



Molten Salt Oxidation

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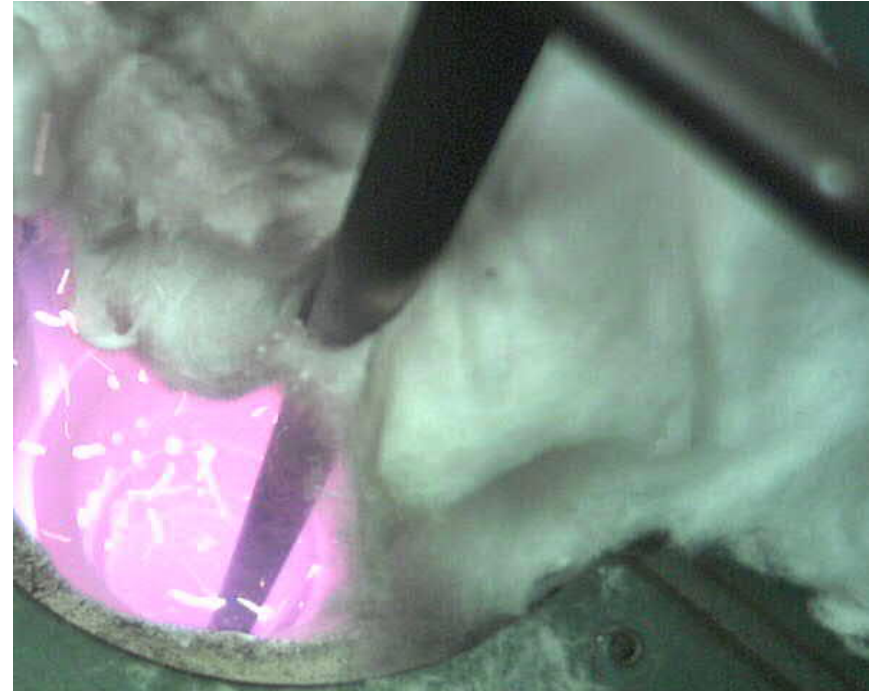
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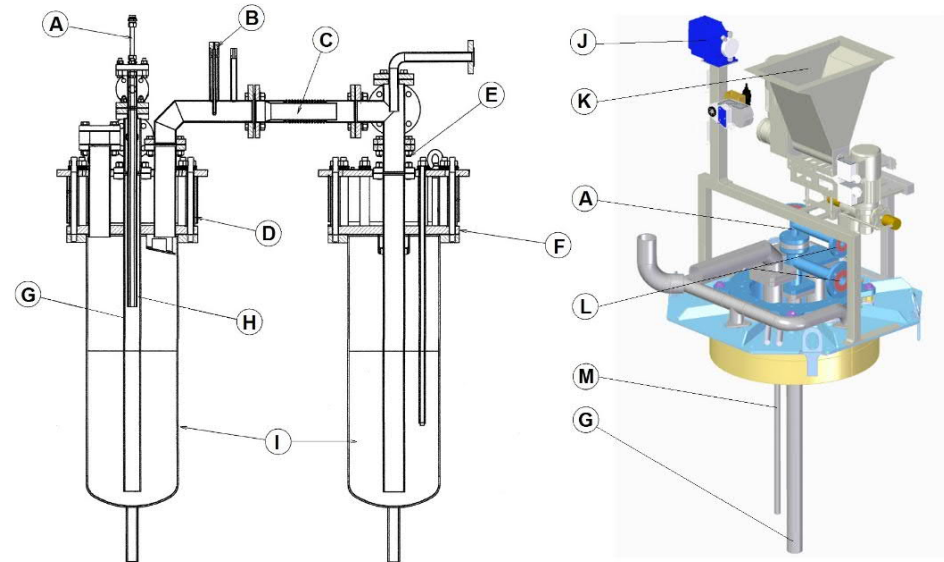
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- For R&D of innovative method for flameless oxidation of liquid (oils) and semi-liquid (spent ion resins) organic waste
- Aim of this technology is to evaluate its real operational applicability for disposal of liquid and semi-liquid waste from the environmental and technological point of view.
- Applicability will be based on experimental experience
- Possibility to use MSO for disposal of the organic waste from GEN IV reactors



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- Flameless oxidation occurs within the molten salt with high temperatures (to 1000 °C)
- Alkaline based salts are the best as molten baths
 - Na_2CO_3 , K_2CO_3 ,
 - Ternary melts: $\text{Na}_2\text{CO}_3 + \text{K}_2\text{CO}_3 + \text{Li}_2\text{CO}_3$
- MSO is used for lowering the volume of the organic waste
- MSO consist:
 - Fuel dosage system (for solid/ liquid materials)
 - Two-stage reactor system
 - Flue gas treatment
 - Analyzer system for online, offline analysis of the flue gas
 - System of spent molten salt disposal



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- MSO – laboratory scale:
 - One stage reactor vessel with volume of 2 l (0,5 l of molten salt)
 - For small scale laboratory experiments
 - New salts melts
 - Organic waste disposal
 - Material (metal and ceramic) corrosion experiments

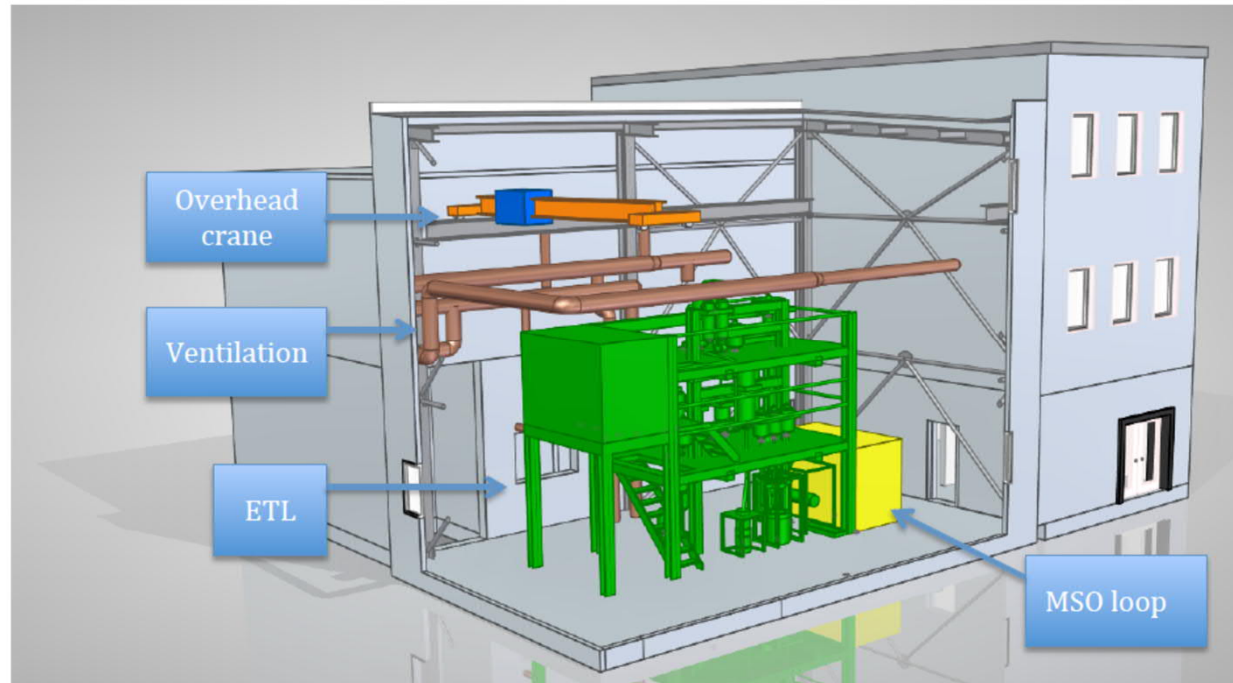


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- Reactor MSO – pilot scale:
 - Reactor vessels are made from Inconel 600
 - Reactors volume is 80 l (40 maximum volume of the molten salt)
 - Reactor vessel is protected from overpressure
 - Concentration of CO is limited to 100 mg/m³ for dry flue gas
 - Traces of SO₂ and NO_x
 - Oxidizing agent – air
 - Surplus of oxidizing agent - $\lambda=2$
 - Temperature during process 400 – 1000 °C

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Projects

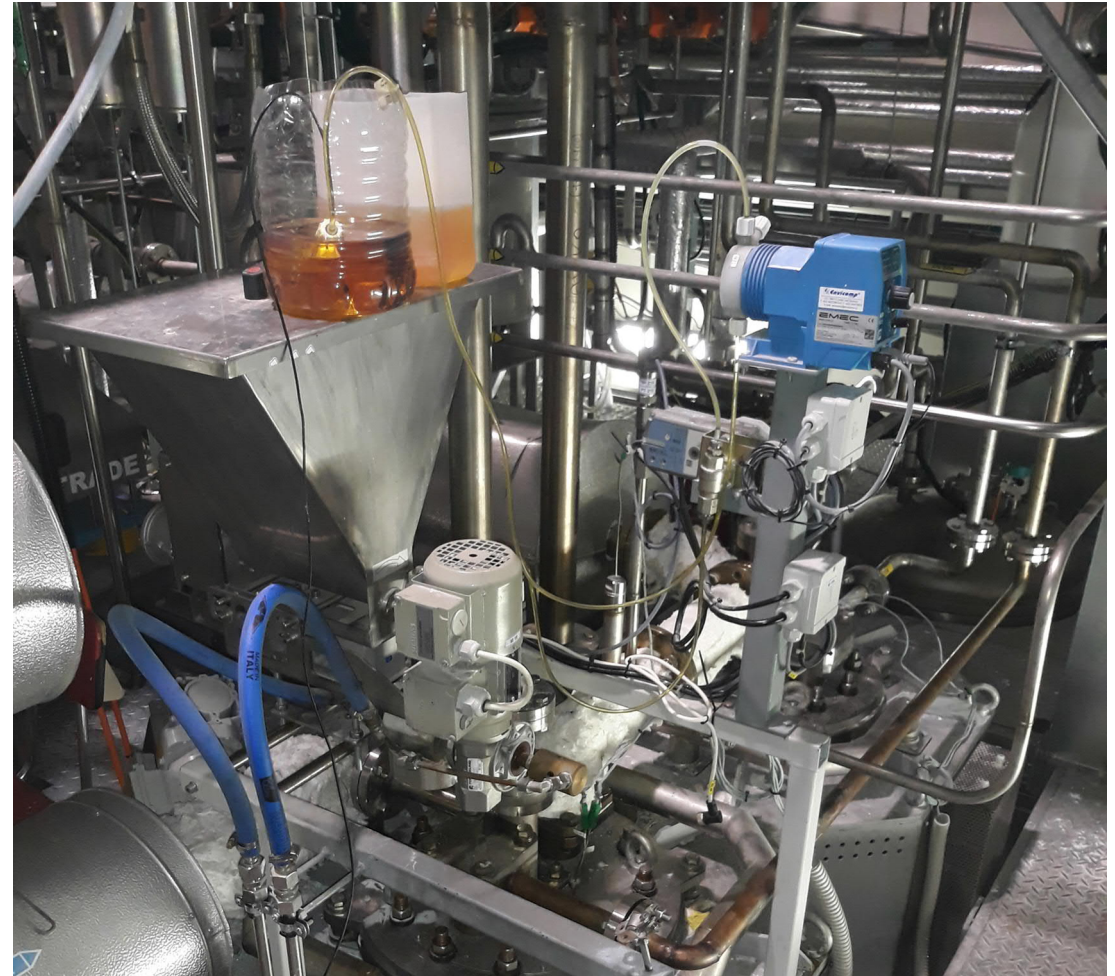
MSO (TaČR) and NCC

Development of the method
for disposal of saturated ion
resins in the molten salt

Development of the method
for disposal of hazardous
waste in the molten salt

Eurofusion

R&D in separation and
capture of tritium



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