BeFC
Bioenzymatic Fuel Cells

Project Summary – INTERN5

PROJECT INFORMATION

BeFC produce paper-based fuel cells that use enzymes to convert natural fuels (glucose and oxygen) into electricity. BeFC technology provides an environmentally-friendly, thin, flexible and metal-free energy source for low-power electronics.

This student project will involve studying the power requirements of different step-up and charge-pump DC-DC converter topologies. The student will first investigate the theoretical start-up voltages, operating current and other relevant parameters of different converters and charge pumps available on the market with the aim of identifying the most suitable for BeFC.

Next, the student will experimentally test identified devices and identify the suitable components, thus refining their previous theory-led selection. Based on the experimental findings, the student will suggest the most suitable platform.

A range of electronic test equipment will be available to the student to complete the project (*e.g.*, oscilloscope, digital multimeter, DC power analyser, current waveform analyser).

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PROJECT SCHEDULE

Titre	Durée
1) WP1 project management	9s
1.1) prepare NDA	1s
1.2) sign NDA	
1.3) laboratory induction	1s
1.4) topical literature review	1s
1.5) report writing	7s
1.6) deliver draft report	
1.7) report corrections	1s
1.8) deliver final report	
2) WP2 component selection & circuit design	3s
2.1) identify suitable off-the-shelf components	1s
2.2) review datasheet information	1s
2.3) schematic design for prototypes	1s
2.4) PCB layout design for prototypes	1s
2.5) export necessary files & send for production	
2.6) identify selected component distributors	1s
2.7) order selected components	
2.8) write report section	1s
2.9) deliver report section	
3) WP3 electronic assembly & testing	5s
3.1) prepare experimental setup	1s
3.2) assemble PCB boards	1s
3.3) perform minimum start-up voltage tests	1s
3.4) measure quiescent power consumption	1s
3.5) perform conversion efficiency tests	1s
3.6) test operational stability	2s
3.7) review results	1s
3.8) write report section	1s
3.9) deliver report section