Mapping – Senior Technician (Spain)

Translated title of the training programme	**SENIOR TECHNICIAN IN MAINTENANCE OF THERMAL AND FLUID INSTALLATIONS**
Brief explanation of the professional fields of activity	Plan, manage, and supervise the assembly and maintenance of thermal and fluid installations in buildings and industrial processes, adhering to regulations and standards. Diagnose and locate malfunctions based on equipment symptoms and history. Start up installations by measuring parameters and making adjustments. Control operating parameters by programming automatic regulation systems. Configure, plan, and budget for facilities and maintenance, ensuring quality and safety protocols are met.
Certificate (incl. EQF-level)	EQF-level 5 Qualified refrigeration professional, Thermal installations in buildings, Plumbing
Entry requirements	Access to the **Higher Degree** cycles or modules requires compliance with one of the following conditions: • Be in possession of the Bachelor's Degree, or a certificate accrediting having passed all the Baccalaureate subjects. • Having passed the 3rd year of BUP (Unified Multipurpose Baccalaureate): Accreditation through academic certification of having passed all the subjects leading to obtaining the Bachelor's degree regulated by Law 14/1970, of August 4, General of Education and Financing of the Educational Reform, after the completion of the third year of said teachings. Order EFP/1210/2021 of November 2, which establishes the equivalence, for the purposes of access to vocational training courses, of certain studies and titles prior to the current educational system. • Have passed the second year of any type of experimental Baccalaureate. • Be in possession of a Technical Degree (Medium Level Vocational Training). • Be in possession of a Higher Technician, Specialist Technician Degree or equivalent for academic purposes. • Have passed the University Orientation Course (COU). • Be in possession of any University Degree or equivalent. • Have passed the entrance test to higher-level training cycles (it is required to be at least 19 years old in the year the test is taken or 18 for those who hold the Technician title). • Have passed the University entrance test for those over 25 years of age
Access to next level of education / VET-training	• Professional specialization courses. • Another Higher Level Vocational Training Cycle with the possibility of establishing validation of professional modules in accordance with current regulations. • University Education with the possibility of establishing validations in accordance with current regulations.

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Notes on using the matrix (Glossary)

The competence matrix for the field of Building Service Engineering is the result of a pan-European empirical study of operational practice. From this, a total of 10 core work processes were identified on the vertical axis and the competences required for these were described as units of learning outcomes. The entire matrix relates to EQF levels 3 - 6. The level of requirement of the matrix increases horizontally and, with regard to core work processes 1 to 7, also vertically. Core work processes 1 to 7 relate to classic core competences in Building Service Engineering. Core work processes 8 to 10, on the other hand, are to be understood more as cross-activity areas of expertise that are particularly important for adaptation processes in the context of interdisciplinary cooperation. The units in the matrix are formulated in general terms and can therefore be related to different occupational fields that have cross-sectional competences in Building Service Engineering**.**

The definitions and explanations below will help you to identify the competencies of the various occupational fields

Building systems technology	Building systems technology encompasses all the technology required to operate a building. This includes construction technology, sanitation, heating and air conditioning, electrical engineering, information technology and security technology.
Building systems	Building systems include all technical components of a building for the supply of heat, air, light, water, energy and information, the disposal of wastewater and exhaust air as well as all associated processes. The term building system must be replaced accordingly for an individual building systems technology trade (e.g. electrical engineering or sanitation, heating, and air conditioning). e.g.: Electrical engineering: the entire power supply of a building. Heating technology: the entire heating system of a building.
Components of building systems	Components of building systems include single technically relevant elements of a building. e.g.: Electrical engineering: PV modules as a component of the entire electrical energy supply. Heating technology: A heat pump as a component of a building's entire heating system.
Building system processes	In terms of facility management, building system processes include all technical and service-related processes regarding planning, construction, operation and dismantling of a building. (e.g. switch-on times of lighting, ventilation, and air conditioning systems, cleaning intervals, presence times, energy flows, operating times of monitoring equipment)

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	Competence areas Core working process	Steps of competence development:				
1	**Assembly, disassembly and disposal of building systems and their components**	He/she can assemble and disassemble components of building systems according to existing assembly and installation plans and in compliance with applicable standards, regulations, and laws. He/she can professionally separate components and building materials while the disposal of building systems.	He/she can plan and document the assembly and disassembly of components of building systems according to customer specifications and in coordination with authorities, architects, and system manufacturers, considering legal requirements. He/she can dispose of the professionally separated components and building materials of building systems in accordance with legal regulations. He/she can estimate workloads and report possible problems to superiors.	He/she can analyze and adapt assembly, dismantling and disposal concepts for building systems or their components regarding process optimization and the current legal situation. He/she can use project management tools in a targeted manner.	He/she can develop new concepts for installation, dismantling and disposal of building systems or their components in cooperation with customers, authorities, and manufacturers of building systems technology.	
2	**Maintain building systems or their components**	He/she can operate components of building systems according to specifications and check their function.	He/she can carry out and document inspection, maintenance, and repair work on components of building systems according to the manufacturer's instructions.	He/she can carry out complex inspection, maintenance and repair work on building systems and prepare documentation.	He/she can create maintenance concepts for building systems considering manufacturer specifications and economic aspects as well as applicable regulations and standards. He/she can create deployment and work plans and determine the team's human and material resources. He/she can use project management tools in a targeted manner.	
3	**Commissioning of building systems or their components**	He/she can commission technical building components according to specifications and customer requirements.	He/she can commission technical building systems and configure them in accordance with customer requirements and prepare documentation and test reports in compliance with the applicable standards and specifications. He/she can recognize and document defects and conflicting objectives during commissioning.	He/she can commission complex technical building systems and configure them in accordance with customer requirements as well as prepare documentation and test reports in compliance with applicable standards and specifications. He/she can recognize and document defects and conflicting objectives during commissioning and resolve them in coordination with other trades.	He/she can commission the entire building systems technology in compliance with applicable standards and specifications.	He/she can hand over complex technical building systems or the entire building system technology to the operator, including the associated documentation, instruct him/her in its use and inform him/her of the operator's responsibilities.

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	Competence areas Core working process	Steps of competence development:				
4	**Monitoring, control and optimization of building system processes through building automation**	He/she can operate simple building automation systems according to specifications and guidelines and further check system statuses to ensure a stable operating status.	He/she can interpret data when faults occur in building systems, initiate processes to rectify faults according to guidelines and document this.	He/she can independently develop solution strategies in the event of faults occurring in technical building systems and initiate their implementation.	He/she can analyze the operating conditions of complex building systems, carry out optimizations and document changes.	He/she can develop, document, and implement concepts for optimizing the economy and ecology of building system processes by analyzing building automation data.
5	**Conception of building systems, their components and the associated processes**	He/she can recognize, structure, and specify the requirements for building systems from customer orders and convert them into a user profile, considering applicable regulations, standards, and laws. He/she can create a concept for the requirements for building systems from user profiles.	He/she can dimension and select components of building systems according to the concepts created from the user profiles in compliance with regulations and guidelines.	He/she can plan and implement building system processes in terms of facility management. He/she can prepare technical data, determine costs for the operation and management of buildings and further specify service tasks as well as compile associated statistics.	He/she can determine all relevant data for the documentation of property operation and prepare given data for the management of buildings.	He/she can prepare tender documents based on applicable legal requirements and the user profile. He/she can determine optimization potentials regarding economy and ecology for existing systems and new systems, and further create corresponding concepts and advise customers in this regard.
6	**Identification, implementation, and review of legal requirements for the operation of a building system**	He/she can carry out and document activities to maintain operation regarding legal requirements for a building system or its components as specified.	He/she can identify the legal requirements for the operation of a building system based on regulations and further implement and document them through organizational measures. He/she can carry out a safety briefing.	He/she can independently create test protocols and work plans based on legal requirements.	He/she can prepare a hazard assessment (risk analysis). He/she can take the risk analysis into account when organizing the operation of a building system and when planning personnel deployment.	He/she can create and optimize a guideline for the implementation of legal requirements, draw conclusions about their effectiveness and take them into account in future planning processes.
7	**Cost control and monitoring for the life cycle of a building system**	He/she can determine and document basic data for tracking cost of building systems in accordance with guidelines.	He/she can evaluate basic data for cost tracking and create key figures from it.	He/she can evaluate key figures of building systems and analyze them to identify optimization potentials.	He/she can implement the identified optimization potentials and ensure their effectiveness.	
8	**Communication across trades, also in foreign languages**	He/she can understand basic technical terms of his/her own and other trades. He/she can conduct conversations with superiors and employees of his/her own and other trades and customers in an appropriate manner while presenting and explaining facts. He/she can read product data sheets and carry out assembly and operating instructions of his/her own and other trades. He/she can communicate with non-specialist trades with the help of translation aids.	He/she can understand and use technical terms from his/her own and other trades. He/she can conduct discussions with superiors and employees of his/her own and other trades and customers and resolve conflicts appropriately. He/she can obtain and evaluate assembly and operating instructions as well as product data sheets for all trades.	He/she can conduct and document planning and coordination meetings with "decision-makers" from all trades and authorities involved. He/she can resolve conflicts appropriately. He/she can understand, interpret, and apply standards, laws and regulations within the framework of the overall system.	He/she can create complex process descriptions across all trades, considering applicable regulations. He/she can organize cross-trade communication in a foreign language.	

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9	**Human resources management**	He/she can identify the training needs of employees and select and organize suitable training courses for further education and training.	He/she can plan personnel requirements, define criteria for the qualification profile of specialist staff and formulate corresponding job descriptions.	He/she can conduct and document personnel development interviews with employees. He/she can prepare an appraisal for employees based on criteria. He/she can recognize the professional and personal development potential of employees and promote it through suitable measures.
10	**Digital information and knowledge management**	He/she can choose basic and advanced digital tools to solve professional tasks and use them in a targeted manner in his/her own profession. He/she can apply data protection regulations and legal regulations in a professional context. He/she can carry out targeted information research to solve professional tasks and evaluate the results.	He/she can choose basic and advanced digital tools to solve professional tasks and use them in a targeted, collaborative manner not only in his/her own profession. He/she can select and use suitable digital tools to create technical presentations and documentation. He/she can carry out targeted information research to solve professional tasks and evaluate the results and check their professional accuracy.	He/she can design and create building operation workflows from an economic and ecological point of view while taking future requirements into account with the help of suitable tools and modern technologies.

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