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Organic fraction from solid waste: The best approach to produce Energy

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Different ways to produce Energy from OF-MSW (Organic Fraction-Municipal Solid Waste):

1. Anaerobic digestion from Organic fraction

2. Anaerobic co-digestion from Organic fraction

and sludge from municipal STP

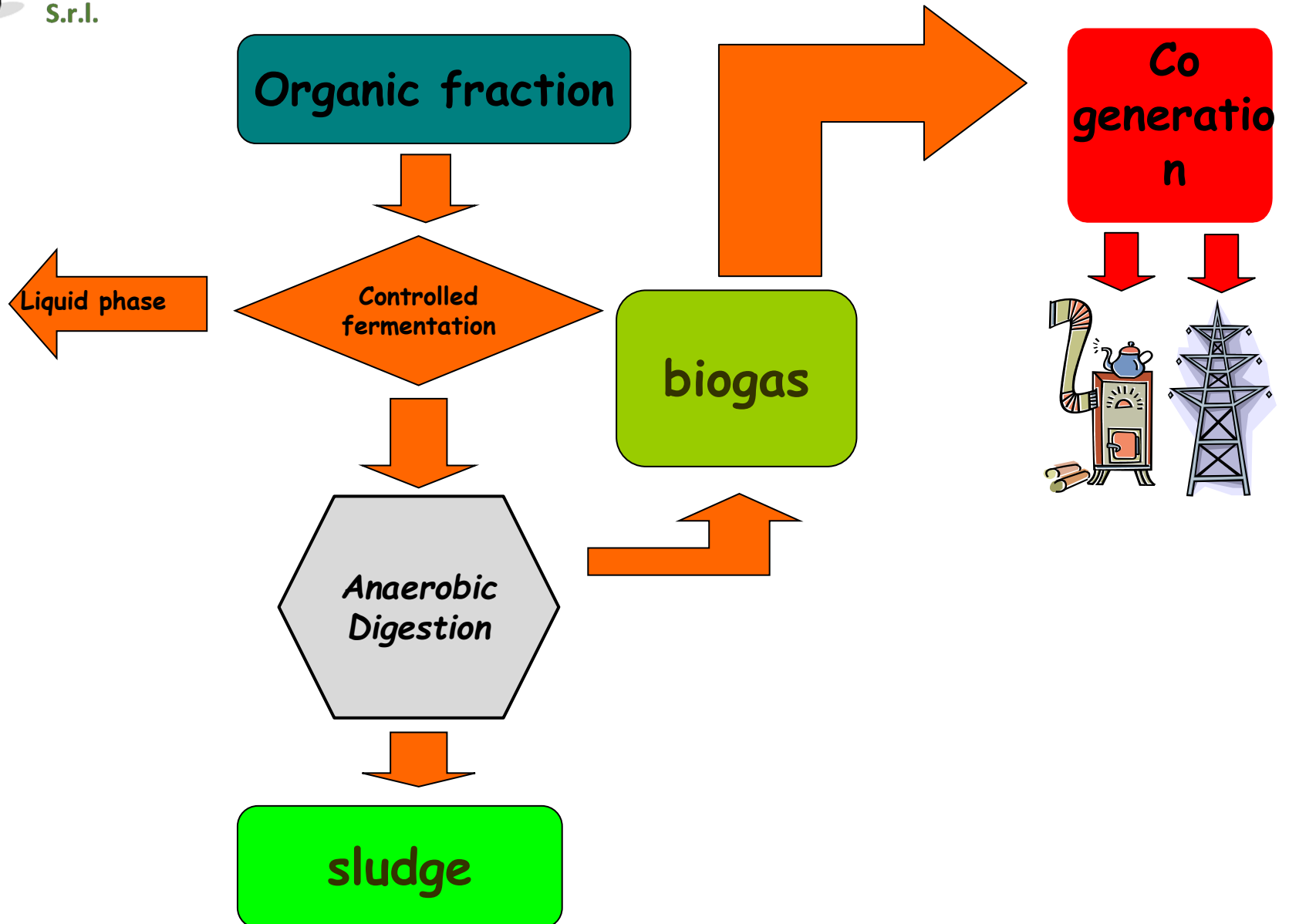


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1 - Anaerobic digestion from Organic fraction



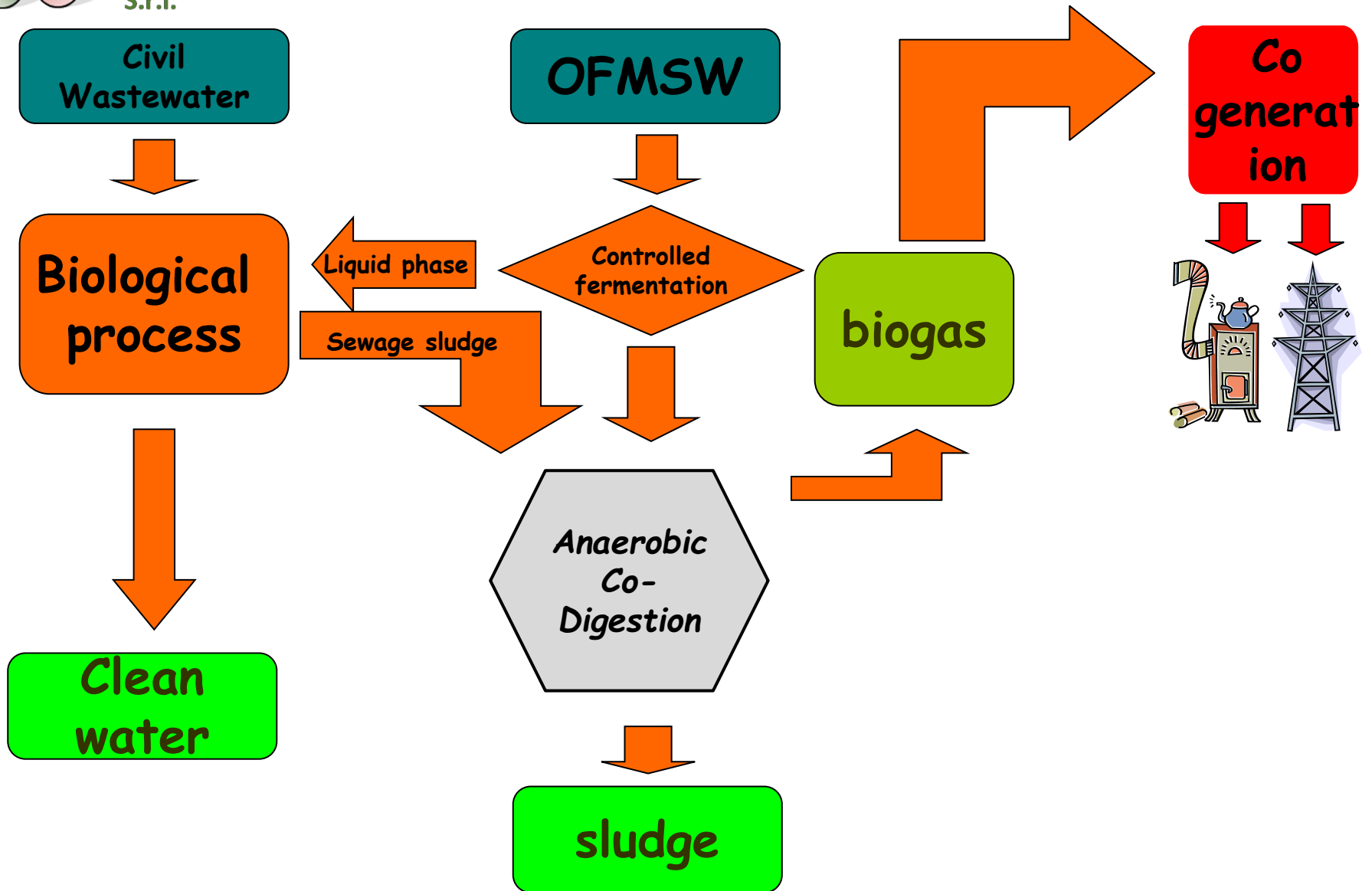
Process scheme





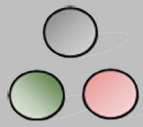
2. Anaerobic co-digestion from Organic fraction and WAS (waste activated sludge) from municipal STP

Process scheme

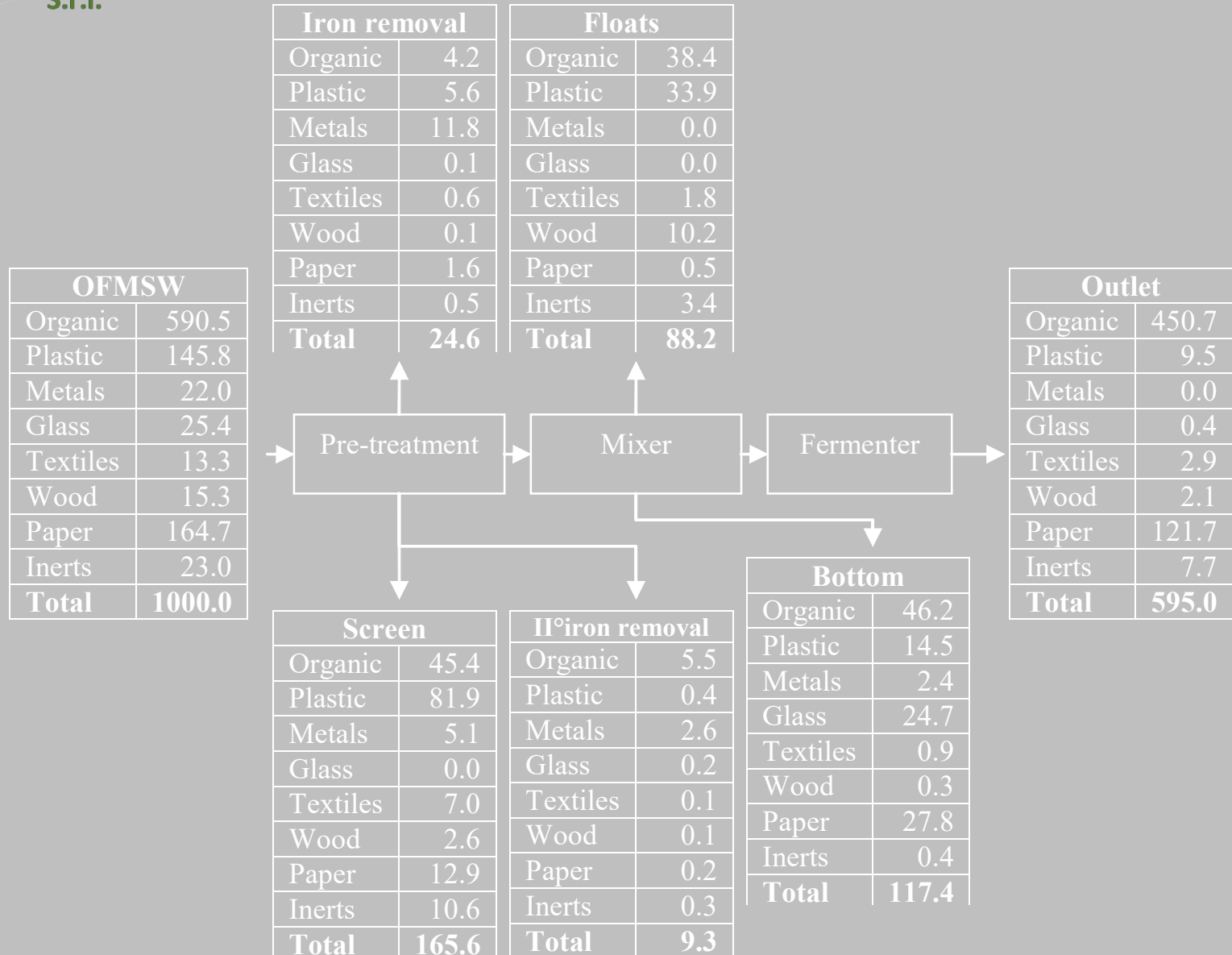




***In both cases it is necessary to pre-treat the OF-
MSW before feeding the Anaerobic Digester***

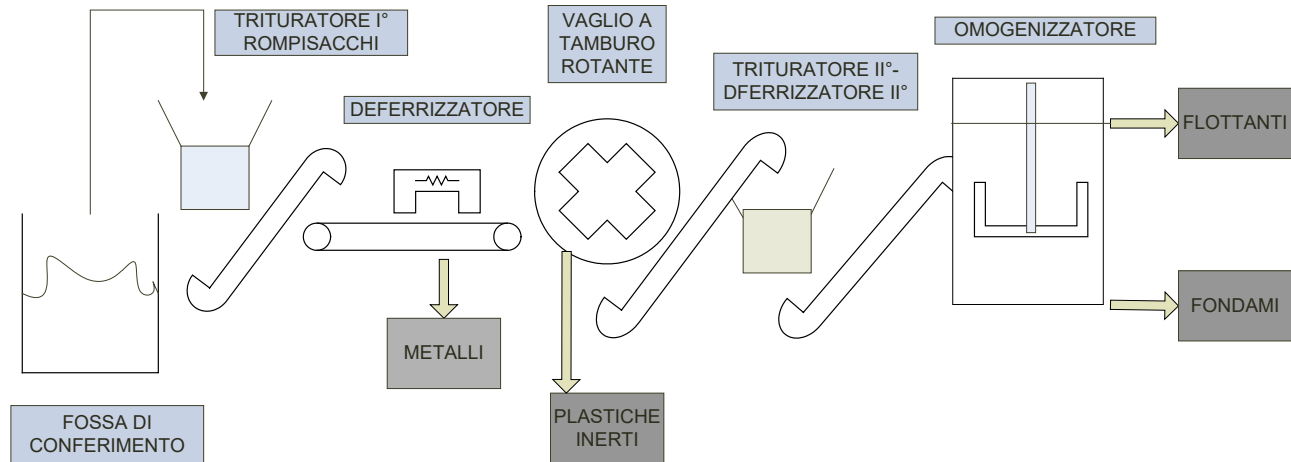


Mass balance of OF-MSW Pre-Treatment





Process chain of OF-MSW Pre-treatment



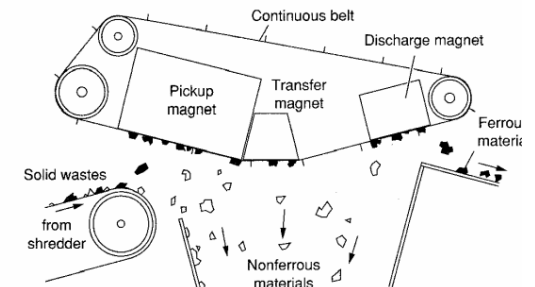
Fossa di conferimento



Rompisacchi



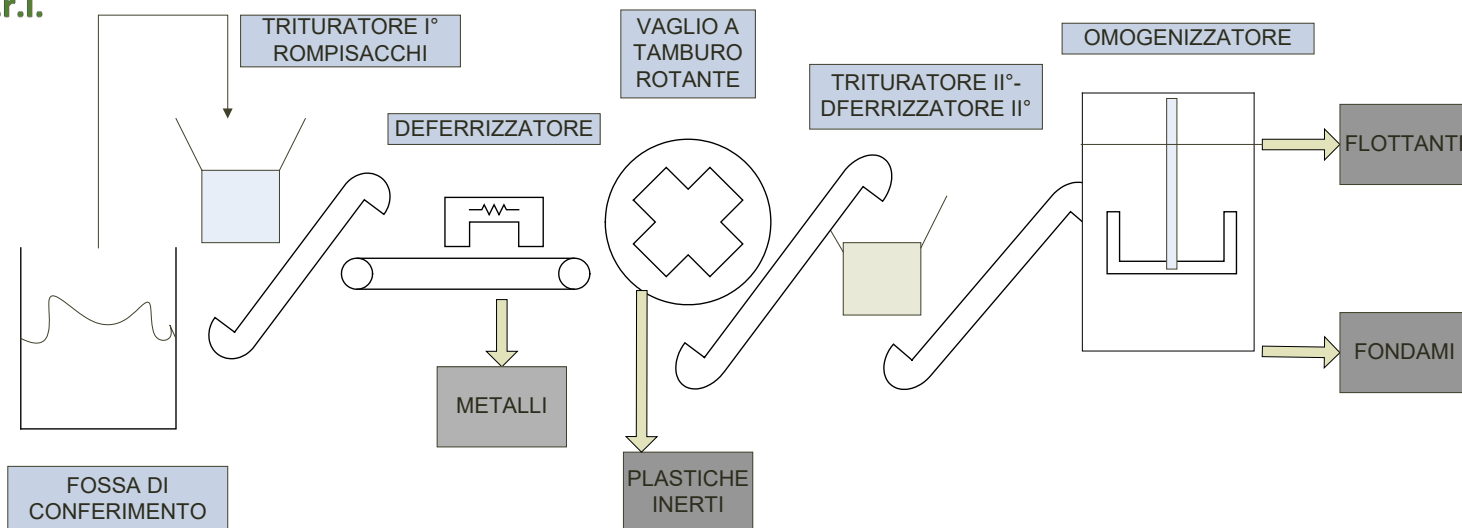
Separatore magnetico





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Process chain of OF-MSW Pre-treatment



Vaglio



Trituratore



Miscelatore



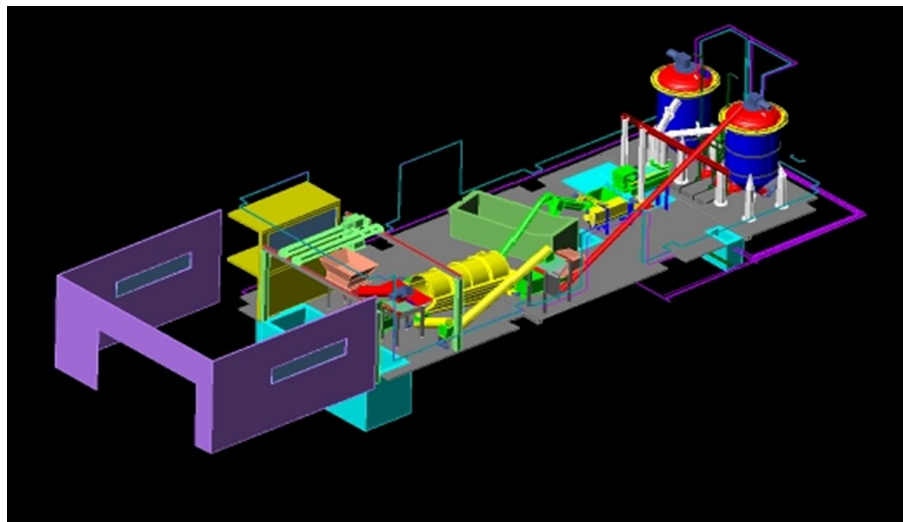
Lavaggio scarti



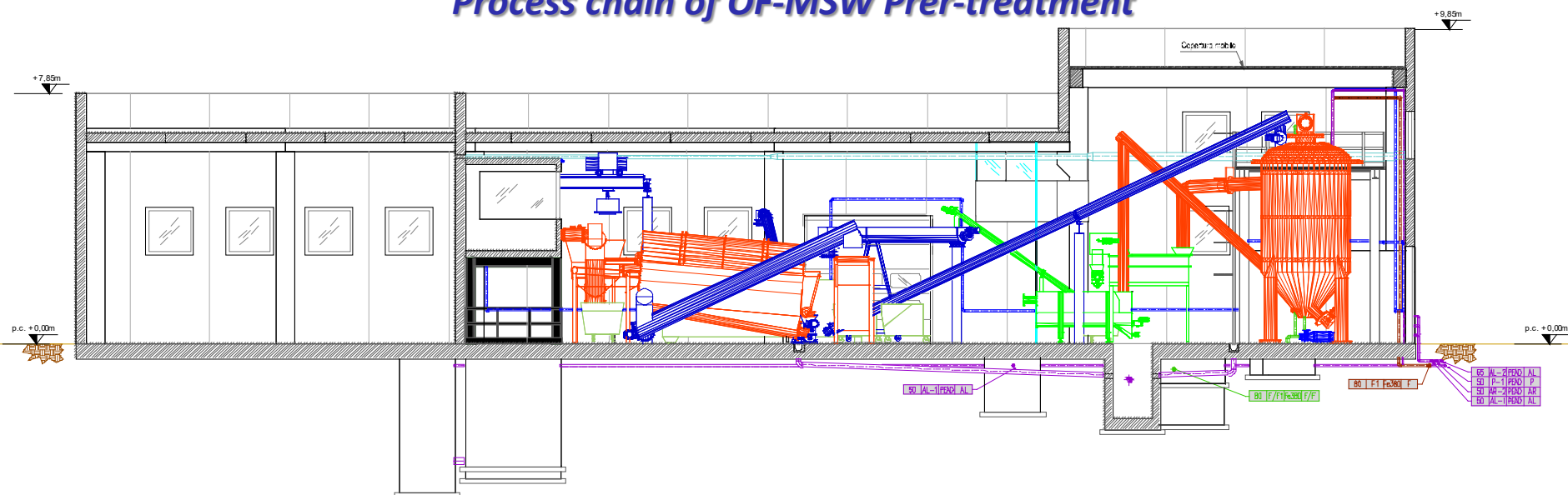


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Process chain of OF-MSW Pre-treatment



Process chain of OF-MSW Pre-treatment





Anaerobic digestion – Functional parameters

<i>Paramter</i>	<i>U.m.</i>	<i>Value</i>
<i>Temperature in the reactor</i>	<i>°C</i>	<i>35 - Mesophylic</i>
<i>HRT - Hydraulic Retenton Time</i>	<i>days</i>	<i>28-32</i>
<i>OLR - Organic Load Rate</i>	<i>KgTVS/(m3d)</i>	<i>0.9-1.2</i>
<i>SGP - Standard Gas Production</i>	<i>m3/Kg TVS_{IN}</i>	<i>0.3-0.4</i>
<i>TS_{IN} - Total Solids</i>	<i>g/Kg</i>	<i>35-40</i>
<i>TVS_{IN} - Total volatile Solids</i>	<i>g/Kg</i>	<i>59-62</i>
<i>pH Influent</i>		<i>6.5-7.0</i>



What obtain with 1 ton of OF-MSW

<i>Paramter</i>	<i>U.m.</i>	<i>Value</i>
<i>Total Energy Production</i>	<i>kWh</i>	<i>300-360</i>
<i>Heat over the consupction in anaerobic digestion</i>	<i>Mcal</i>	<i>210-300</i>
<i>Sludge producted at 25%TS</i>	<i>kg</i>	<i>90-200</i>
<i>Supernatants producted</i>	<i>m3</i>	<i>1.7-3.0</i>
<i>Nitrogean back to waterl line to treat</i>	<i>PE</i>	<i>200-300</i>



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A full scale plant (Treviso WWTP): the sludge line





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A full scale plant (Treviso WWTP): the OF-MSW section



The waste as collected



The OFMSW treatment section



Co-generation unit (200 kWh)



Co-generation unit (200 kWh)



References

