PdM Masters project proposal

Company name	**GME / SMX with Laboratory for Processing of Advanced Composites (LPAC)**
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Project title or topic

"Best carbon foot-print polymeric materials"

Context and background

PdM master's project: **Data science or Mechanical Engineering / Materials Science**

This project will model the decarbonization of hard to abate classes of materials examining their current CO2e footprint and the evolving landscape and sustainability initiatives to reduce this versus time. The project is focused on polymeric materials and specifically the case studies in the ZeroPol (Towards NetZero Plastics Innosuisse Flagship project) sub-project 3, "Best carbon footprint materials".

The project will model decarbonization of the Swiss Plastics footprint towards NetZero scenarios examining both market growth and technological and legislative drivers to reduce the environmental footprint per kg and hence across the economy. It will build upon previous work by adding a durability switch that can include or exclude the effect of product life time on market demand.

Hence for polymeric materials, this will consider: i) virgin or primary raw materials, ii) bio-mass or bio-attributed mass balanced materials, iii) circular solutions: recycled post-industrial waste, iv) circular solutions: recycled post-consumer waste. This will hence examine the effects of working both upstream in the supply chain and also developing circular economy approaches.

Specific points on these plots will be data from the case studies in the ZeroPol project which will be used to tell stories as to how the Swiss plastics landscape can transform versus time with examples of processes, products, and customers. This will involve collaboration with the other ZeroPol research partners including ETHZ and SUPSI.

Previous experience with coding and Python is required.

It is anticipated that high quality work will be published and presented accordingly and used in lecture materials.