



### **WHO ARE CELTIC RENEWABLES?**

Celtic Renewables Ltd is a spin-out from Edinburgh Napier University incorporated in 2012 to commercialise a fermentation technology developed at the University's Biofuel Research Centre by Professor Martin Tangney, a world authority on biobutanol production.

The company is uniquely adapting the traditional Weizmann Fermentation process (also known as the ABE fermentation process) to a brand new entirely sustainable novel substrate created by combining the two main by-products of Scotch Malt Whisky production (draff and pot ale).. This not only provides a sustainable disposal route for the by-products of one of the UK's largest and most iconic industries, but also integrates environmental sustainability and carbon reduction, in the production of sustainable bio-solvents.

The re-introduction of this once dominant fermentation process in a modern biotechnology context using whisky by-products is an exciting development with huge potential for international application both within the whisky sector and through the application of the technology to other related substrates.

### **THE TECHNOLOGY**

Celtic Renewables Ltd.'s patented technology uses bacteria which converts the sugars (xylose, arabinose and glucose) into bio solvents. The initial application utilises the by-products from the Scotch Malt Whisky Industry but has been developed for a number of other low value organic industrial residues.

The process is anaerobic (done in the absence of oxygen), similar to how yeast ferments sugars to produce ethanol for wine, beer, or fuel. The process produces Acetone, Butanol and Ethanol typically in a ratio of 3 parts acetone, 6 parts butanol and 1 part ethanol while the remaining solid fraction from the process has value as a high protein animal feed.

### **WHATS NEXT?**

The company has plans to build, own and operate a portfolio of ABE fermentation plants on an international basis as they move out of the R&D space into full commercial operation. There are opportunities to licence the technology or establish joint ventures with major distillers seeking to enhance their environmental credentials and there are parallel opportunities to develop plants that utilise other low value organic industrial residues as feedstocks. There is true potential to create a global industry.

### **EXECUTIVE TEAM**

- President and Founder – Prof Martin Tangney OBE
- Chief Executive Officer – Mark Simmers
- Managing Director – John Stevenson

## **INVESTMENT / INCOME STREAMS**

The company has attracted funding from a number of sources including private investment, public sector grants and crowd funding which has supported the development of the process and its transition from the laboratory to commercial scale. The company is now in the process of constructing its first commercial plant at Grangemouth that will demonstrate the technology at industrial scale, generate its first revenues and become the springboard for the growth of the company on an international basis. Construction of this (circa £21 million) commercial demonstration plant began in 2018 and the company is in the final stages of a major investment deal that will fund the completion of the plant by the end of 2020.

## **TARGET MARKETS**

Significant opportunity exists to create revenue streams for the company through the sale of pure bio-solvents from the back end of the process into the chemical and fuel markets; creating higher value retail products that leverage their sustainable credentials and strong brand; and sales of animal feed into the cattle feed or fish food markets. Additionally, liquid and gaseous by-products from the process have the potential to generate revenue streams as the company advances their zero waste biorefinery concept and the pilot facilities at the Grangemouth plant could be marketed to organisations globally who are seeking to test their technology.

## **WHAT WE ARE LOOKING FOR**

We require an experienced, driven Commercial Director to play a key role in the next stage of the company's development as we establish commercial operations through developing and growing our target markets, whilst ensuring robust and sustainable processes and contracts are in place for low value feedstock at the front end of the process. The Commercial Director will be required to negotiate and maintain contracts and partnerships with a wide range of key contractors; vendors; supply chain and development partners across a number of industry sectors and disciplines both across the UK and in an international context.