



## Biofabrik WASTX Plastic solution

### INTRODUCTION

QMRE have exclusive UK distribution rights for a German manufactured plastic recycling technology/ on-site product. QMRE believes that there is a compelling investment case to locate a recycling machine (P5000) with a payback of approximately 3 years on an investment of c£1.8m.

This note sets out further background to and details of QMRE's proposal. A comprehensive presentation has been attached with this note that covers off the below. All page numbers reference in this document relate to the presentation.

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The machine is still undergoing final testing and validation and is subject to UK regulatory approval but we are confident that we will be in a position to take orders in early April 2020 for delivery at the end of this year. A demonstration of the machine can be arranged in Germany any time from now or a visit to our UK test site in Dover can be arranged for May when we expect it to be fully operational.

### UK LEGISLATIVE CHANGE ON WASTE PRODUCTION

Plastic waste pollution has risen rapidly up the scale of priorities for governments as well as Industry and business. As you are probably aware, UK Government legislation will soon make it prohibitively expensive for businesses that produce plastic waste and that do nothing, with the recent Packaging Tax Consultation document stating:

*'At Budget 2018, this government announced its intention to introduce a new tax on plastic packaging. The tax will apply to businesses that produce or import plastic packaging which uses insufficient recycled content, taking effect from April 2022. The tax will be set at a rate that provides a clear economic incentive for businesses to use recycled material in the production of plastic packaging, which will create greater demand for recycled plastic, and in turn stimulate increased levels of collection and recycling of plastic waste.'*



## **BACKGROUND TO QMRE, BIOFABRIK & PYROLYSIS**

QM Recycled Energy (QMRE) Ltd is solely focused on helping UK businesses to address their plastic waste pollution problem. QMRE is run and owned by Tim StClair-Pearce and Dave Garbett both of whom have extensive experience in the plastics, paper and synthetic packaging industries as well as project managing large, multi-site industrial/commercial developments.

QMRE has been pursuing companies that can commercially apply pyrolysis, a thermal process where no flame is created and that reverses the process of making plastic (depolymerisation). QMRE believes that pyrolysis is the best solution for plastic waste recycling because pyrolysis creates power from the product and the process is self-sufficient.

Following extensive research, QMRE signed an exclusive distribution agreement with Biofabrik. *Pages 31-38* show a report on all current technologies in use, competitors, sites and reports. Biofabrik was chosen by QMRE because, unlike its competitors, it didn't use burners to heat the thermal process and therefore didn't require additional planning consent, and doesn't necessitate a much larger footprint to operate.

Biofabrik is a design company that owns the IP to the technology and has manufacturing capabilities through its relationship via industrial partner Nurmont – a mechanical engineering company established in 1985 with an excellent reputation and owned by Baumuller Group. Biofabrik have taken 8 years developing this system which has been extensively tested by Schur the world's oldest packaging company. *For further information on Biofabrik, see Pages 19-30.*

## **INFORMATION ON BIOFABRIK'S P5000 MACHINE & INSTALLATION**

The P5000 machine is the only available compact, electronically-powered pyrolysis plant available in the world. The machine can process 5 tonnes per day which, based on plastic polyolefins waste volumes.

The P5000 machine does not need planning permission given its size and is easily installed on site with minimal set up costs.

We can confirm that BIOFABRIK have commenced production on multiple orders received from their partners in UK, USA, Germany, UAE and Switzerland, including an international plastic producer.

## **BENEFITS OF USING THE P5000 MACHINE**

By reducing the movement of plastic waste customers will reduce their carbon footprint by reducing plastic waste movement. Condensing waste plastic into oil is more efficient than bulk waste, landfill, incineration or export – all of which are disappearing as options.



Based on waste data, the waste managed by the machine is expected to deliver an attractive financial return, with income from two sources:

1. **Output material sales** at an assumed £360 per tonne from the sale of oil, which QMRE will manage; and
2. **Packaging Recovery Notes (PRNs)** at assumed £250 per tonne which are government incentives to recycle packaging. QMRE are currently in discussions with the Environment Agency (EA) to provide evidence and approve the qualifying of the oil for **Packaging Recovery Notes**.

We estimate a pay back period of c. 3 years from an initial investment of machine cost £1.681m + site set up costs subject to survey. An optional reduction in Capex of £0.4m if customers wish to take up the **Partner Model** option with shared revenue, with a payback of approximately 2.2 years on an investment of c£1.35m which could prove an attractive alternative.

The operational cost include: Service £8k, Insurance 18k, Energy supply £32k Staff 43k Total £101k

We expect that **capital allowances** for early adopters of this technology will also be available but we have not factored these into our analysis so this could be further upside.

Given recent movements in oil prices, we have provided below a worst case sensitivity analysis for the material sales income and its impact on returns as well as historic oil prices over the last 5 years. This demonstrated that even based on an oil price significantly lower than historic there is still an attractive payback.

Oil price (\$pb)	\$35 (Current price)	\$28 (Assumed case)
Oil £ per tonne of waste	£268	£215
Output Material Sales income	£442,200	£354,750
P&L pa	£493,000	£406,000
Payback	3.4	4.1

Year	Closing Price
2020	\$60.40
2019	\$64.26
2018	\$71.34
2017	\$54.71
2016	\$45.13
2015	\$53.03

In addition, there is likely to be an option in the near future to extend the machine (to a Phase 2 machine- see page 41) which changes oil to electricity and provide Islip with an electricity supply and provide significant additional financial and environmental benefits.



## REGULATORY & OTHER APPROVALS

QMRE are in the process of obtaining a licence under a Small Waste Incineration Permit (SWIP) - burning under three tonnes an hour which is site specific and regulated by Local Authorities. QMRE will apply for the same on customers behalf.

We are active members of the Renewable Energy Association (REA) and are working with the central office of the Environment Agency. QMRE is expected to obtain its own 'EoW end-of-waste certificate' once its Dover test site is up and running (May 2020). We have appointed 360 Environmental who are expert consultants in this area, and Constantine – an environmental agency specialist – both to provide advice and guidance to QMRE. Once the EoW certificate is received, a site specific 'local authority licence' is required for customer sites which will take up to six months to receive, target date November 2020 for orders placed in April 2020.

An end of waste licence is required in order to receive PRN's, which QMRE will project manage and expect to receive by October 2020.

## TIMELINES

- Delivery of test machine in UK: Projected April 2020
- UK Test machine demonstration: Projected May 2020 (Dresden April 2020)
- P5000 product testing complete: Projected August 2020
- Projected Approvals: Projected local authority licences expected to be received in November 2020
- Delivery of P5000: Projected December 2020 (assuming order placed in April 2020)

## DETAILS ON THE CONTRACT

- **Quotes available:** Standard Purchase Model or Price Supported **Partner Purchase Model**.
- **Warranties:** 1 year guarantee included in price (this is extendable yearly for an extra cost with an overall 10 year warranty)
- **Servicing arrangements:** The first two services at 6 months and 12 months are included – QMRE's contract with Biofabrik stipulates that an engineer must be on site within 12 hours of any breakdown. Maintenance is between cycles estimated at 30 day intervals, training is provided.
- **Contract:** The guarantee and contract are written into the appended quotations.
- **Deposit Insurance:** Third party insurance cover is provided on UK deposits.
- **Manufacturer** additional breakdown and business interruption insurance, **optional**.
- **Leasing:** option available by request.
- **Payment structure:** A 50% deposit is required on placement of order. 30% is due once the machine is shipped, 20% is due once machine is commissioned and running.