



POWERHOUSE ENERGY GROUP

Making the economy circular and
sustainable

Technical Presentation

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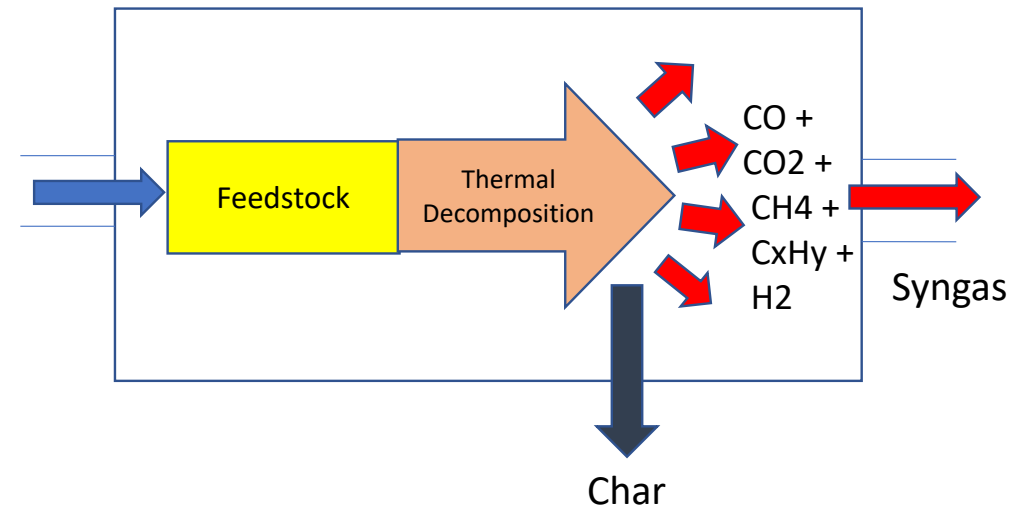
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DMG - The Powerhouse brand



DMG - The Technology

- DMG[®] uses a form of advanced conversion technology (ACT) called pyrolysis during which feedstock is heated in the absence of oxygen. The material cannot burn, so its molecular structure breaks down.
- Due to the high temperatures involved, the material turns into a gas and solid residues, which are carbon rich drop out and are recovered.
- PHE's knowhow lies in the understanding of how waste feedstocks behave, and how to apply feed rates, residence time and temperature ranges to optimize production of the end products.
- PHE has tested a range of materials and holds all results in its database and is developing a prediction model.



DMG Technology – How do we know it works?

Development of known Concepts

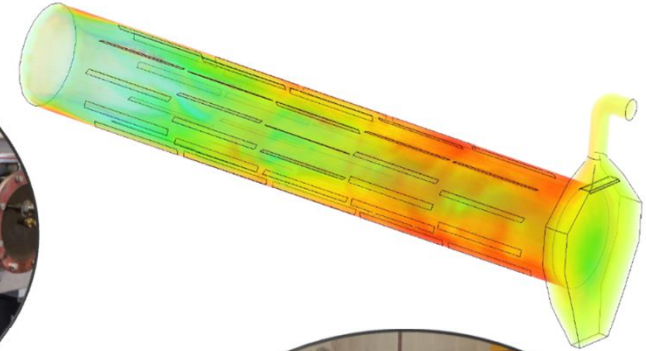
- Background research on behaviour of materials under heat and the application of thermo-chemistry
- Aspen process simulation
- Working with universities on design analysis using advanced computerised methods

Laboratory Scale Testing Unit

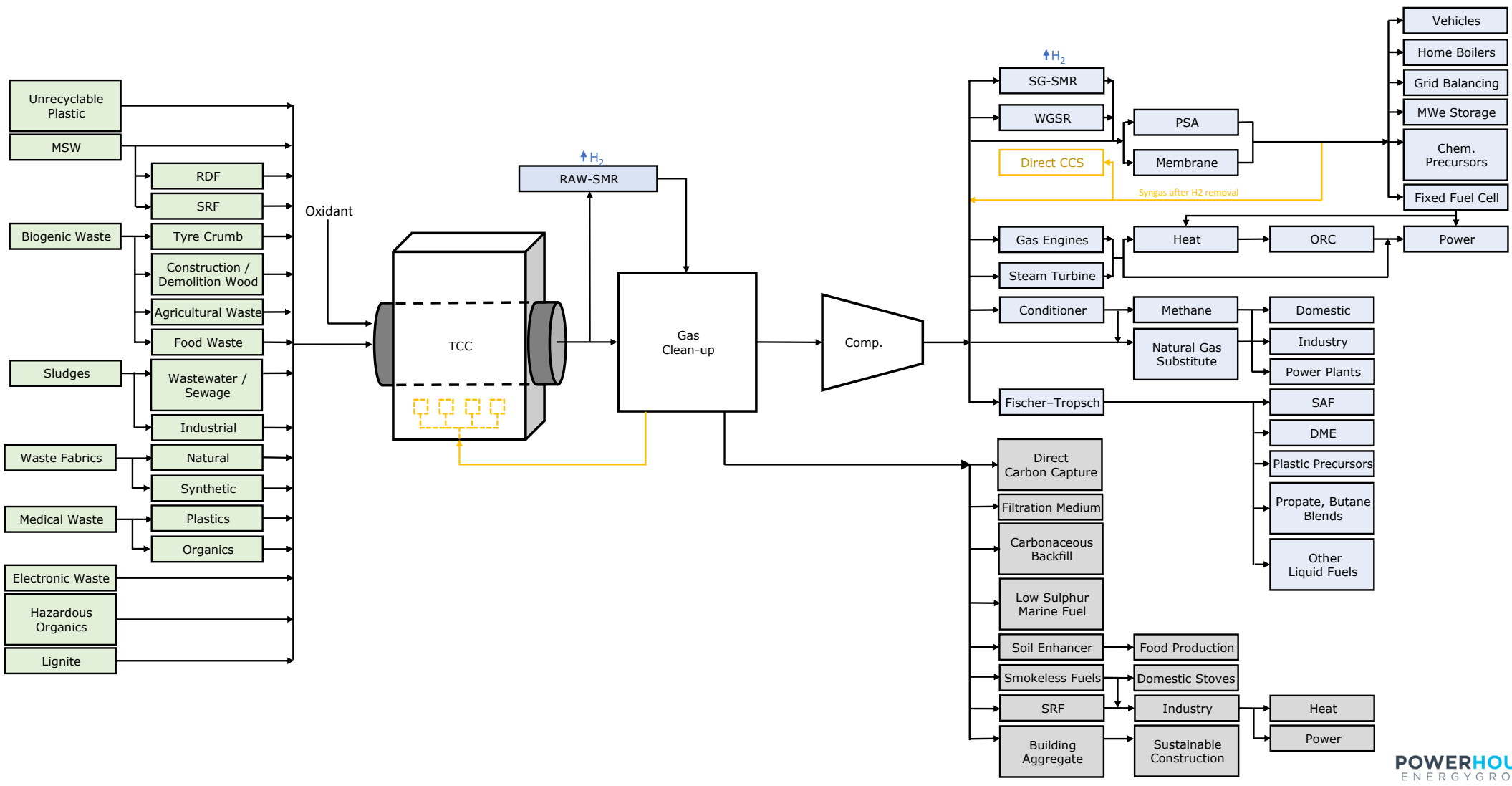
- ~50kg per day of feedstock processing
- Providing testing data for process modelling

Process Research Demonstrator

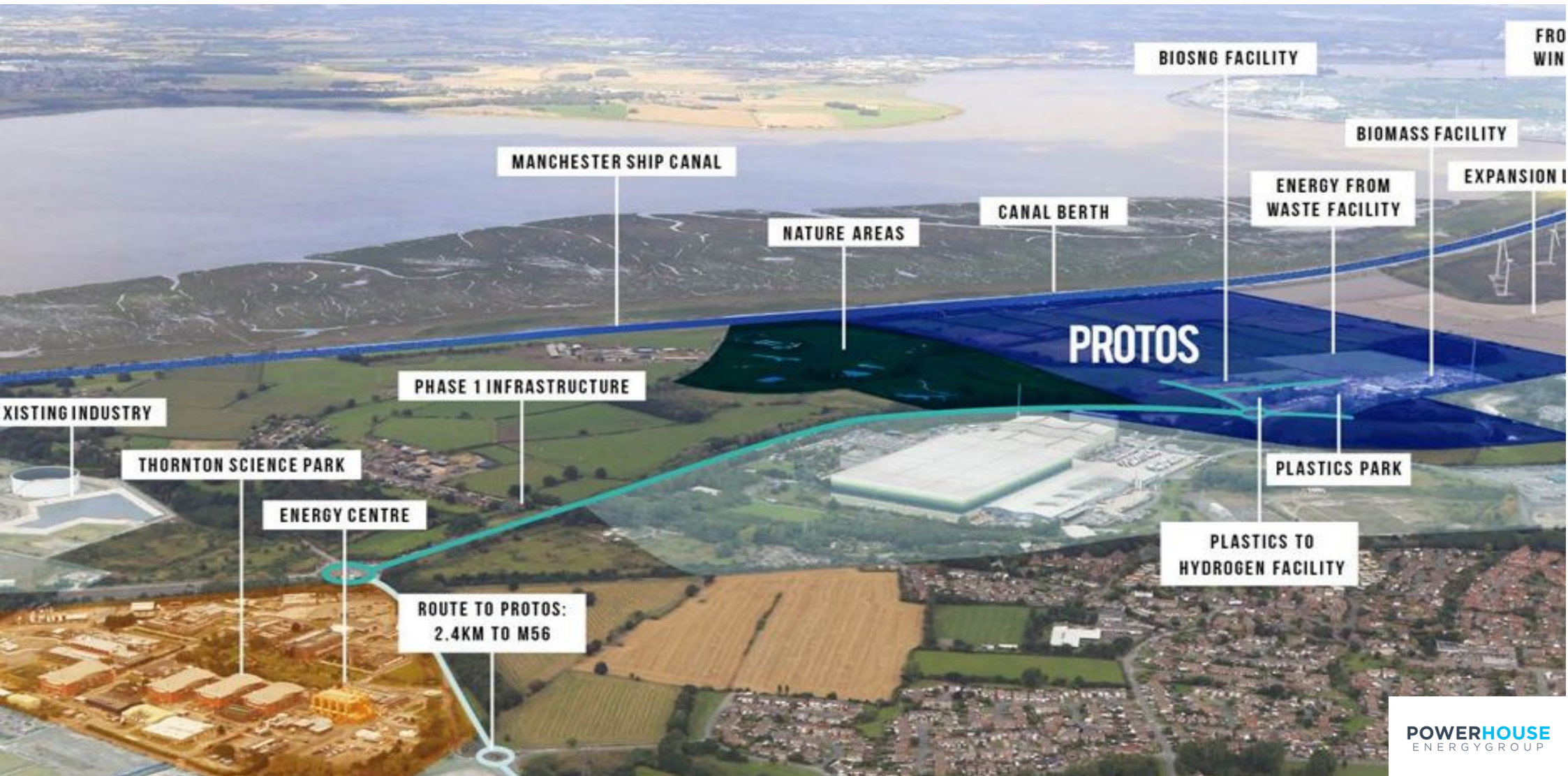
- ~750kgs per day of feedstock processing
- Provide testing data for process modelling
- Syngas has been run successfully through Gas Engine Generator
- Power provided to University MicroGrid



DMG Technology - A Wide Potential

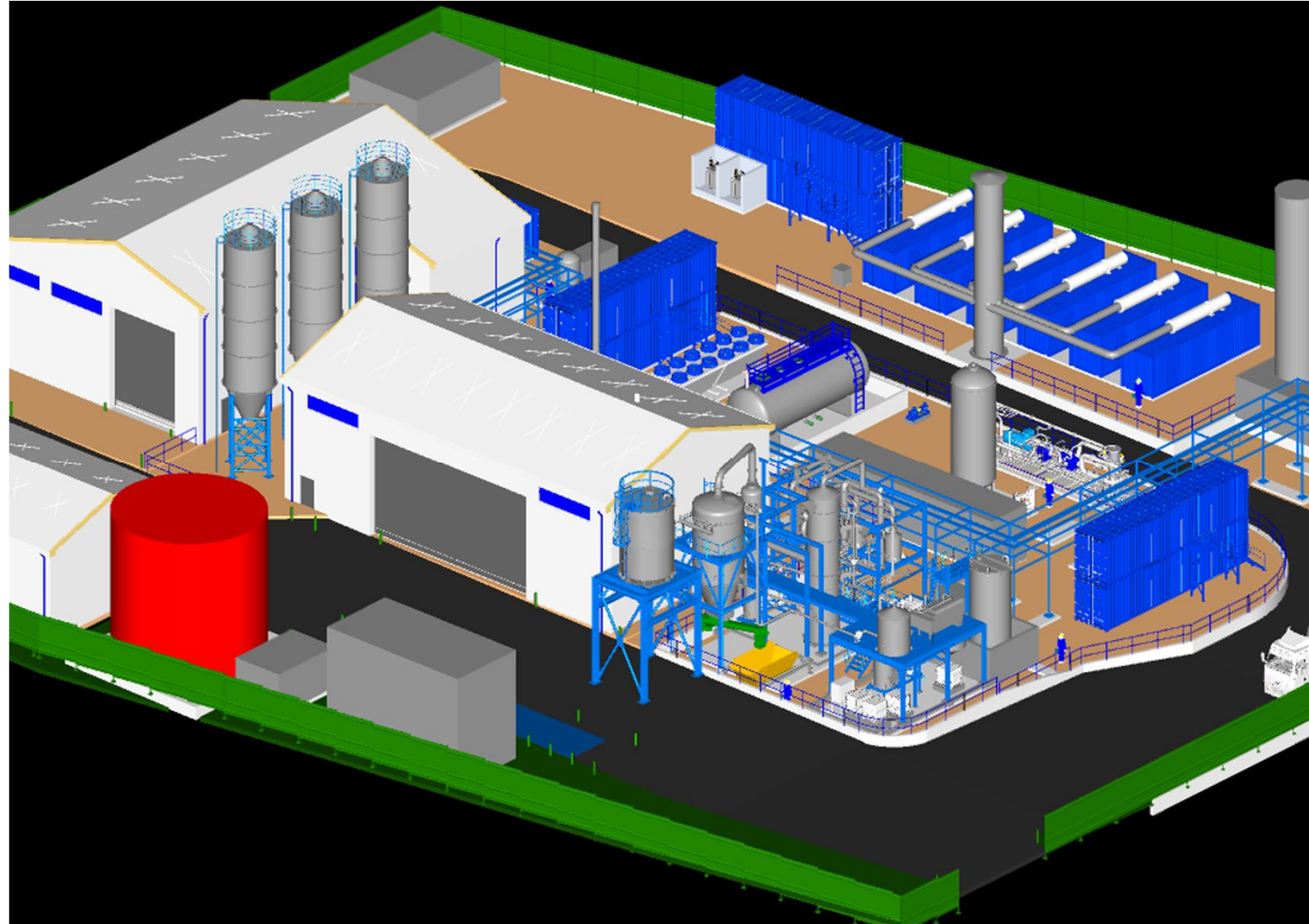


DMG Technology - Protos Plastics Hydrogen No 1

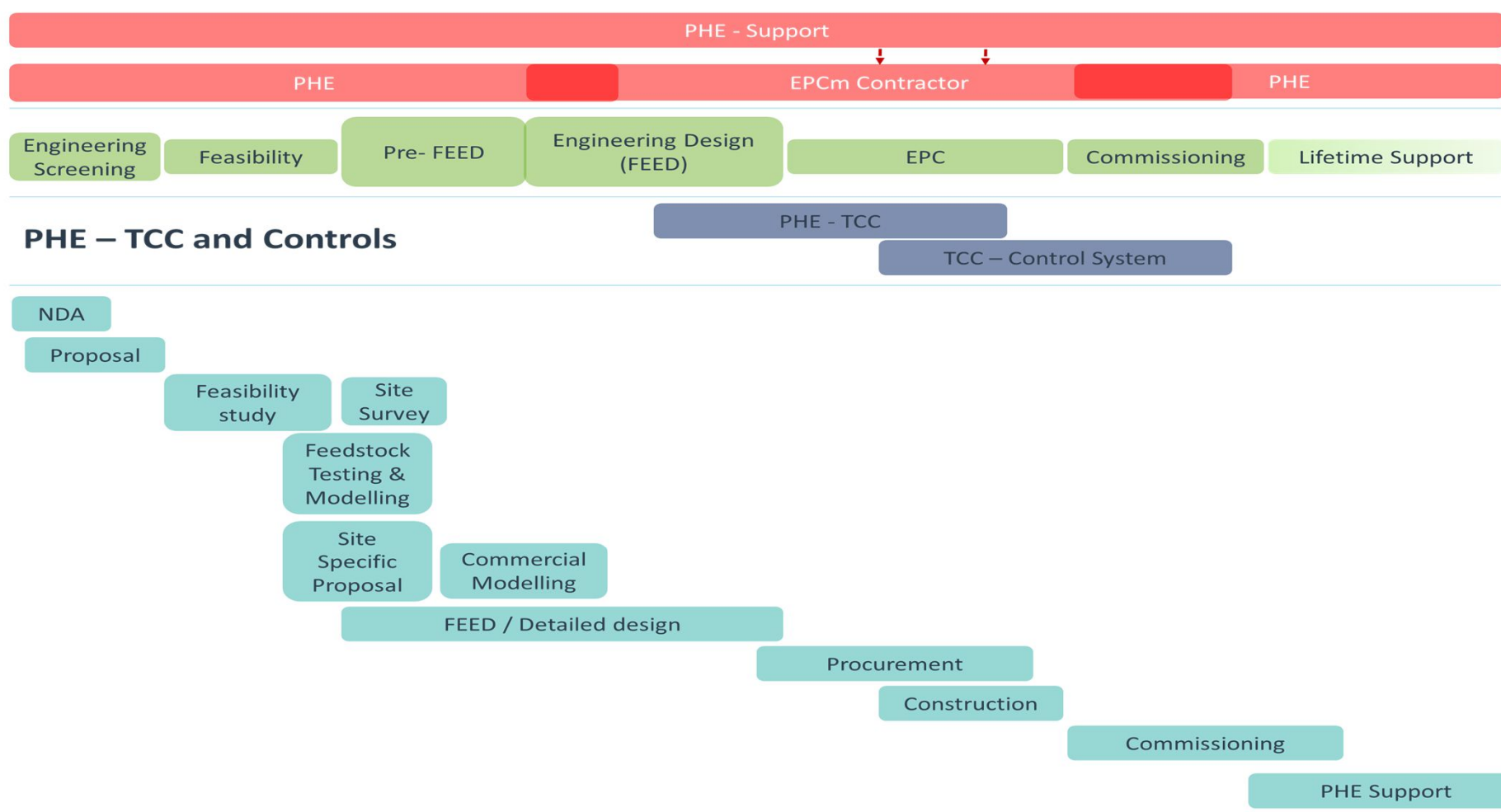


DMG Technology - Protos Plastics Hydrogen No 1

First industrial scale unit being developed at Plot 10b on the Protos Plastic Park near Elsmere Port, planning approved, preliminary site works started.



DMG Technology – Typical Facility Delivery Model



DMG Technology – Design and Engineering

- Full Feasibility and Concept Designs completed
- FEED study Completed and peer reviewed
- 3D model developed
- Through an iterative process of design and review, which coupled with testing and modelling we have improved hydrogen yield from the initial design.
- The design period has generated over 200 technical documents including: 24 Specifications, 13 Datasheets, 28 P&IDs, UFDs and PFDs, 9 layouts, 18 Specific Technical reports and studies, CAPEX and OPEX, 11 Procedures, EPCm ITT package etc.
- In addition, the Feedstock Testing Facility (Technology Innovation Centre) has been Designed, Specified and ordered.

DMG Technology – The Technology Innovation Centre

A place to:

- Innovate
- Invent
- Experiments
- Learn
- Develop
- Grow
- for visitors to see what we do

