

Hydrogen fuel cell activities at Hydrogen South Africa

From research to commercialisation

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Prepared for Hannover Messe, Hydrogen and Fuel Cells and Batteries Group Exhibit Technical Forum

27 April 2017

The Department of Science and Technology's commitment to the Hydrogen Economy will enable a shift from a resource-based economy to a knowledge-based economy.

Three Main Goals:


1. Supply 25% of the global catalyst demand for the global hydrogen and fuel cells market by 2020
2. Develop local cost-competitive hydrogen generation solutions
3. Promote equity and inclusion in the economic benefits of South Africa's resources

Hydrogen South Africa



Materials and Components

UCT, Mintek



Components and Systems

UWC

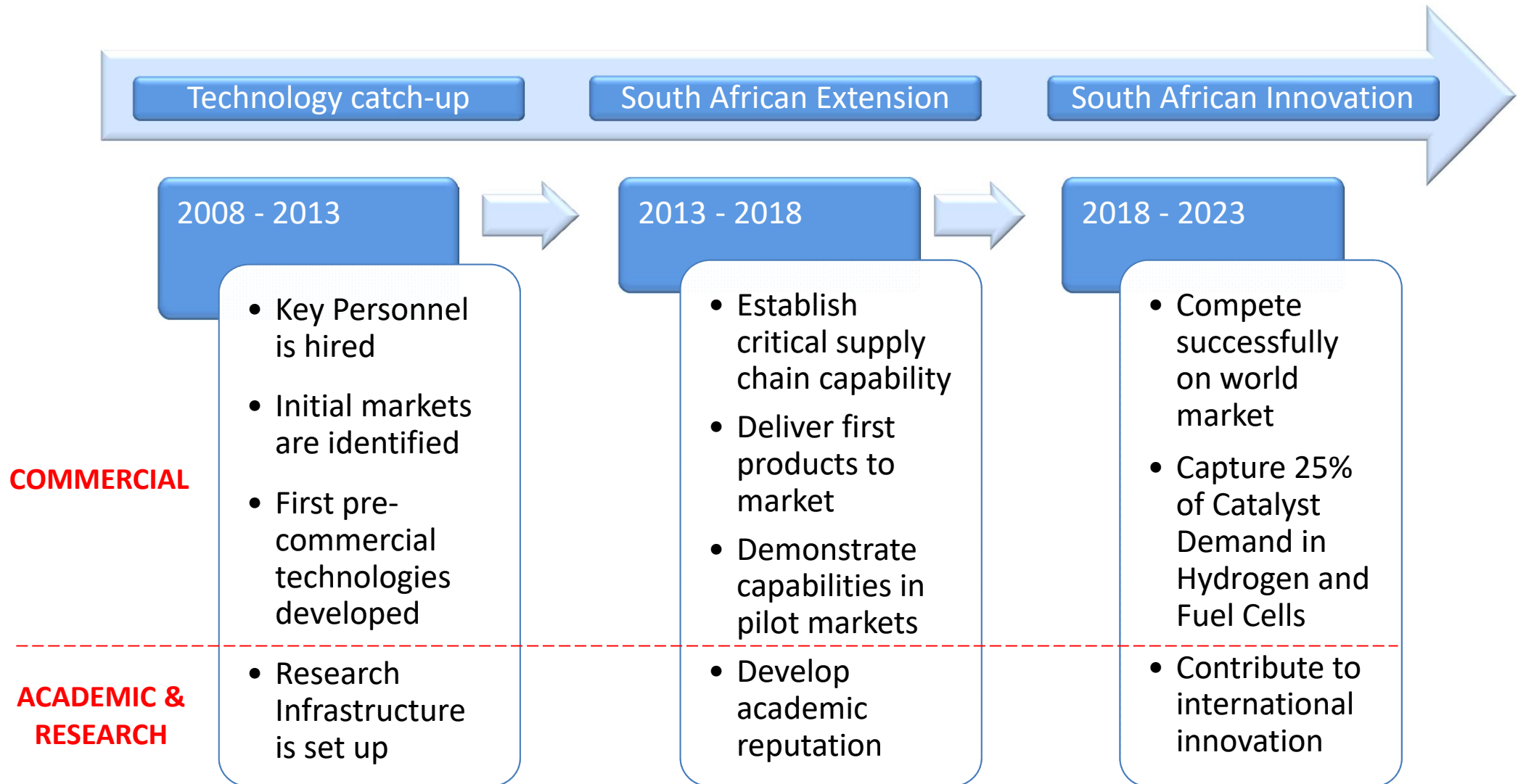


Systems and Infrastructure

NWU, CSIR

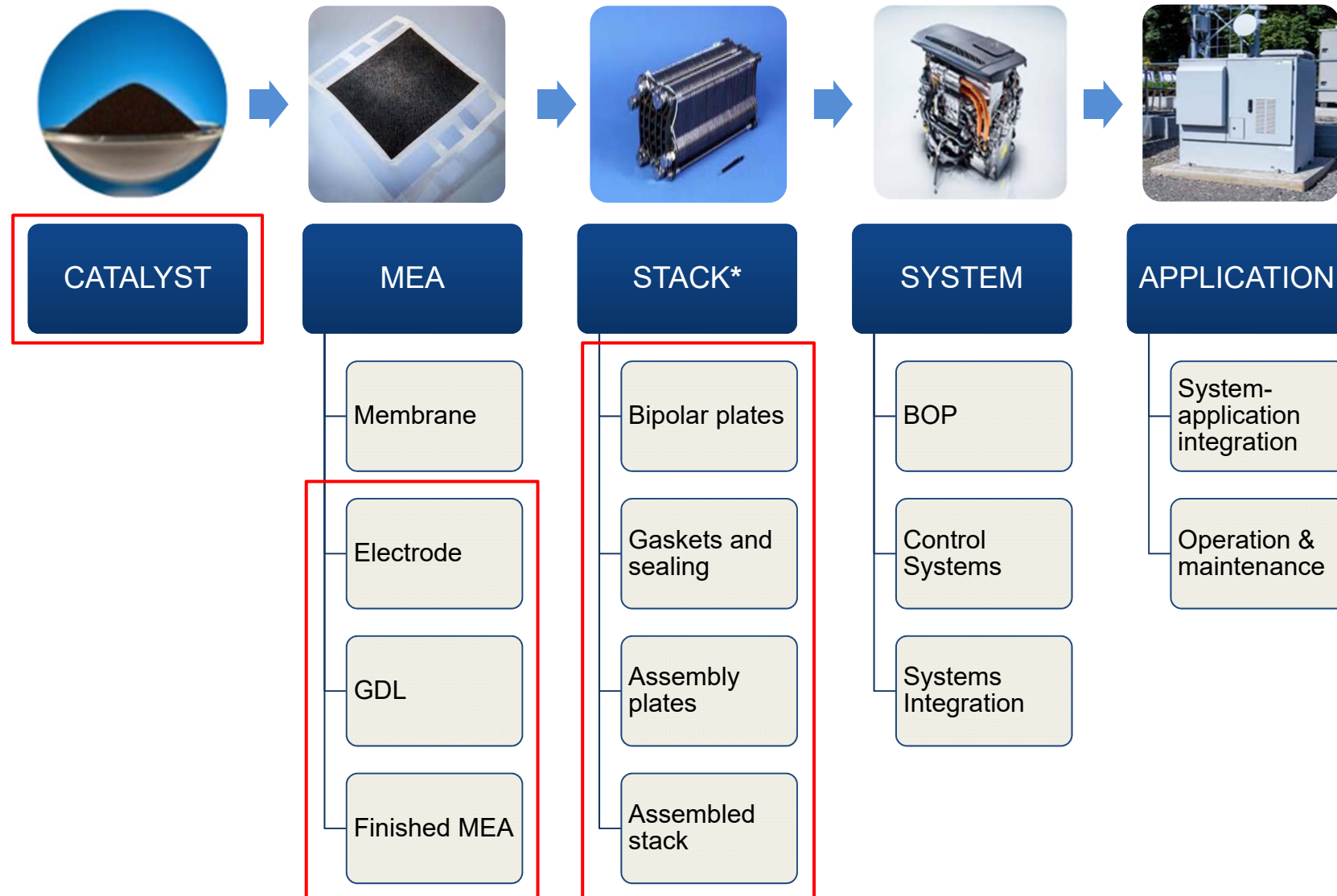


Implementation Plan



Overview of activities

Materials and components for **fuel cells** and hydrogen generation

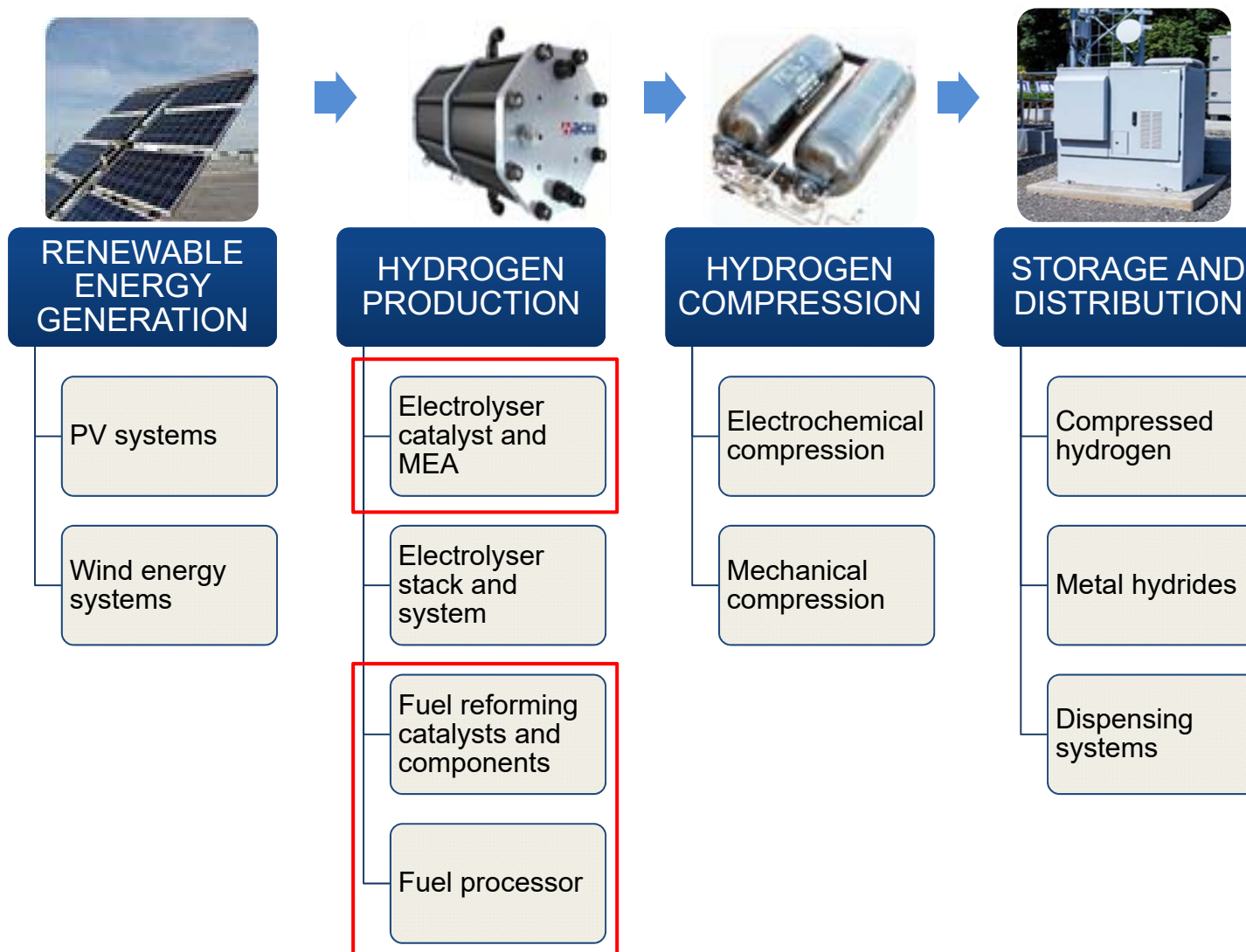


FUEL CELL VALUE CHAIN

* Stack development only on customer request and additional funding


Overview of activities

Materials and components for fuel cells and **hydrogen generation**



HYDROGEN GENERATION VALUE CHAIN

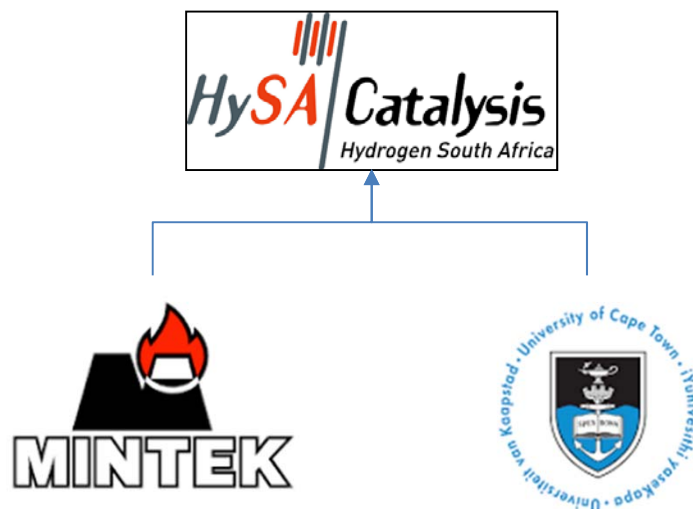
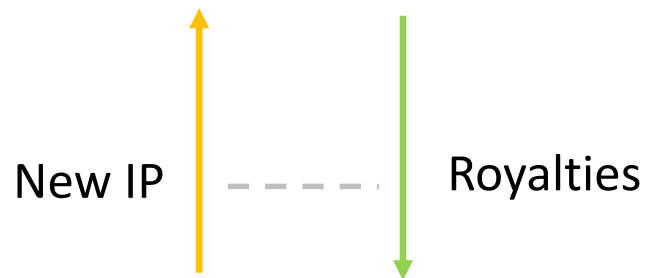
Implementation strategy

	RESEARCH AND HCD	TECHNOLOGY DEVELOPMENT	PRODUCT DEVELOPMENT	BUSINESS DEVELOPMENT
TRL	1-3	4-6	7-9	
Team	16 MSc and PhD Students	13 engineers and scientists	6 engineers and scientists	KP2: Portable Power 
Drivers	HyPlat's customers and US DOE Targets		HyPlat's customers	
Goals and KPIs	<ul style="list-style-type: none"> • Proof of concept • Patents • Publications and graduates 	<ul style="list-style-type: none"> • Customer performance/US DOE targets in lab application • Patents and trade secrets 	<ul style="list-style-type: none"> • Customer performance in final application • Cost targets 	<ul style="list-style-type: none"> • Trial product deliveries • Customer engagements • Local projects



* TRL = Technology readiness level

Commercialisation structure



Commercialisation (TRL 7-9)

- Licence HySA Catalysis technology
- Product development
- Inform HySA Catalysis of FC market requirements
- Commercialise products

R&D Centre (TRL 1-6)

- New IP generation
- Advanced technologies

HyPlat's Product Offering

Leader



PGM-based Catalysts

- V-series
- K-series
- A-series

Leader



Customised MEAs

- 3, 5 & 7 layer MEAs
- Custom and standardized

Pipeline



Electrolyser CCMs

and

MEA sub-components

Products are made in South Africa using proprietary South African technology

Markets and Applications



STATIONARY

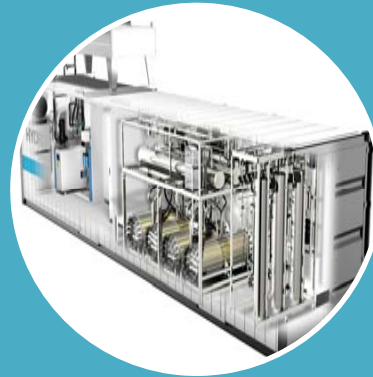
Backup and remote

- Telecoms base stations
- Remote off-grid
- Rural electrification
- Retail & commercial buildings



MOBILITY

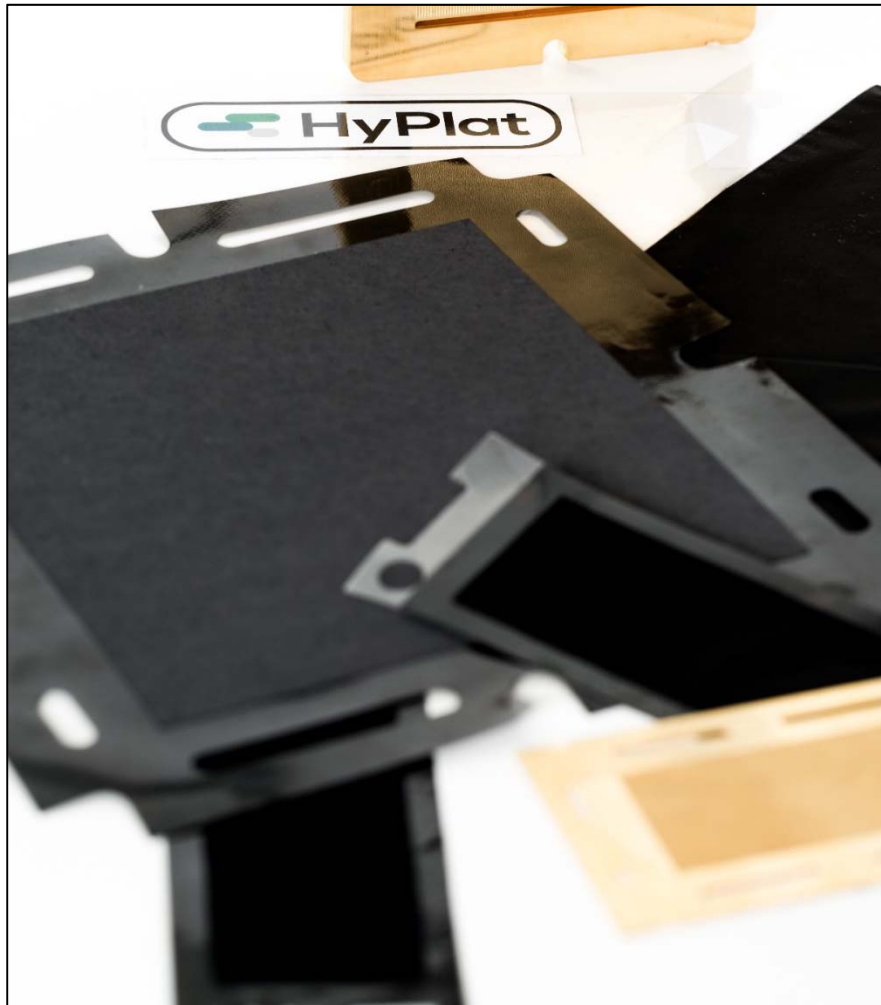
- Range extenders
- Buses
- UAVs



ELECTROLYSER



HyPlat's MEA Offering



- ✓ Proprietary manufacturing methods
- ✓ Detailed cost model
- ✓ Flexible manufacturing techniques
- ✓ Lean six sigma based manufacturing processes
- ✓ Translates into a high quality, cost competitive and customisable product

South Africa's Department of Science and Technology is committed to:

- Shifting from resource based economy to knowledge based economy
- Training of scientists and engineers
- Developing technologies from concept to commercialisation
- Commercialisation of South African technologies