



ULO MBT-1	<u>TITLE</u> Plan and develop a waste composting facility	EQF 6
Work tasks:	Manage the planning of a MBT facility	
Assessment criteria:	1	
<p>Learning outcomes: LO 1: Review documentation and site plans taking account of the health and safety requirements, and technology options LO 2: Design of the MBT facility</p>		
<p style="text-align: center;">Knowledge <i>(assimilation of knowledge throughout learning)</i></p>	<p style="text-align: center;">Skills <i>(Ability to apply knowledge)</i></p>	<p style="text-align: center;">Competences <i>(Measure of responsibility and autonomy; ability to use knowledge, skills, social abilities)</i></p>
<p>1) Review documentation and site plans taking account of the health and safety requirements, and technology options</p>		
<ul style="list-style-type: none"> • Explain in detail the legislative definition of a mechanical biological treatment plant • Explain in detail the standards/specifications related to MBT plant and equipment • Describe in detail the facility plans/maps/technical information • Explain in detail the principal activities involved in MBT operations • Describe in detail the legislation in relation to the specific hazards applicable to the waste composting facility, output materials and residues 	<ul style="list-style-type: none"> • Review relevant documents to identify company constraints and commercial objectives related to compliance requirements and output/product range and specifications (e.g. district and regional plans, resource consents, supplier contracts, quality systems, site plan) • Obtain relevant, current and applicable sources of information • Demonstrate advanced skills by classifying and identifying all site areas in relation to health and safety at a specific 	<ul style="list-style-type: none"> • Manage the process of implementing proposed amendments to facility plans and documentation in response to identified changes in situation/circumstances • Assume responsibility for ensuring the discussion of an agreement on the objectives and scope of the proposed amendments with the key stakeholders



<ul style="list-style-type: none"> Describe in detail the statutory requirements for a safe system of work 	<p>non-hazardous waste composting facility (e.g. evacuation area, first aid, restricted areas and their respective levels of danger, first aid and emergency facilities, personal protective equipment)</p>	
<p>2) Design of the MBT facility / LO2</p>		
<ul style="list-style-type: none"> Describe in detail the handling requirements for input materials in accordance with company procedures and relevant legislation Describe in detail the capacity plant and the potential uses of digestate 	<ul style="list-style-type: none"> Demonstrate advanced skills by design the areas of the treatment/production site in accordance with the organisational procedures 	<ul style="list-style-type: none"> Ensure that the design complies with legislative and organisational requirements Assume responsibility for the negotiation and securing of supply contracts on suitable trading terms in accordance with company practice (equipment, machinery, general materials) places all the units in a place easily accessible for inspection



ULO MBT-2	<u>TITLE</u> Manage the process for mechanical treatment	EQF 6
Work tasks:	Ensure efficiency and continuous improvement during the mechanical treatment	
Assessment criteria:	2	
<u>Learning outcomes:</u> LO 1: Provide for supervision and improvement of the separation processes, including the adoption of innovative technologies LO 2: Implement measures in order to increase efficiency of the system, improving the energy performance and reducing waste LO 3: Improve the mechanical step of the processes in order to reduce the size of the matter as most as possible, in view of the next step		
Knowledge <i>(assimilation of knowledge throughout learning)</i>	Skills <i>(Ability to apply knowledge)</i>	Competences <i>(Measure of responsibility and autonomy; ability to use knowledge, skills, social abilities)</i>
1) Provide for supervision and improvement of the separation processes, including the adoption of innovative technologies / LO1		
<ul style="list-style-type: none"> Distinguish in detail existing separation processes Demonstrate an advanced knowledge on how to separate flows on the basis of the homogeneity of composition 	<ul style="list-style-type: none"> Integrate preparatory separation techniques Apply the most appropriate techniques for the pre-treatment of waste according to the characterisation of the waste source Integrate preparatory separation techniques 	<ul style="list-style-type: none"> Assume responsibility for carrying out the examination of physical quantities related to the mechanical treatment



2) Implement measures in order to increase efficiency of the system, improving the energy performance and reducing waste / LO2

<ul style="list-style-type: none">• Demonstrate an advanced knowledge of the technologies for size, gravimetric and electromagnetic separation• Demonstrate a critical knowledge of the key performance indicators of plants in terms of mass balance, recovery and separation	<ul style="list-style-type: none">• Demonstrate advanced skills to design and combine different separation systems	<ul style="list-style-type: none">• Manage the observation, examination and selection of the processes and the existing technologies in view to maximize the recovery• Assume responsibility for the implementation of technologies to reduce emissions and energy consumption
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3) Improve the mechanical step of the processes in order to reduce the size of the matter as most as possible, in view of the next step / LO3

<ul style="list-style-type: none">• Demonstrate an advanced knowledge of the technologies for size reduction	<ul style="list-style-type: none">• Demonstrate advanced skills to identify the desired size of the final product• Demonstrate advanced skills to identify the payload of waste to be treated	<ul style="list-style-type: none">• Act independently to examine the most appropriate technologies for size reduction on the basis of the material to be treated and of its composition
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ULO MBT-3	<u>TITLE</u> Manage the process for biological treatment	EQF 6
Work tasks:	Ensure efficiency and continuous improvement during the biological treatment	
Assessment criteria:	2	
Learning outcomes: LO1: Check that the stabilization process is carried out in compliance with fixed limits, benchmarks and deadlines LO2: Supervise and improve sanitation operations LO3: Optimize the parameters of the biological treatment process and maximize the methanogen yield		
Knowledge <i>(assimilation of knowledge throughout learning)</i>	Skills <i>(Ability to apply knowledge)</i>	Competences <i>(Measure of responsibility and autonomy; ability to use knowledge, skills, social abilities)</i>
1) Check that the stabilization process is carried out in compliance with fixed limits, benchmarks and deadlines / LO1		
<ul style="list-style-type: none"> • Demonstrate an advanced knowledge about the chemical and biochemical reactions • Demonstrate an advanced knowledge about the reactions related to stabilization 	<ul style="list-style-type: none"> • Demonstrate advanced skills to check stabilisation times and parameters and identify appropriate solutions if these parameters are not maintained 	<ul style="list-style-type: none"> • Manage the implementation of the stabilisation processes in compliance with the limits established by law • Manage that stabilised fractions are reused
2) Supervise and improve sanitation operations / LO2		
<ul style="list-style-type: none"> • Has in-depth knowledge of the different types of equipment for sanitation 	<ul style="list-style-type: none"> • Control the air intake and purification systems 	<ul style="list-style-type: none"> • Ensure objectives for sanitation are achieved by the established deadlines
3) Optimize the parameters of the biological treatment process and maximize the methanogen yield / LO3		



<ul style="list-style-type: none">• Demonstrate an advanced knowledge of the chemical parameters necessary to evaluate the organic fraction and formulate a balanced and productive ration• Demonstrate an advanced knowledge of the reference values for the main parameters of the process	<ul style="list-style-type: none">• Assess costs and productivity of the organic matrix	<ul style="list-style-type: none">• Monitor the feeding process of the digester in order to achieve the maximum performance according to the methanogen output
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ULO MBT-4	<u>TITLE</u> Check performance and trends of parameters - Maintenance	EQF 6
Work tasks:	Analyse data continuously, react properly to deviations and carry out necessary interventions	
Assessment criteria:	1	
Learning outcomes: LO1: Ensure that maintenance operations are adapted to the needs of the system LO2: Interpret data and information resulting from monitoring activities LO3: Implement specific measures in case of deviation from the parameters		
Knowledge <i>(assimilation of knowledge throughout learning)</i>	Skills <i>(Ability to apply knowledge)</i>	Competences <i>(Measure of responsibility and autonomy; ability to use knowledge, skills, social abilities)</i>
1) Ensure that maintenance operations are adapted to the needs of the system / LO1		
<ul style="list-style-type: none"> Demonstrate an advanced knowledge the operations related to the levels of maintenance (daily, periodic, scheduled and preventive) 	<ul style="list-style-type: none"> Demonstrate advanced skills by planning some days of production standstill during the year as a preventive measure for all levels of maintenance Demonstrate advanced skills by preparing a prompt intervention to restore normal operating conditions in the event of extraordinary maintenance 	<ul style="list-style-type: none"> Execute the validation of the schedule for maintenance operations
2) Interpret data and information resulting from monitoring activities / LO2		
<ul style="list-style-type: none"> Distinguish between the monitoring actions 	<ul style="list-style-type: none"> Identify the most appropriate sampling 	<ul style="list-style-type: none"> Assume responsibility to choose the



<p>to be implemented during start-up and management</p> <ul style="list-style-type: none"> • Demonstrate an advanced knowledge to the main monitoring techniques that can be used depending on the parameter 	<p>points depending on the stream to be sampled</p>	<p>appropriate measurement units (respecting the given timescales) depending on the parameter that needs to be monitored</p> <ul style="list-style-type: none"> • Manage the selection of the most effective and efficient monitoring techniques depending on the parameter that needs to be monitored
<p>3) Implement specific measures in case of deviation from the parameters / LO3</p>		
<ul style="list-style-type: none"> • Demonstrate an advanced knowledge of the chemical and physical parameters and the ranges within which parameters must be kept • Demonstrate an advanced knowledge of the advantages and disadvantages of the possible strategies to be implemented for the control of pH, C: N ratio, oxygen saturation, alkalinity, etc. 	<ul style="list-style-type: none"> • Demonstrate advanced skills to design the most appropriate strategy in terms of costs and benefits to ensure the maintenance of reaction parameters 	<ul style="list-style-type: none"> • Lead the continually improvement of BATs



ULO MBT-5	<u>TITLE</u> Manage entering and outgoing waste streams in compliance with the legislation	EQF 6
Work tasks:	Ensure on time delivery of waste, plant utilization and evaluate reuse option for outgoing products	
Assessment criteria:	2	
Learning outcomes: LO1: Ensure waste delivery according to legal regulation and respect of the preliminary procedures LO2: Check the system runs according to the authorised purpose and capacity LO3: Develop possibility concerning reuse of the ending product		
Knowledge <i>(assimilation of knowledge throughout learning)</i>	Skills <i>(Ability to apply knowledge)</i>	Competences <i>(Measure of responsibility and autonomy; ability to use knowledge, skills, social abilities)</i>
1) Ensure waste delivery according to legal regulation and respect of the preliminary procedures / LO1		
<ul style="list-style-type: none"> Demonstrate an advanced knowledge of the EWC (European Waste Catalogue) 	<ul style="list-style-type: none"> Carry out preliminary checks to waste transfer/delivery 	<ul style="list-style-type: none"> Assume responsibility to ensure compliance of incoming waste Lead the implementation of measures to prevent the onset of problems for health and hygiene
2) Check the system runs according to the authorised purpose and capacity / LO2		
<ul style="list-style-type: none"> Demonstrate a critical knowledge of the origin, type and characteristics of the waste in terms of volume, mass and weight Demonstrate an advanced knowledge of 	<ul style="list-style-type: none"> Size the receiving and storage areas on the basis of incoming material Calculate the remaining treatment capacity 	<ul style="list-style-type: none"> Manage that the operation are in compliance with the authorised treatment capacity



the capacity of the plant		
3) Develop possibility concerning reuse of the ending product / LO3		
<ul style="list-style-type: none">• Demonstrate an advanced knowledge of the benefits arising from the use of outgoing products• Demonstrate an advanced knowledge about the categories of the waste output (Solid Recovered Fuel, Refuse Derived Fuel), their characteristic and potential market value	<ul style="list-style-type: none">• Demonstrate advanced skills to identify and classify the outgoing materials• Demonstrate advanced skills to prepare the requested documents• Demonstrate advanced skills in order to analyze the products, the procedures, potential certification and marketability analysis.	<ul style="list-style-type: none">• Assume responsibility of possible use of the outgoing products• Manage differentiate flows and fractions of the outgoing products



ULO MBT-6	<u>TITLE</u> Store the waste resulting from the treatment process in compliance with the regulations in force	EQF 6
Work tasks:	Ensure the usage of septic and equalisation tanks, the characterisation and the direction of residuals	
Assessment criteria:	1	
Learning outcomes: LO1: Provide for adequate pits and tank in order to receive matter LO2: Ensure the presence of the necessary equipment and guarantee adequate residues characterization LO3: Direct the residuals of the treatment to the most appropriate place		
Knowledge <i>(assimilation of knowledge throughout learning)</i>	Skills <i>(Ability to apply knowledge)</i>	Competences <i>(Measure of responsibility and autonomy; ability to use knowledge, skills, social abilities)</i>
1) Provide for adequate pits and tank in order to receive matter / LO1		
<ul style="list-style-type: none"> • Demonstrate an advanced knowledge of the parameters related to size and payload of septic or equalisation tanks • Demonstrate an advanced knowledge of the processes for stabilisation of volumes 	<ul style="list-style-type: none"> • Identify the appropriate materials to build tanks 	<ul style="list-style-type: none"> • Verify the security levels of tanks • Monitor water flow and pollutant load
2) Ensure the presence of the necessary equipment and guarantee adequate residues characterization / LO2		
<ul style="list-style-type: none"> • Demonstrate an advanced knowledge of the principal methods for sampling, preparation and analysis in order to carry 	<ul style="list-style-type: none"> • Demonstrate advanced skills during the evaluation of the reactivity of residuals • Identify the basic equipment of a 	<ul style="list-style-type: none"> • Assume responsibility of the characterisation of the quality of the residuals according to the specific end use



<p>out the physical-chemical characterisation of residuals</p> <ul style="list-style-type: none">• Demonstrate an advanced knowledge of the limits for parameters to be analysed	<p>laboratory for physical-chemical characterisation of residuals</p>	
3) Direct the residuals of the treatment to the most appropriate place		
<ul style="list-style-type: none">• Demonstrate an advanced knowledge of the plants for the recovery and disposal where outputs and residues can be directed• Demonstrate an advanced knowledge of the amount of residuals produced	<ul style="list-style-type: none">• Assess the suitability of residuals to disposal or recovery	<ul style="list-style-type: none">• Manage the evaluation and selection of the proper destination on the basis of the characterisation and of the amount of residuals