inden for det jobområde, arbejdsmarkedsuddannelsen retter sig imod, og som er beskrevet i uddannelsens centralt godkendte handlingsorienterede mål. Personer, som har dette uddannelsesbevis, har på en række områder mulighed for at få beviset anerkendt ved optagelse på en erhvervsuddannelse (merit). I bekendtgørelsen for erhvervsuddannelserne findes der nærmere bestemmelser om merit.

Bevis opnås således:
Beviset tildeles ved bedømmelse af, om deltageren har nået arbejdsmarkedsuddannelsens centralt godkendte handlingsorienterede mål. For arbejdsmarkedsuddannelser, som afsluttes med en prøve, kan beviset også tildeles personer, som ikke har deltaget i undervisningen, men som aflægger prøven. Endelig kan beviset tildeles på baggrund af en individuel kompetencevurdering (IKV i AMU).

Uddannelsesinstitutioner som kan tildele bevis:
Beviset tildeles af offentlige og private uddannelsesinstitutioner, som er godkendt af Undervisningsministeriet til at udbyde arbejdsmarkedsuddannelsen.

Bevistekster

Bevisformat: A6
Gældende fra: XX

Bevistekst:
Deltageren kan efter gennemført uddannelse udføre reparationsarbejde på fly og fly-strukturdele. Deltageren kan evaluere og udføre basisarbejdsopgaver vedrørende flytekniske reparationer. Deltageren har viden om metal-struktur enkelte dele og deres sammenhæng. Deltageren er introduceret i brugen af relevante manuals i relation til nødvendige vedligeholds-, forholdsregler og værkstedsetik ved reparationsopgaver på strukturdele og kan endvidere lokalisere struktur skader og bedømme reparations opgavens omfang.

Report on testing of the recognition standards United Kingdom

Report on testing of the recognition standards United Kingdom

EAL

1.0 Terms of Reference

A report submitted in fulfilment of the requirements for WP 4.06.

2.0 Introduction

This report aims to provide a summary overview of the development of the Joint European Curriculum on Robotics: Level 3 Certificate in Robotics and Automation, its accreditation process and how it can be utilised by the Transport sector.

The qualification's content derives from 'SKILLMAN' (Sector Skills Alliance for Advanced Manufacturing in the Transport Sector) units. This qualification has been developed by EAL in partnership with European Partners in order to build a knowledgebase to address sector trends and innovations to provide the sectors employers with the skills they require through educational programmes and qualifications.

2.1 About EAL

Since 1964 EAL (Excellence Achievement and Learning) has been the specialist awarding organisation for the engineering industry and related sectors. They have a commitment to partnering with industry to understand the skills employers need. This results in qualifications that carry weight and respect with employers which deliver real career benefits for learners.

3.0 Qualification Summary and Development

3.1 Qualification Summary

The qualification covers the knowledge, understanding and practical skills involved with robotic and automation engineering within a manufacturing environment. The qualification development has been co-funded by the Erasmus+ programme of the European Union by the European Commission's Erasmus+ programme. SKILLMAN is a Sector Skills Alliance for Advanced Manufacturing for the Transport Sector, promoted in partnership with a team of industrial players, in cooperation with research centres, education and awarding bodies. The Sector Alliance aims at detecting the skills needs and jointly designing educational programmes and qualifications in line with current and emerging technologies and providing solutions to industry led demand for skills and competencies.

For the development of this qualification the industrial players and educational bodies included:

- Jaguar Land Rover (*who supported the qualification to enable it to become regulated in England*)
- Birmingham Metropolitan College (BMet)
- EEF (the manufacturers' organisation)

- EAL
- A range of SME's from within the automotive sector

The qualification is aimed at learners who wish to understand robotic and automation engineering; and technicians and engineers who already work within the manufacturing industry who wish to enhance or re-confirm their skills and understanding of robotic and automation engineering.

The qualification has been submitted and approved to the UK regulator and is listed on the Register of Regulated Qualifications https://register.ofqual.gov.uk/ .

This site shows the qualifications and awarding organisations regulated by Ofqual (UK regulators). In the UK the qualification is registered by EAL as a Level 3 Certificate. In Europe it is recognised as Level 4 qualification on the European Qualification Framework.

The qualification can enable progression to further study, such as technical qualifications at level 4. It will also enhance the career prospects of learners working within the industry.

The qualification is funded for the age group: 16-19 in England via the Education Funding Agency (EFA). Funding for this programme will be reviewed on 30/06/20.

The qualification has 186 Guided Learning Hours (GLH) and a Total Qualification Time (TQT) of 205 hours - which is the notional time required by the learner to complete the qualification. It will be obtained by the learner once they have completed the 11 mandatory units.

Unit ROB3-10 is an additional unit and can be chosen to suit local needs however is not required for the qualification to be awarded.

The following are mandatory units ROB3-01 to ROB3-09

Unit	Unit title	GLH	Ofqual Code
ROB3-01	Programmable Logic Controllers	22	H/616/2149
ROB3-02A	Mechanical Maintenance of Automation	20	Y/616/2150
ROB3-02B	Electrical Maintenance of Automation	25	D/616/2151
ROB3-02C	Maintenance Support Activities for Automation	20	H/616/2152
ROB3-03	Fault Finding and Diagnosis for Automation and Robotics	7	K/616/2153
ROB3-04	Robot Processes and Functions	7	M/616/2154
ROB3-05	Automated Control Systems	15	T/616/2155
ROB3-06	Machine Software Design Principles	20	A/616/2156
ROB3-07	Robot Programming	15	F/616/2157
ROB3-08	Introduction to Simulation Engineering	20	J/616/2158
ROB3-09	Process Optimisation	15	L/616/2159

Additional unit which can be chosen to suit local needs however is not required for the qualification to be awarded.

Unit	Unit title	GLH	Ofqual Code
ROB3-10	Innovation in Automation	7	F/616/2160

The qualification comprises of a series of units which cover the knowledge and skills of robotic and automation engineering. The qualification is gained when the assessments have been fully completed. These currently consist of centre set and centre marked assignments. Should training providers and colleges wish to seek accreditation for delovering this qualification and provide a regulated certificate to learners who undergo this qualification, they must provide evidence of their centre marked assessment strategies which will be mapped against an EAL assessment criterion and approved. The training provider/ college will then be able to apply for the learner's regulated certificate. Training providers/ colleges wishing to deliver this as an accredited qualification will need to comply with EAL's requirements for the qualification and centre recognition criteria upon accreditation and launch.They must also put in place the appropriate physical and human resources and administration systems to effectively run the qualification. EAL has created a qualification manual which sets out the requirements, and which supplements its policies and procedures. Further details can be found here http://eal.org.uk/ .

3.2 Qualification Development

The development of the qualification entailed an appraisal of the SKILLMAN units which underwent delivery trials at Birmingham Metropolitan College (BMet) and EEF. The content of these units and their delivery were reviewed and discussed between technical experts at JLR, BMet, EEF and EAL. This source SKILLMAN content enabled EAL to develop the qualification's units, learning outcomes and assessment criteria in a manner which is compliant with EAL's procedures and the English qualification regulator 'Ofqual'.

Amongst its obligations EAL had to ensure that the qualification:

- is fit for purpose and valid
- had a clear objective and user support.

EAL will also review and enhance the qualification on the basis of user feedback.

The development entailed devising a suitable structure for the qualification and ensuring the units and the content within were relevant to the occupational role. We ensured the qualification followed best industry practices together with relevant legal requirements such as statutory regulations etc. This took several meetings and many discussions between the partners and technical experts. Partners shared draft materials and worked cohesively and effectively. An agile product development process was taken to provide opportunity for on-going appraisal of the content and refinement.

Key to the development was ensuring that the learner upon completion of the qualification would gain the appropriate amount of understanding and skills to carry out the occupational role. To this end, great care and consideration was given to the qualification's content to ensure meaningful assessments could be created for each unit that would

meet EAL's policies and the English regulator's criteria of:

- manageability: ensuring assessments can be delivered efficiently and cost effectively and to provide a balance between learning and assessment
- minimising bias: ensuring assessments will not introduce a barrier to learners
- accessibility: ensuring the qualification and the assessments complies with the requirements of Equalities Law
- reliability: ensuring the assessment provides a consistent and reliable approach in assessing what it intends to.

The finalised qualification content underwent design review by an independent EAL product specialist. This provides the opportunity for comment about the content from an independent person. In this particular development - the qualification's content did not require any remedial work.

Upon completion of the qualification development the qualification is submitted to a formal internal governance panel at EAL. This governance panel is independent from the development team and will review the completed article against EAL's policies and the regulators conditions. Once satisfied, the qualification's details are submitted to Offal via their Portal system to enable it to become a regulated qualification. EAL receives a qualification regulation number together with the operational start date. Other details are also included within EAL submission to the regulator including: age range, sector area, review date, grading guided learning hours and total qualification time.

EAL prepare the qualification for upload into its internal systems and inform centres through its e-bulletin and marketing channels of the qualification's availability.

Training providers and colleges approved by EAL can add the qualification to their remit of delivery, and when this is approved by EAL centres can then start to deliver the qualification. This due diligence by EAL ensures the centres adequately equipped and have sufficient delivery/assessment resources for use with the qualification.

EAL carry out external quality assurance of the centres of delivering the qualification.

Figure 1 represents a typical timeline of development for a regulated qualification.

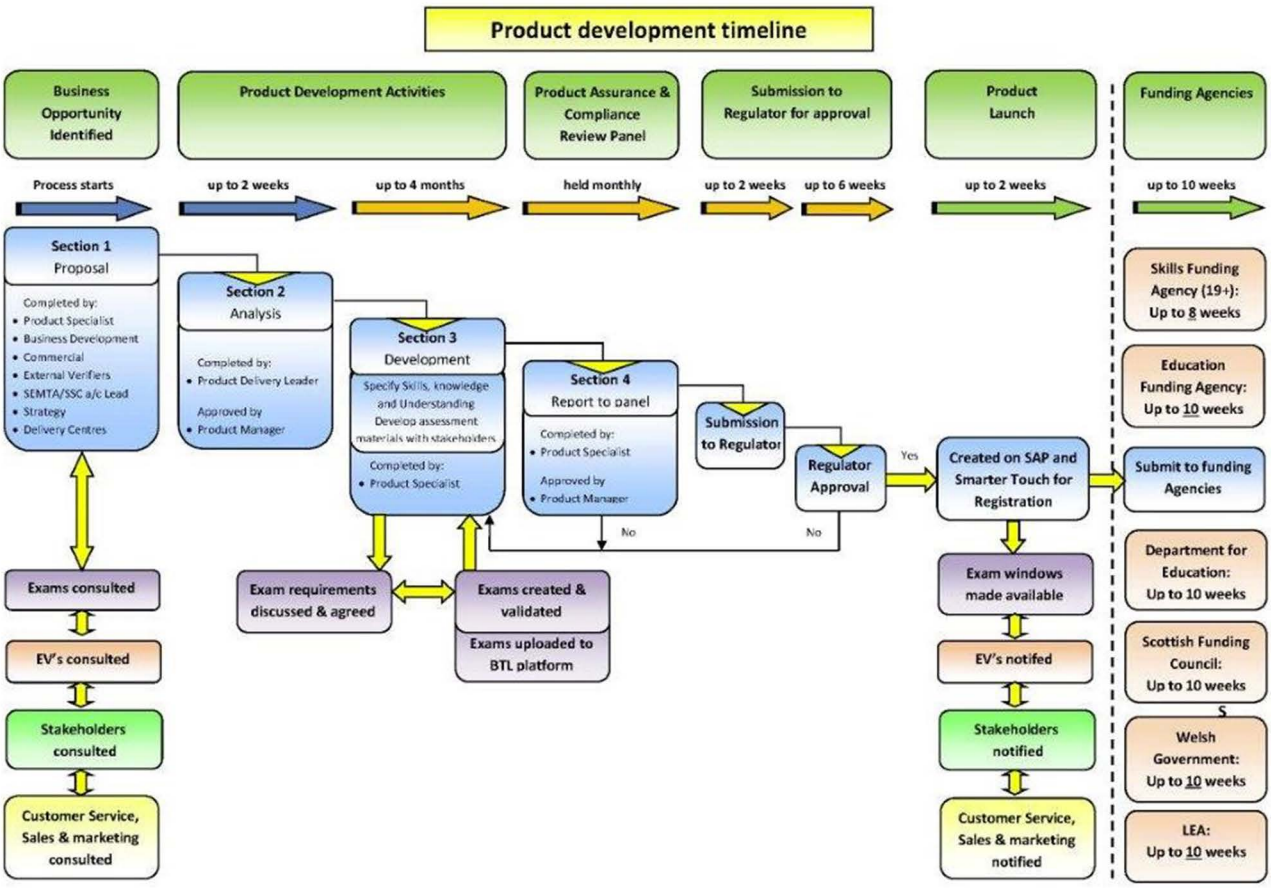


Figure 1

4.0 Conclusion

EAL will continue to review the accredited qualification on-going and implement any relevant updates as required (in an auditable approach in conjunction with the industry) to ensure the qualification remains fit for purpose, and adds value to the stakeholders involved within the advanced manufacturing engineering sector – which is of great importance to the economy.

www.skillman.eu