





# ITM Power

22nd April 2016

## World leading renewable energy specialist now at an inflection point

ITM Power is a renewable energy specialist which manufactures hydrogen energy systems for use in energy storage and the production of clean fuel. Its products are based on PEM (proton exchange membrane) electrolysis, a technology which enables excess electrical energy to be converted into “clean” hydrogen gas. It operates two divisions focused on markets which are experiencing rapid growth.

### ■ Power-to-Gas

This division provides utility companies with electrolysis units for the large scale storage of hydrogen or methane, providing clients with grid balancing services. A flagship project with German utility Thüga has delivered excellent results and provides a reference point for growth in this burgeoning market.

### ■ Clean fuel

ITM is providing hydrogen generation and fueling equipment in order to support the growth of hydrogen as a fuel for vehicles such as cars and buses. Significant progress has already been made in this area, and with several major manufacturers such as Hyundai, Renault and Toyota rolling out their range of fuel cell electric vehicles (FCEV) we see good growth opportunities in the near term.

### ■ Growing order book and low share price provides potential entry point

We see a potentially interesting opportunity to invest in ITM Power at the present time given that the company is seeing good momentum in growing the order book, is at the most technologically advanced stage in its history, combined with the fact that the shares are trading at an almost equivalent level to the all time lows seen at the market nadir in Q1 2009. **Given the current valuation we believe that ITM Power shares offer a potentially good risk/reward opportunity and that at the current price the company may even stand out as a takeover target for a larger player in the industry.**

Source: Company accounts & market consensus forecasts

Table: Financial overview

Year to end Apr	2014A	2015A	2016E	2017E
Revenue (£m)	1.13	1.63	5.07	7.09
PBT (£m)	(7.95)	(5.71)	(4.16)	(3.11)
EPS (p)	(5.73)	(3.3)	(2.01)	(1.49)

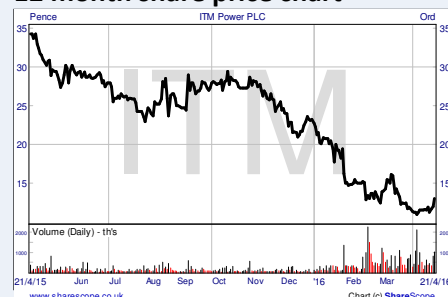
## PREVIEW NOTE



### Key data

EPIC	ITM
Share price	13p
52 week high/low	33.275p/11p
Listing	AIM
Shares in issue	216.89m
Market Cap	£28.2m
Sector	Energy

### 12 month share price chart



### Analyst details

Richard Gill, CFA

[richard.gill@alignresearch.co.uk](mailto:richard.gill@alignresearch.co.uk)

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## Business Overview

Sheffield based ITM Power is a renewable energy specialist which manufactures hydrogen energy systems for use in energy storage and the production of clean fuel. Its products are based on PEM (proton exchange membrane) electrolysis, a technology which enables excess electrical energy to be converted into “clean” hydrogen gas.

Electricity itself cannot be stored so must either be used as it is produced or converted into something else before storage is possible. PEM electrolysis facilitates this process by converting electrons generated from electricity production into hydrogen gas via the electrolysis of water. This can then either be stored or injected into the existing gas grid, providing a much more cost effective way of energy storage compared to other methods, such as batteries.

Over the years ITM has obtained a valuable suite of patents for its technology, as well as established knowhow, field data, and test data, and is widely considered to be a world leader in PEM technology. While competition exists in the industry, new entrants to the market face many barriers, not least the costs and challenges associated with developing the technology, compliance issues and building relationships with blue chip clients. **ITM has achieved all of these points and more and now seems to be at a key inflection point.**



*Key clients and partners of ITM Power. Source: Company*

## Divisional structure

ITM Power operates two divisions which are focused on markets currently seeing rapid growth.

### POWER-TO-GAS ENERGY STORAGE

The need for energy storage and grid balancing services (matching energy supply with demand) is becoming an ever more pressing issue in many countries around the world as power demand rises and supply challenges threaten national economies. In the UK alone the National Grid spent £1 billion on balancing services in 2013-14, up from £803 million in 2012/13.

This is where ITM's Power-to-Gas business comes in. It provides utility companies with electrolysis units for the large scale storage of hydrogen or methane. These can be integrated into current systems & infrastructure easily and relatively cheaply, providing clients with grid balancing services, whereby excess energy in the power network can be converted into hydrogen for injection into the gas network. Meeting a key industry requirement, ITM's electrolyser units are rapid response, meaning that they can be switched on and off within a second to meet grid balancing demands. The system is also able to self-pressurise and operate via remote control.



*ITM Power-to-Gas PEM electrolyser system*

### **Reference plant in Germany with the Thüga Group**

The company's flagship project in the Power-to-Gas market, aimed at testing the practicality of Power-to-Gas technology, is being done in collaboration with German utility company Thüga Group at a site in Frankfurt. **Germany is a key market for ITM as the country is setting the pace as an early adopter of hydrogen fuel and Power-to-Gas technology.** Energy storage requirements are growing quickly, with Thüga estimating a need for 17 terrawatt hours (TWh) by 2020, rising to 50 TWh by 2050. With the municipal gas distribution network being able to easily absorb these amounts, Power-to-Gas looks to have a big future in Germany.

In September 2013 ITM delivered its 315 kW HGas electrolyser to the Thüga site on schedule and in December it became the first plant to inject electrolytic generated hydrogen into the German gas distribution network. Following full commissioning in May 2014 the project has exceeded expectations, with Thüga announcing electricity conversion efficiency as high as 77%. The project will run into this year and is providing valuable field data which the company is using to help attract potential partners and customers.

### **Further sales in Germany**

Elsewhere in Germany, in December 2014, following a competitive tender, energy company RWE Deutschland ordered a 150 kW PEM Power-to-Gas electrolyser system from ITM. The unit was delivered within 10 weeks of order, officially launched in August and has reported energy efficiency of 86%. **The collaborations with Thüga and RWE are the only Power-to-Gas projects currently using rapid response PEM electrolysis in the world.**

More recently, in mid-April ITM announced the sale of a 1MW electrolyser system and additional equipment to another German utility company, ZEAG Energie. Delivery is planned for the first quarter of 2017 and comes with a two year warranty and maintenance contract.

### **Other significant deals**

Elsewhere, In April last year ITM won a £1.79 million deal to provide a 0.5MW electrolyser with integrated compression and up to 500 kg of storage to the European Marine Energy Centre's (EMEC) tidal test site on Orkney, Scotland. The system is currently undergoing factory acceptance testing prior to shipping. It will be used to absorb excess power generated by the tidal turbines, with some being used in a hydrogen fuel cell to provide back-up power.

## CLEAN FUEL

In this division ITM is providing infrastructure, such as hydrogen generation and fueling equipment, in order to support the growth of hydrogen as a fuel for vehicles such as cars and buses. Significant progress has already been made in this area, and with several major manufacturers such as Hyundai, Renault and Toyota currently rolling out their range of fuel cell electric vehicles (FCEV) we see good growth opportunities in the near term. Notably, Toyota sees significant growth in this area, having in 2014 ended a venture with Tesla for electric vehicles in order to focus on hydrogen fuel cell cars.

While there are only a handful of such vehicles currently on the road in the UK there are significantly more in Germany, California and Japan. Production estimates vary considerably but industry data suggests that production post 2020 is expected to be in the tens of thousands annually.

Hydrogen powered vehicles have a number of advantages over traditional petrol fueled vehicles, producing no carbon emissions or air pollution, having a range of several hundred miles and refuelling in just three minutes. Recognising this, the UK Government has committed to the findings of report by UKH2 Mobility (UKH2M), a joint-industry government project of which ITM Power is a founder member, which examined the potential for hydrogen as a transport fuel. The body is looking for a network of 65 hydrogen refuelling stations to be operational in the UK by 2020, followed by a larger phase (1,000) to align with greater adoption rates.

**Government agency the Office for Low Emission Vehicles (OLEV) has announced that it will provide £600 million to support the uptake of ultra-low emission vehicles between 2015 and 2020, with £100 million of this being allocated to hydrogen infrastructure.**

### Progress

To date ITM has won contracts to supply on-site hydrogen generation equipment for a total of 11 refuelling stations. It is currently building nine stations in the UK and two in California in the US.

In September 2015 the company's first public access hydrogen refueling station was opened near to the M1 in Rotherham, South Yorkshire. Funded by government agency InnovateUK, the site uses the company's hydrogen generation equipment and is used to provide retail hydrogen fuel services. It consists of a 225kW wind turbine coupled directly to an ITM built electrolyser, 220kg of hydrogen storage, a hydrogen dispensing unit and a 30kW fuel cell system capable of providing backup power generation for nearby buildings.

### Siting agreement with Shell

In the same month ITM signed a siting agreement with **Shell** to deliver Hydrogen Refuelling Stations on three of the petrol giant's retail forecourts in the UK - the first to be fully integrated on fuel forecourts. At least one of these stations will be built under a scheme with the Office for Low Emission Vehicles, which in March 2015 awarded ITM £1.89 million to invest in stations in London.

### **Fuel contract with Toyota**

In October last year ITM signed its first fuel deal with **Toyota**, covering green hydrogen fuel dispensed from three HyFive refuelling stations (built under an EU funded project) located in London. Under the deal Toyota will buy the fuel, as all of its Mirai fuel cell electric vehicles are being offered with free fuel for the first three years. The three HyFive stations have a total capacity of 400 kg/day and are the first in a planned expansion of the UK's green hydrogen infrastructure, which will initially be focused on the capital.

### **Siting and business development agreement with Arup**

In December 2015 a deal was struck with engineering consultants **Ove Arup & Partners** for the siting and business development of hydrogen refuelling stations and hydrogen energy systems. With Arup having access to early stage construction schemes involving energy systems there is a good opportunity here to identify new sites for ITM.

Further demonstrating the quality of partners working with ITM, the company has also recently become an approved supplier to **BOC**, part of the Linde group, and an approved subcontractor and supplier to **Artelia**, the fuel forecourt designer and architect.



*Rotherham refueling station*



## Funding, contract pipeline & recent trading

Over the past year or so two specific fundraisings have strengthened the ITM balance sheet, providing the company with working capital and the funds needed to deliver its contracted deals - projects require significant upfront expenditure before income is received towards the end of a contract.

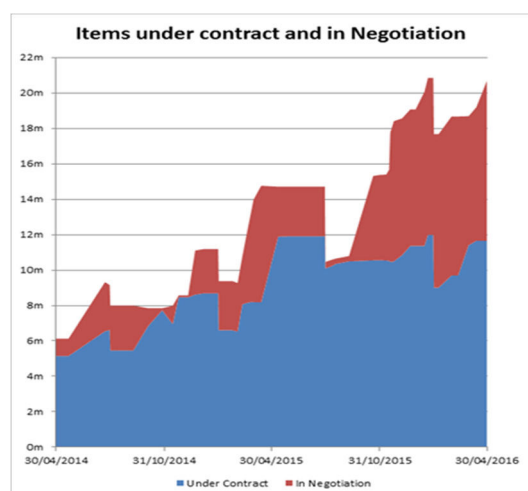
March 2015 saw the company receive a total of £4.86 million from existing shareholder JCB Research (a subsidiary of construction equipment giant JCB) and Valebond Consultants, a company owned by Jo Bamford, son of JCB Chairman Lord Bamford. The related parties now own 11.15% of the business. Then in February this year ITM raised a total of £5.8 million via a placing and open offer.

### Commercialisation now delivering deals

Having spent around 15 years developing its technology ITM is now in the advanced commercialisation stage of its development, with the contract pipeline having increased steadily over the past 24 months (see chart below). We note that the dips in the pipeline occur as values “under contract” are recognised as revenues and are thus removed from the pipeline. As of the last update in mid-April the company’s total pipeline stood at £20.69 million worth of projects, with £11.65 million under contract and £9.04 million being under the final stages of negotiation.

A March trading update confirmed a growing pipeline of qualified quoted for ITM products, with the bulk of enquiries being for larger scale platforms (0.3MW to 6MW), often including ancillary systems. There are further good opportunities for new business in the coming months as ITM is taking part in a number of trade shows, including the key industry event, Hannover Messe, at the end of April.

**The key focus now for ITM is upon becoming cashflow positive, an event which is targetted in the “medium-term”.**



*ITM 24 month total pipeline value. Source: Company*



## Assessment

With the deals already done ITM is demonstrating to customers, the energy industry and investors that it has market ready and commercially viable products. Combined with the recent fundraisings the company also looks to potentially have the financial backing to take it through to being cash flow positive. That is the critical thing here, as the markets currently look to be pricing in another fundraising.

However, we see a potentially interesting opportunity to invest in ITM Power at the present time, especially given that the company is seeing good momentum in growing the order book. The Company is, technologically, now at the most advanced stage in its history. The shares, although not trading on an enterprise value basis at the same level as the nadirs in Q1 2009 and adjusting for the increased share count, are now trading at a discount to the very recent placing of 15p per share. **One important point for new investors to reflect on is that with the company having raised a gross amount of £67.1 million since IPO in 2004, and the current market capitalisation being £28.2 million, investors entering the stock now are effectively buying at a 58% discount to the funds raised in developing the business.**

Still, until ITM is delivering sustainable revenues and profits a sustained re-rating looks unlikely to happen. However, let's take a long-term view here. Even *if* another fundraising has to be completed there are still significant long-term opportunities. To take just one example, the company's broker, Zeus, estimates that up to 500 electrolyser units could be needed in the German market in the long-term. At a price of £1.75 million per unit and assuming a 40% gross margin this equates to potential for gross profits of £350 million to ITM – this is in Germany alone, a market where ITM has an excellent track record and references from world leading clients such as Thüga.

**Given the current valuation we believe that ITM Power shares offer a potentially good risk/reward opportunity at the current price and that the selling pressure the stock has clearly felt in recent weeks provide a potential good entry opportunity. We also believe that should the company not deliver on the move towards cash flow neutrality in the next 12-18 months that there must be consideration made with regards to the company becoming a takeover target for a larger player in the industry.**

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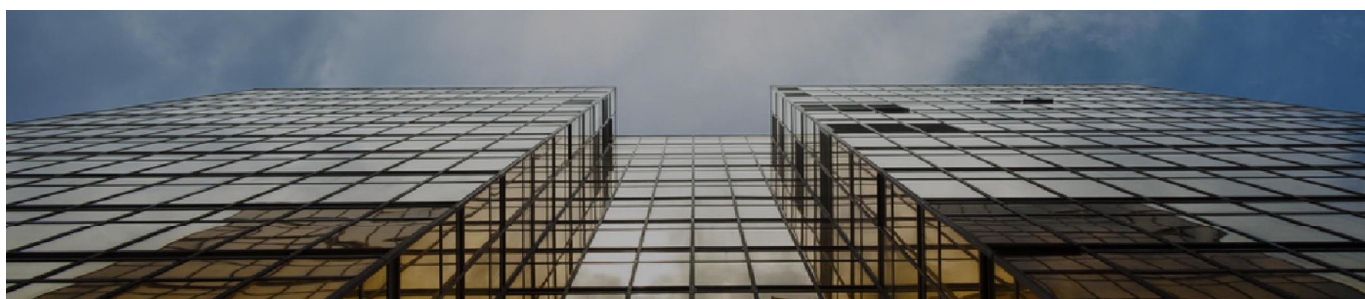
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T. +44 (0) 207 464 4091  
E. [info@alignresearch.co.uk](mailto:info@alignresearch.co.uk)

Align Research C/O Keith Bayley Rogers  
1 Royal Exchange Avenue  
London  
EC3V 3LT