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New innovative process by MMAtwo for recycling end-of-life PMMA waste

The MMAtwo (pronounce it Matou - /mætu:/) project coordinated by the Dutch company Heathland has just been launched on October 1st 2018 for a 4 years duration. It is supported by a 6.6 M€'s funding from the European Union Horizon2020 Research and Innovation programme. MMAtwo collaborative consortium gathers 13 partners from 6 different countries and will develop a new and innovative process to recycle post-industrial and end-of-life PMMA waste into Second Generation MethylMethAcrylate (MMA) raw material.

PolyMethyl MethAcrylate (PMMA) is a well-established polymer known for its optical properties. About 300 000 tons of PMMA are produced in Europe every year, or close to 1 billion Euro of market value. Although PMMA can be turned back into its monomer by thermal depolymerization, thus saving precious resources and CO₂ emission, it is estimated that currently only 30 000 tons of waste is recycled annually in Europe, or only around 10% of the yearly production. For a large part, recycling of PMMA is currently reliant on a lead-based process which does not allow to reprocess the lower PMMA qualities. PMMA scraps's current recycling processes focus on post-industrial PMMA, rather than end-of-life PMMA which represents the main share of the total PMMA waste stream which is either exported, landfilled or incinerated.

MMAtwo's innovative concept for PMMA waste recycling through depolymerization will focus on handling both post-industrial and contaminated end-of-life PMMA waste, thereby converting difficult to recycle waste that would otherwise be landfilled or incinerated into high quality secondary raw material. The PMMA recycling process will be validated at a TRL 7 scale (TRL= Technology Readiness Level, Level 7: pre-commercial system is demonstrated in operational environment), enabling the possibility of a first commercial unit soon after the end of the project (2022).

The MMAtwo consortium consists of partners representing every step of the PMMA value chain: **Heathland**, a Dutch collector and recycler of PMMA waste; **Comet Traitements**, a Belgian recycler of end-of-life vehicles; **Ecologic**, a French private non-profit company in charge of Extended Producer Responsibility compliance for WEEE; **Arkema**, a French PMMA producer; **Delta Glass** (part of Polyplastic Group), a Dutch producer of PMMA windows; **JSW Europe**, a German based division of Japan Steel Works and core technology provider; **Speichim** (part of Séché-Environnement group, French leader of waste treatment), a French based specialist in purification of solvents and chemicals; **AKG-Gazbeton**, a Turkish company manufacturing heat-insulated, light, non-combustible autoclaved aerated concrete blocks and reinforced products as well as insulating boards; **University of Gent**, a Belgian academic partner to train researchers on polymer recycling; **Quantis**, a Swiss based specialist in Life Cycle Analysis; **Process Design Center**, a Dutch SME for process development, integration and optimization; **Certech**, a Belgian applied research center in chemistry, specialised in emissions and odours of materials and polymer recycling standards; and **Ayming** a French consulting group supporting the project management, communication and dissemination activities.

The MMAtwo's Advisory Board includes several academics, CEFIC's Methacrylate sector group and other PMMA producers' representatives, illustrating the commitment of the PMMA value chain.



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