

Stock Data

Share Price:	6.19p
Market Cap.:	£244.1m
Shares in issue:	3,943.4m
52 week high/low:	11.40/2.25

Company Profile

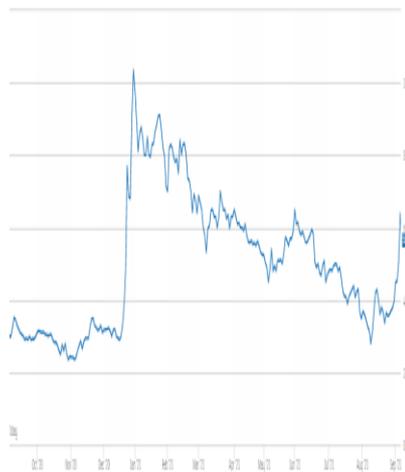
Sector:	Alternative Energy
Ticker:	PHE
Exchange:	AIM

Activities

Powerhouse Energy Group plc ('the Group', 'Powerhouse' or 'PHE') has developed a proprietary process technology - DMG® - which can utilise waste plastic, end-of-life tyres, and other waste streams to efficiently and economically convert them into syngas.

[www.powerhouseenergy.net/](http://www.powerhouseenergy.net/)

1 year share price performance



Source: [LSE](#)

Past performance is not an indication of future performance

Turner Pope contact details

Tel: 0203 657 0050  
Email: [info@turnerpope.com](mailto:info@turnerpope.com)  
Web: [www.turnerpope.com](http://www.turnerpope.com)

Andrew Thacker  
Corporate Broking & Sales

Barry Gibb  
Research Analyst

TPI acts as joint broker to Powerhouse Energy Group plc.

Attention is drawn to the disclaimers and risk warnings at the end of this document.

Retail clients (as defined by the rules of the FCA) must not rely on this document.

# Powerhouse Energy Group plc

Hydrogen Utopia International plc ('HUI'), Powerhouse's independent agent for its Distributed Modular Gasification ('DMG®') technology, has announced a potentially far-reaching agreement with Linde AG ('Linde', NYSE: LIN). Coming very shortly after having established a binding exclusivity agreement (the 'PGH Exclusivity Agreement') for deployment in Poland, Greece and Hungary, a press release from HUI confirms Linde has finalised the technical feasibility evaluation for a project in Konin, Poland which, when completed, will contain as many as ten DMG® units in one location, helping the city, which was originally built around coal, make a clean energy transition. Representing a significant step forward in Powerhouse's ambitions to initiate an international roll-out of its technology, being able to partner with what is arguably the global leader in production, processing, storage, distribution and transition to hydrogen, adds considerably to international credibility for its technology to foster decentralised hydrogen utilisation. Going forward, its relationship and dependence on HUI might be expected to deepen still further. Given that this comes on the back of Group operations having performed strongly during the first half of 2021 despite the impact of the lockdown, and with Peel's financial closure of the Protos project anticipated during Q4 2021, execution of DMG®'s first application might be expected to commence before year end with activity levels moving into a much higher gear shortly thereafter.

## Technical feasibility evaluation finalised

Linde has finalised its technical feasibility evaluation to deploy the syngas clean-up and hydrogen extraction capabilities of DMG® technology in Poland. As a result, HUI and Linde are now in the final stage of signing a mutual contract that is expected to lead to its licensing and implementation.

The study envisaged a plant to be jointly developed by Linde, HUI and Powerhouse, located in Konin in Central Poland. It proposes to convert 40 tonnes per day of plastic waste into 58 MWh of renewable electricity and clean hydrogen. Once the plant is commissioned, the hydrogen is expected to be used locally as a fuel for city buses and other heavy-duty vehicles, as well as for passenger cars. The DMG® system may also be used to provide heat to the citizens of Konin through its planned geothermal district heating project.

The project, when completed, will contain as many as ten DMG® units in one location. The site is one that HUI has received legal access to commence planning applications, necessary permits and EIA, and for this purpose, HUI has engaged SWECO, the European engineering consultancy, to commence the process.

The project is subject to funding approval by the Just Transition Fund which will be matched by funds from the Polish Government under the JUST Transition Fund terms of government matching funds.

## Polish Hydrogen Strategy 2030

Poland increasingly recognises hydrogen as an essential component in the energy transition to clean energy away from fossil fuels. It considers it to be the best available technology for heavy-duty and long-range transport, as well as for decarbonising key

industries including cement and steel production and potentially domestic heating.

The Polish Hydrogen Strategy 2030, which is now being implemented, sets ambitious targets for the development of hydrogen technologies in the country. It plans to have 2GW of hydrogen electrolysis capacity and 2,000 hydrogen fuel-cell buses on its streets by 2030 as part of a new strategy to promote the use of the fuel. It sets out six key targets and forty steps that must be taken to achieve European Union guidelines. The three sectors where hydrogen will be needed are energy, transport and industry. The Government is seeking new energy solutions, such as DMG<sup>®</sup>, in order to reduce its dependency on coal and make a swift transition towards sustainable energy.

During 2019 Konin, located in central Poland on the Warta River, prepared a new energy transition strategy for the city. This included both waste-to-energy initiatives as well as using hydrogen as a fuel for local transport and municipal companies. The city is currently engaged, together with other relevant regional stakeholders, in preparing the territorial JUST transition plan for the Eastern Wielkopolska region.

### International deployment of DMG<sup>®</sup> technology

HUI has become an international champion of Powerhouse's technology. While initially driving its rollout across Poland, Greece and Hungary, its longer-term ambition is to market and distribute across the whole European Continent.

Following its initial payment of deposits totalling €125,000, the PGH Exclusivity Agreement requires HUI to pay Powerhouse a further €325,000 by the end of 2021 in anticipation of it being formally granted an intellectual property licence for the DMG<sup>®</sup> technology, with a further €300,000 to be paid 12 months later. In addition to this Powerhouse will, of course, continue to receive an annual licence fee of £500,000 in respect of each DMG<sup>®</sup> plant project which becomes operational in any location in the world. As such, the Group's worldwide rights to ongoing licensing fees for the DMG<sup>®</sup> technology will remain unaffected by the PGH Exclusivity Agreement and/or any SPVs that might ultimately be created by HUI in order to fund and operate the projects over what is expected to be a 20+ year anticipated life span.

To put the scale of the opportunity presented into perspective, the [PlasticsEurope Market Research Group](#) ('PEMRG') and Conversio Market & Strategy GmbH estimated that 2019 global plastics production almost reached 370 million tonnes, with Europe alone accounting for close to 58 million tonnes. On this basis, TPI estimates that Europe would require the deployment of c.2,500 DMG<sup>®</sup> units in order to convert an estimated 35 million tonnes of non-recyclable waste into zero-CO<sub>2</sub> hydrogen and syngas.

### Powerhouse is well-resourced to fund anticipated uptick in activity

The raising of £10 million (gross) through an equity placing in January 2021 enabled Powerhouse to provide the Protos SPV with a substantial short-term loan to help expedite the project by securing long lead time equipment and accelerating design services. It is now also providing facility to support the technology's planned international roll-out, initially through the PGH Exclusivity Agreement that has been announced today.

Against this, it should also be recalled that on 9 September 2020, Peel Holdings (IoM) Limited was granted warrants to acquire new shares equating to 10% of the current issued capital of Powerhouse, that will be triggered by announcement of the financial closing of the Protos project (which TPI now expects to take place early in Q4 2021). In addition to existing resources, the exercise of the warrants would bring a further £10.2 million of cash into Powerhouse, placing it on a secure financial footing for its UK operations while also facilitating the deployment of its technology to international customers.

Under the terms of its exclusivity option, Peel NRE will also be obliged to pay the further sum of £500,000 within six months of the financial close for exclusive rights to the DMG technology in the UK while assuming responsibility for leading the development and funding strategy for all future UK projects. In expectation of both the warrant exercise and option take-up in the relatively near term the Group, whose capital light model based exclusively on licencing rather than project commissioning, will be left with a strong balance sheet that TPI considers is unlikely to call on shareholders for additional funding in the foreseeable future.

With Protos presently looking set to be commissioned and operational by early in 2023, activity levels appear set to rise sharply in the remaining months of this year and remain so for the whole of next. Anticipating this, Peel has already announced a second UK facility at the Rothesay Dock on the north bank of the River Clyde, West Dunbartonshire, while HUI also targets completion of its own build on a similar timeframe, the Group now appears poised for substantial progress as its modular technology commences formal roll-out into full commercial operations. Given that further global licensing agreements are expected to follow in relatively short order, with most of the capital cost for deployment being borne by development partners and those licensed to use DMG® technology, Powerhouse can expect to secure rapid simultaneous growth across multiple markets without further recourse to shareholders.

### Potential for positive returns in just two years

The fund raising completed earlier this year, along with inflow from Peel following anticipated financial closure of the Protos project, has substantially lowered the site's residual commissioning risk. Indeed, Powerhouse now appears to be on a sufficiently secure financial footing to reassure shareholders it will not be calling for additional cash resources in the foreseeable future. Having already put a loan in place to help expedite the project, the Group has access to all foreseeable working capital/corporate needs in support of both Peel's post-COVID UK roll-out while also facilitating its planned overseas marketing/licensing drive as has been detailed today. The adoption of a low cost, licence fee-based business model leads TPI to believe that Powerhouse could potentially achieve cashflow breakeven or better, based simply on the commissioning of just three Protos-sized projects (each targeting production of, say, 3.8MWe on site and exporting 3.4MWe electricity when in power-only operation and up to 2 tonnes of hydrogen/day when in combined operation). Considering the lengthy existing project pipeline already under consideration by Peel, together with further fees from expected feedstock testing and site-specific engineering work, TPI considers that full integration of Waste2Tricity Limited, following its acquisition at the end of June 2020, might enable the Group to start generating returns for shareholders within the next two years, based on its expectation that HUI will also contribute to the Group having three fully operational sites plus a further four under construction by that time. During this period, Powerhouse is also expected to have further progressed its planned international licensing proposals, securing agreement with selected, well-financed partners based on exclusivity terms similarly to those it has already negotiated with Peel and HUI. On this basis, TPI considers Powerhouse could possibly generate its first meaningful profits before end-2023.

**THIS DOCUMENT IS NOT FOR PUBLICATION, DISTRIBUTION OR TRANSMISSION INTO THE UNITED STATES OF AMERICA, JAPAN, CANADA OR AUSTRALIA.**

### Conflicts

This is a non-independent marketing communication under the rules of the Financial Conduct Authority ("FCA"). The analyst who has prepared this report is aware that Turner Pope Investments (TPI) Limited ("TPI") has a relationship with the company covered in this report. Accordingly, the report has not been prepared in accordance with legal requirements designed to promote the independence of investment research and is not subject to any prohibition on dealing by TPI or its clients ahead of the dissemination of investment research.

TPI manages its conflicts in accordance with its conflict management policy. For example, TPI may provide services (including corporate finance advice) where the flow of information is restricted by a Chinese wall. Accordingly, information may be available to TPI that is not reflected in this document. TPI may have acted upon or used research recommendations before they have been published.

### Risk Warnings

Retail clients (as defined by the rules of the FCA) must not rely on this document. Any opinions expressed in this document are those of TPI's research analyst. Any forecast or valuation given in this document is the theoretical result of a study of a range of possible outcomes and is not a forecast of a likely outcome or share price.

The value of securities, particularly those of smaller companies, can fall as well as rise and may be subject to large and sudden swings. In addition, the level of marketability of smaller company securities may result in significant trading spreads and sometimes may lead to difficulties in opening and/or closing positions. Past performance is not necessarily a guide to future performance and forecasts are not a reliable indicator of future results. AIM is a market designed primarily for emerging or smaller companies and the rules of this market are less demanding than those of the Official List of the UK Listing Authority; consequently, AIM investments may not be suitable for some investors. Liquidity may be lower and hence some investments may be harder to realise.

### **Specific disclaimers**

TPI acts as joint broker to Powerhouse Energy Group plc ('Powerhouse') which is listed on the AIM Market of the London Stock Exchange ('AIM'). TPI's private and institutional clients may hold, subscribe for or buy or sell Powerhouse's securities.

Opinions and estimates in this document are entirely those of TPI as part of its internal research activity. TPI has no authority whatsoever to make any representation or warranty on behalf of Powerhouse.

### **General disclaimers**

This document, which presents the views of TPI's research analyst, cannot be regarded as "investment research" in accordance with the FCA definition. The contents are based upon sources of information believed to be reliable but no warranty or representation, express or implied, is given as to their accuracy or completeness. Any opinion reflects TPI's judgement at the date of publication and neither TPI nor any of its directors or employees accepts any responsibility in respect of the information or recommendations contained herein which, moreover, are subject to change without notice. Any forecast or valuation given in this document is the theoretical result of a study of a range of possible outcomes and is not a forecast of a likely outcome or share price. TPI does not undertake to provide updates to any opinions or views expressed in this document. TPI accepts no liability whatsoever (in negligence or otherwise) for any loss howsoever arising from any use of this document or its contents or otherwise arising in connection with this document (except in respect of wilful default and to the extent that any such liability cannot be excluded by applicable law).

The information in this document is published solely for information purposes and is not to be construed as a solicitation or an offer to buy or sell any securities or related financial instruments. The material contained in the document is general information intended for recipients who understand the risks associated with equity investment in smaller companies. It does not constitute a personal recommendation as defined by the FCA or take into account the particular investment objectives, financial situation or needs of individual investors nor provide any indication as to whether an investment, a course of action or the associated risks are suitable for the recipient.

This document is approved and issued by TPI for publication only to UK persons who are authorised persons under the Financial Services and Markets Act 2000 and to professional clients, as defined by Directive 2004/39/EC as set out in the rules of the Financial Conduct Authority. This document may not be published, distributed or transmitted to persons in the United States of America, Japan, Canada or Australia. This document may not be copied or reproduced or re-distributed to any other person or organisation, in whole or in part, without TPI's prior written consent.

Copyright © 2021 Turner Pope Investments (TPI) Limited, all rights reserved.