

14th BUILD UP SKILLS EUROPEAN EXCHANGE MEETING

29th November 2022

EUROPEAN PROJECT TRAIN4SUSTAIN "Stimulating demand for sustainable energy skills in the building sector"





TRAIN4SUSTAIN Competence Quality Standard

GPP SPANISH PILOT CASE STUDY

ESR PLATFORM





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- Train4Sustain Competence Quality Standard at a glance
- GPP Spanish Pilot
- Debate and discussion



The TRAIN4SUSTAIN CQS structure



Train4Sustain Competence Quality Standard





TRAIN4SUSTAIN CEN Workshop Agreement (CWA)



first pre-standard available in Europe





T4S Competence Quality Standard at a glance



4 Dimensions

LEVEL 1 – THEMATIC FIELDS LEVEL 2 – MACRO AREAS OF EXPERTISE LEVEL 3 – AREAS OF EXPERTISE

LEVEL 4 – LEARNING OUTCOMES

Dimension	\rightarrow	Envi	ronment
Thematic field	\rightarrow	E	Energy
Macro-Area Expertise	\Rightarrow	ER	Energy Reduction
Area of Expertise		ER1	Insulation
		ER2	Air tightness building
		ER3	Micro climates
		ER4	Envelope systems
		ER5	Hot water systems

Enviro	nvironment		Society		Economy		Process		
EN	Energy	CO	Comfort and well being	EQ	Economical quality	BD	Sustainable Building Design		
EN1	Energy Performance Assessment	CO1	Indoor air quality	EQ1	Cost planning and management	BD1	Integrative design		
EN1.1	Energy Simulation	CO1.1	Low Emitting materials	EQ1.1	Construction cost planning	BD1.1	Integrated Design Process		
EN2	Energy Management	CO1.2	Indoor air pollutants management	EQ1.2	Life cycle cost assessment	BD1.2	Quality of site assessment		
EN2.1	Smart grid systems	CO1.3	Outdoor air pollutants management	EQ2	Green value	BD1.3	Value engineering		
EN2.2	Domotic systems	CO2	Thermal comfort	EQ2.1	Value creation and risk exposure	ID	Innovative Digital Solutions		
EN2.3	Building Management Systems (BMS)	CO2.1	Indoor Thermal Comfort	EQ2.2	Communication of green building value	ID1	Building Information Modelling		
EN2.4	Renewable Energy communities (smart neighbourhoods)	CO2.2	Outdoor Thermal Comfort	EQ3	Financing schems and business models	ID1.1	Operation of BIM systems		
EN3	Energy Production and HVAC systems	CO3	Visual comfort	EQ3.1	Financing schemes for sustainable building	ID2	Small urban Information Modelling		
EN3.1	Heating and cooling systems	CO3.1	Daylighting	EQ3.2	Business models preparation	ID2.1	Operation of DIM systems for small urban areas		
EN3.2	Ventilation systems	CO3.2	Indoor lighting	EQ4	Operative costs	ID3	GIS Systems		
EN3.3	Hot water systems (DHW)	CO3.3	Outdoor lighting	EQ4.1	Operating and maintenance cost management	ID3.1	GIS Systems for design and planning		
EN3.4	Electric heating systems	CO4	Acoustic comfort	EQ4.2	Use stage energy cost management	ID4	Lean Management		
EN3.5	Heat pump systems and geothermal energy systems	CO4.1	Sound insulation	EQ4.3	Use stage water cost management	ID4.1	Lean Management solutions		
EN3.6	Solar thermal energy systems for heating, cooling and DHW	CO4.2	Room acoustics			ID5	Measuring		
EN3.7	Solar power systems for electricity generation	CO4.3	Indoor noise management			ID5.1	Smart meters		
EN3.8	Combined Heat and Power (CHP) generation	CO4.4	Environmental noise management	1		ID5.2	Smart Building Sensors		
EN3.9	Mini wind power generation	CO5	Electromagnetic pollution	1		ID6	Digital Twins Solutions		
EN3 10	Energy storage systems (long duration storage, central/ decentral.)	C05 1	Management of indoor exposure to FLF magnetic fields	1		ID6 1	Digital Twins systems		
FN4	Energy Reduction	C05.2	Management of indoor exposure to RE/MW electromagnetic fields	1		SC	Sustainable costruction		
EN4 1	Thermal insulation	C05.2	Free period	1		SC1	Sustainable construction management		
EN/ 2	Building air tightness	0061	Ergonomic and Active Eurnishing	1		SC1 1	Construction Activity Pollution Management		
EN/ 3	Window and glazing systems	SA	Safaty	1		SC1.2	Sustainability awareness		
	Solar shading systems	S/A S/A 1	Fire protection			MN	Maintenance and exercting		
EN4.4	Dassive systems for cooling and heating	SA1 1	Pick to occupants and facilities from fire	1		MN1	Maintenance		
ENA 6	Energy saving strategies for lighting	541.1	Earthquarke	1		MNI 1	Building maintenance		
EN4.0	Mitigation strategies for urban thermal effects	SA2 1	Bisk to occupants and facilities from earthquake	1		MNI 2	Building degradation diagnosis		
EN/ 0	Puilding occupancy babayion	3/12.11 A.C	Accessibility			MN1 2	Estimation of materials' convice life		
LIN4.0	Water	AC AC1	Accessionity Barrier free accessibility	•		DC	Built Environment Certification systems		
WA1	Water officiency	AC1 1	Accessibility of public spaces	1		DL DE1	Building sustainability cartification		
WA1 1	Outdoor water use management	AC1.2	Decign for All	1		BE1 1	Energy Performance Certification		
WA1.1	Indoor water use management	MO	Mobility			BE1 2	Building sustainability certification systems		
WA2	Effluents management	M01	Alternative mobility	•		BE2	Small Jirban scale assessment systems		
WA2 1	Painwater collection and reuse systems	M01 1	Sustainable mobility strategies	1		BE2 1	Small Urban scale sustainability assessment systems		
WA2.1	Gravwater collection and reuse systems	SE SE	Socialization for the strategies			IS	Interdisciplinary Skills		
WA2.2	Lirban Wasta Water Treatment	SE1	Communication			IS IS I	Procurement		
MA	Materials	SET 1	Communication services	1		151 1	Green Procurement		
MA1	Design for Deconstruction, reuse and recycling	SE2	Services for inhabitants	1		151.1	Quality assurance		
MA1 1	Materials and components for ease of disassembly	SE2 1	Functional mix	1		152	Quality assurance planning and management		
MA1 2	Adaptive reuse	SF2 2	Infrastructure and connectivity	1		152.1	Collaboration and Communication		
MA2	Sustainable materials	AD	Adaptation and resilience to climate change	i .		153 1	Motivation and communication - Design Team		
MA2.1	Life Cycle Assessment (building scale)	AD1	Climate change resilient huildings	1		153.1	Inormation management		
MA2 2	Recycled and reused materials	AD1 1	Resilience to extreme weather events	1		154 1	Management of information in a design process		
MA2.3	Regenerative materials and technologies	AD1 2	Sustainable drainage	1		155	Safety Assurance		
MA3	Solid wate	AD1.3	Resilience to heatwayes	1		155 1	Risk prevention safety and health of workers		
MA3 1	Solid waste management	AD1.4	Resilience to windstorms	1		18	Listed Buildings		
HΔ	Habitat	AD1.5	Resilience to wildfire	1		LB1	Improving energy performance of listed buildings		
HA1	Land Lise		nearest considere	1		LB1.1	Handling and architectural conservation of listed buildings		
ΗΔ1.1	Site preservation regeneration and development	1				101.1	instanting and architectural conservation of inter buildings		
ΗΔ1 2	Irban and neri-urban agriculture	1							
UA2	Biodivercity	1							

HA2.1 Management of biodiversity on the site



T4S Competence Quality Standard structure and methodology



Dimension	\rightarrow	Environment			
Thematic field		EN	Energy		
		EN4	Energy Reduction		
Area of Exportico		EN4.1	Thermal insulation		
Area of Expertise		EN4.2	Building air tightness		
		EN4.3	Window and glazing systems		
		EN4.4	Solar shading systems		
		EN4.5	Passive systems for cooling and heating		
		EN4.6	Energy saving strategies for lighting		
		EN4.7	Mitigation strategies for urban thermal effects		
		EN4.8	Building occupancy behavior		

LEVEL 3 – AREAS OF EXPERTISE LEVEL 4 – LEARNING OUTCOMES

EN4.6	Energy saving strategies for lighting									
LO code	LO Description	Knowledge	Skill	B/W	Comp.	Project's				
					Level	stage				
EN4.6.1	Understanding the importance of energy saving for lighting	Minimal knowledge of: - artificial lighting for indoor spaces and its integration with daylight; - user needs and technical standard requirements.	Participating in discussions for the feasibility study of energy saving for lighting within a design team.	W, B	1	Со				
EN4.6.2	Applying basic solutions of energy saving for lighting	Basic knowledge of: - photometric quantities and metrics on visual comfort; - photometric and energy performance of main light sources and luminaires; - simple calculation methods (LENI simplified calculation method, EN standard compliant).	Performing simplified calculation to assess energy saving in relation to different lighting systems.	В	2	D				
EN4.6.3	Proposing conceptual solutions of energy saving for lighting	Medium knowledge of: - metrics on visual comfort in indoor workplaces; - all relevant standards on energy performance for lighting; - photometric and energy performance of light sources, luminaires and control systems; - commercial software for lighting design.	Selecting and proposing alternative lighting systems, considering the most energy efficient lamp/luminaire combination and indoor space configuration. Assessing energy performance of the lighting system by means of commercial simulation tools.	В	3	Co, D				





T4S Competence Quality Standard structure and methodology





professionals and workers

WORK FIELDS are related to PROFESSIONS: WHITE COLLARS

#	Work field	Reference profession(s) within the work field	Definition of the profession
1	Architecture	Architect	Architects investigate, design and oversee the implementation buildings taking into account functional, architectural, aesthetic structural, technical, regulatory, cost and contextual requirement with due regard to public health and safety. Specialization is possible on topics like construction safety, thermal performance acoustics, quality of air, daylighting.
2	Mechanical engineering (HVAC)	Mechanical Engineer	Designer of systems for HVAC and sanitary equipment, considering the limitations imposed by practicality, regulation, safety, and cost.
3	Civil engineering	Structural engineer, Civil Engineer, Construction Engineer, Service engineers	Designer of materials and structures, considering the limitation imposed by practicality, regulation, safety, and cost. Specializat is possible on topics like construction safety, thermal performance, acoustics, building physics.
4	Electrical engineering	Electrical Engineer, ICT Engineer, Building Automation Engineer, Lighting specialist	Designer of power, lighting, data and or communication installations, considering the limitations imposed by practicality regulation, safety, and cost. Designer of building automation systems, system engineer / system integrator, considering the limitations imposed by practicality, regulation, safety, and cost





T4S Competence Quality Standard structure and methodology





professionals and workers

WORK FIELDS: BLUE COLLARS

Construction work	#	Work field	Definition of the profession
	10a	Bricklayers	Worker dealing with the construction of the building envelop
	10b	Carpenters	Worker dealing with wood construction
Duilding	10c	Façade Workers, Plasterer	Worker dealing with the façade construction and its finishing
Building	10d	Insulation installers	Worker dealing with the installation of thermal insulation
	10e	Roofers	Worker dealing with the construction of the building's roof
	10f	Window Installers	Worker dealing with the installation of windows or other transparent components of the building envelope
	11a	Electrical installers	Worker dealing with the installation of electrical equipment
	11b	Plumber	Worker dealing with the installation of water pipes and devices
	11c	Renewable Energy Systems Installers (Electric)	Worker dealing with the installation of renewable energy systems for producing electricity (e.g. Photovoltaic Panels)
Technical installations	11d	Renewable Energy Systems Installers (Thermal)	Worker dealing with the installation of renewable energy systems for producing heat (e.g. Solar thermal panels)
	11e	Ventilation and Air Conditioning Installers	Worker dealing with the installation of ventilation and air conditioning systems
	11f	Heating systems installer	Worker dealing with the installation of heating systems (boilers, heaters, etc.9





TRAIN4SUSTAIN CQS is now a European CEN pre-standard

CEN	CWA 17939	
WORKSHOP		
	October 2022	
AGREEMENT		
ICS 03.100.30		
	English version	
TRAIN4SUSTAI	N Competence Quality Standard	





GPP AND THE ESR PLATFORM

TRAIN4SUSTAIN Competence Quality Standard

SPANISH PILOT CASE STUDY







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Pilot









1. PILOT DEFINITION





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3. HOW TO INTRODUCE THE REQUIREMENTS IN THE GPP PROCESS



PHASE 1. A. SOLVENCY "technical and professional ability"

PHASE 1. B. VALUE JUDGEMENT

PHASE 2.A. VALUE JUDGEMENT

PHASE 2.B. AUTOMATIC

1.A. Solvency

- 1.1. Economic and Financial
- 1.2. Professional Technique
- 1.3. Minimum Technique

1.B. Value Judgement (40 pts)

- 1.1. Adaptation of the proposal to the existing environment (8 pts)
- 1.2. Building Layout (10 pts)
- 1.3. Spatial quality of the housing typology proposal (8 pts)
- 1.4. Energy Stragegy (4 pts)

This Project has reeived funding from

3. HOW TO INTRODUCE THE REQUIREMENTS IN THE GPP PROCESS



PHASE 1. A. SOLVENCY

PHASE 1. B. VALUE JUDGEMENT

PHASE 2.A. VALUE JUDGEMENT

PHASE 2.B. AUTOMATIC



1.3. Spatial quality of the housing typology proposal (8 pts)

1.4. Energy Stragegy (4 pts)

2.B. Automatic (25 pts) 1.1. Total built area/Usable area (10 pts) 1.2. Arehitectural criteria for anergy.

1.2. Architectural criteria for energy efficiency. (7 pts)

1.3. BIM (1 pts)

1.4. Skills Passport (7 pts)



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement No 894514.

Skills

(7 pts)

Passport





EUROPEAN SKILLS REGISTRY

Profile

























Which Areas of Expertise Incasòl needs from the Architectural Team?





	Energy					
l	Energy Production and HVAC systems					
EN3.3 EN3.1 EP5 EN3.7	Hot water Systems (DHW) Heating and cooling Systems Planning and design of heat pump installations Solar power Systems for electricity generation	3 3 3 3				
	Energy Reduction					
EN4.1 EN4.2 ER4	Thermal insulation Building air tightness Envelope systems	3 2 4				
	Materials					
	Sustainable materials					
MS6 MS2 MS5	Design for adaptability and renovation Environmental impact of construction materials Certified materials	5 4 3				
	Water					
	Water efficiency					
WA1.2	Indoor water use management	3				
	Effluents management					
WA2.1 WA2.2	Rainwater collection and reuse Systems Greywater collection and reuse Systems	4 4				

	Innovative Digital Solutions	
ID1.1	Operation of BIM systems	5
	Comfort and well being	
	Thermal comfort	
CO2.1 CT2	Indoor Thermal Comfort Ambient Thermal Comfort conditions	4 3
	Quality of air	
CQ2 CQ3	Natural Ventilation Mechanical Ventilation	4 4
	Visual comfort	
CO3.1 CO3.2	Daylighting Interior lighting	4 4









Which Work fields Incasòl needs from the Architectural Team?

TRAIN4 SUSTAIN EUROPEAN SKILLS REGISTRY EXPERTS PROJECTS SCHEMES E-INVENTORY HELPDESK CONSTRUCTION OF 38 DWELLINGS IN THE ALFONS COMIN SQUARE - ARCHITECTURE TEAM July 19, 2019 - December 16, 2022 EN3.3 Hot water systems (DHW 3 3 Heating and cooling system ning and design of heat nump installati 3 EN3.7 Solar power systems for electricity generation 3 EN/ 1 3 2 EN4.2 Building air tightness Envelope systems 4 Design for adaptability and renovation 5 MS6 Environmental impact of construction materia MS5 Certified materials т Indoor water use management VA1.2 3 ollection and reuse system 4 4 NA22 ter collection and reure out 5 ID1.1 Operation of BIM systems Indoor Thermal Comfort 4 CO2.1 3 Ambient thermal comfort condition C02 Natural ventilation 4 CQ3 Mechanical ventilatio 4 CO3.1 Daylighting 4 Interior lighting 4 CO3.2

-> Areas of Expertise required with score

NO	Materials					
NVIE		Sustainable materials				
ш	MS6	Design for adaptability and renovation	5			
	MS2	Environmental impact of construction materials	4			
	MS5	Certified materials	3			

Work fields required within the Team

Professions:

Architects Building Energy Consultants / Assessors Structural Engineer









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	Phase	Maximum Score	PPMM Architects	A&A Arquitectes	TAAS Arquitectura
	1.A. Solvency	Yes/No	Yes	Yes	Yes
1. A. 1. B.	1.B. Value Judgement	40 pts	34	32	32





Phase	Maximum Score	PPMM Architects	A&A Arquitectes	TAAS Arquitectura
2.B. Automatic	25 pts	17	18	22
Total built area/Usable Area	10 pts	7	7	9
Architectural criteria for energy efficiency	7 pts	4	5	6
BIM	1 pts	1	1	1
Skill Passport	7 pts	5	5	6
TOTAL	95 pts	80	77	81





TAAS Arquitectura						
Work field	Degree	Master/Postgraduate/Course	Years of Experience			
Architect 01	Architecture	Smart Cities Postgraduate	18 Years			
Architect 02	Arci Architects	Building Energy Consultants / Assessors	Structural Engineer			
Energy Engineer	Energy Engineer	Master in Energy Efficiency in Lighting	9 Years			
Structural Engineer	Civil Engineer	-	10 Years			





Energy						
Energy Production and HVAC systems						
EN3.3 EN3.1 EP5 EN3.7	Hot water Systems (DHW) Heating and cooling Systems Planning and design of heat pump installations Solar power Systems for electricity generation	3 3 3 3	3 2 3 4			
Energy Reduction						
EN4.1 EN4.2 ER4	Thermal insulation Building air tightness Envelope systems	3 2 4	3 1 5			
Materials						
	Sustainable materials					
MS6 MS2 MS5	Design for adaptability and renovation Environmental impact of construction materials Certified materials	5 4 3	5 5 2			
Water						
Water efficiency						
WA1.2	Indoor water use management	3	2			
Effluents management						
WA2.1 WA2.2	Rainwater collection and reuse Systems Greywater collection and reuse Systems	4 4	4 3			

Innovative Digital Solutions						
	64 72 X 7 points = 6,22 points	5				
CO2.1 CT2	Indoor Thermal Comfort Ambient Thermal Comfort conditions	4 3	3 3			
	Natural Ventilation Mechanical Ventilation					

TOTAL SCORE REQUIRED	72 pts 7/7 pts
APLICANT SCORE	64 + 3 pts 6/7 pts











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Thanks for listening!

https://train4sustain.eu/

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