



COLDry Demonstration Plant Phase 1 Commissioning Completed

Key points/Highlights:

- Wet commissioning of COLDry primary processing and conditioning systems completed
 - Equipment performance within expected parameters
 - COLDry product validated via end-user trial, with superior performance
 - Lowest value use for COLDry plant capacity demonstrated at \$6.25M notional revenue
 - Estimated reduction of 500kg CO₂ in Scope 3 emissions per tonne of solid fuel consumed by the end user
 - External testing confirms excellent (low) spontaneous combustion qualities
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Commissioning of COLDry Primary Processing and Conditioning Systems Complete

Tuesday 20 December 2022: Further to the update provided in the last quarterly report (31 October 2022), the Company is pleased to confirm the successful wet commissioning of the primary processing and conditioning systems.

The commissioning process spanned several weeks and entailed the individual commissioning of components that make up the primary processing and conditioning system, followed by integrated end-to-end trials to confirm baseline operational alignment with design parameters and the programming of manual and automated control systems.

ECT Chief Engineer Mr Ashley Moore commented:

“Our commissioning objective was to reliably initiate and control the systems, produce a consistent COLDry pellet in a steady-state manner and establish the baseline drying performance of the conditioning system.

“I’m pleased to report that not only have we achieved good performance across the equipment, but we were able to produce sufficient COLDry product for end-user testing, with excellent results.

“We can now commence the performance evaluations and experimental activity to generate the data to define the operational envelope, which will inform the final design of the packed bed dryer before installation under Phase 2.

“This core experimental activity is expected to produce a reasonable volume of COLDry. Where that COLDry meets desired specifications, we anticipate being able to sell it into the local solid fuel market as we advance to phase two of the project.”

In the new year, the Company looks forward to advancing Phase 2 activity in parallel to Phase 1 operational trials.

COLDry Product Testing Outcomes Confirm Value Proposition

Following the successful commissioning activity these past weeks, several tonnes of COLDry were sent for end-user testing, with superior results achieved compared to the current feedstock.

This end-user trial aimed to:

- 1) Confirm product specs meet industrial steam market requirements
- 2) Support early off-take for COLDry as a feedstock for steam production
- 3) Demonstrate lowest value base-case for the COLDry component of the broader Viridian Hydrogen demonstration plant, at up to \$6.25M revenue¹

Technical Validation – Industrial Steam Market

Following the commissioning of the plant, it was important to demonstrate that the COLDry product is suitable for sale to external parties and carries superior physical and chemical qualities as a feedstock.

Notably, the COLDry process creates a pellet featuring increased surface area with lower density than conventional alternatives. In the case of this trial, improved combustion and efficiency were observed, confirming superior performance in utility steam applications.

Higher product surface area should also aid in efficient chemical reactions in downstream processes like pyrolysis and gasification, with similar efficiencies expected from Phase 2 operations when producing char and syngas.

In a practical sense, COLDry is easier to process, is more responsive as a feedstock and reacts more efficiently than the alternative feedstock for this trial.

Emissions Reduction – Industrial Steam Market

Additionally, the fact that COLDry is a zero-emission drying process means the sale of COLDry will confer Scope 3² emissions savings to the end user by displacing higher emission feedstock. Compared to the end-user's current feedstock, COLDry is estimated to deliver approximately 500kg of CO₂ savings per tonne of material consumed.

Commercial Validation – Industrial Steam Market

Based on the success of this initial trial, it is anticipated that a formal off-take agreement with the end user will be established early in 2023 and, subject to Phase 2 priorities, the Company will aim to meet the end user's full demand for solid fuel over the coming months.

ECT Managing Director Glenn Fozard commented:

“The value of establishing an early off-take ahead of completing Phase 2 of the project means that we can offset some of the costs of planned COLDry trial runs by selling the output. We see this as essential to managing the costs of completing Phase 2 and completing our Viridian Hydrogen



Above: observation port of the industrial steam system used for COLDry test.

¹ The concept of the lowest value base case refers to the value of COLDry in the local solid fuel market and does not include the additional value anticipated from COLDry production when used as a feedstock to Phase 2 of the demonstration project when it becomes operational.

² Scope 3 emissions are indirect greenhouse gas emissions other than scope 2 emissions that are generated in the wider economy. They occur as a consequence of the activities of a facility, but from sources not owned or controlled by that facility's business.

demonstration project at Bacchus Marsh. To bring online a revenue source midway through completing a project like this highlights the flexibility of COLDry as a valuable chemical feedstock.”

The highest value use of a COLDry pellet will be through the pyrolysis process and downstream upgrading processes, which require the completion of Phase 2, currently underway.

The Company has previously estimated that its Viridian Hydrogen demonstration project, once complete, will deliver ~\$12M of marketable product through the sale of hydrogen, formic acid and agricultural char.

The currently proposed off-take of COLDry pellets to the industrial steam market as an interim opportunity supports a reasonable estimate that the COLDry plant's full production capacity could deliver a notional \$6.25M in revenue solely from solid fuel sales and builds confidence that the project is on track to deliver the broader commercial revenue objectives once Phase 2 is complete and can access higher value products, including hydrogen and agricultural char.

The actual value of the proposed COLDry offtake agreement is subject to volume and price negotiations.

Spontaneous Combustion Testing Reconfirms Previous Results

In addition to achieving a positive end-user test, a COLDry sample was sent for analysis at Australia's leading spontaneous combustion lab, B3 Mining Services.

A positive result was confirmed, with the lab noting:

“Based on the R70³ value alone, the intrinsic spontaneous combustion propensity rating would be Low-Medium... the Spontaneous Combustion Hazard Likelihood Rating of the sample would be NTR (No Thermal Runaway under ideal conditions without an additional heat source).

“The drop in the R70 value (reactivity) from the fresh lignite state is pretty impressive. It would take something like 6 months of ageing for us to reach the same point based on our lab work.”

Commissioning Activity

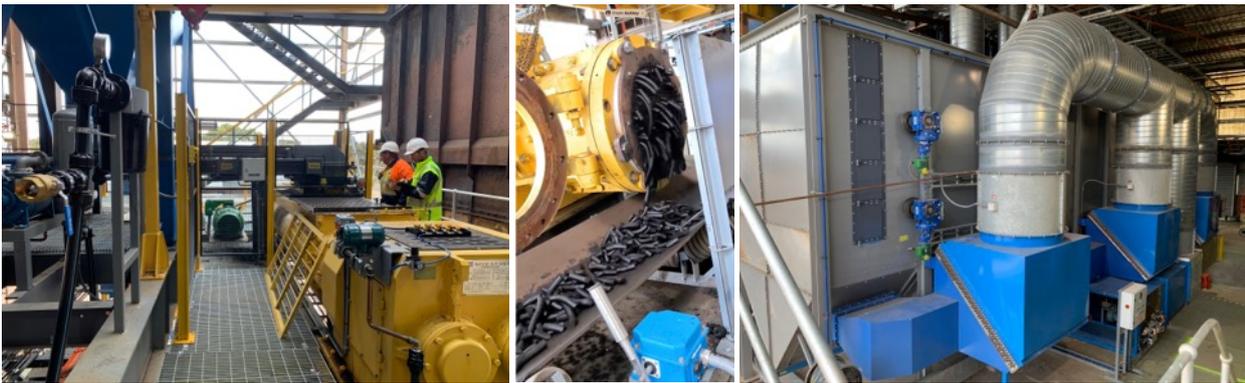


Above: Infeed system, where lignite is loaded and conveyed to the hammer mill.

³ The R70 test is an adiabatic/non-isothermal heating test designed to provide a measure of the intrinsic reactivity of coal to oxygen. The R70 value is determined as the average self-heating rate from 40-70°C, expressed in °C/h and provides a measure of intrinsic coal reactivity.



Above: hammer mill (left) sizes and screens the lignite before delivery to the surge hopper (centre). The weigh conveyor (right) controls the feed rate into the mixer (below left).



Above: the mixer adds a small amount of water to the incoming lignite to form a paste (left) before extrusion (centre). The extruded pellets are delivered to the conditioning system (right).



Left: The conditioning system is filled, and pellets are analysed at intervals to gather data to confirm system performance before discharge.

This announcement is authorised for release to the ASX by the Board.

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About ECT

ECT has been developing net-zero emission and hydrogen technologies for over 15 years.

Our solutions aim to transition today's use of resources to tomorrow's zero-emission future, delivering immediate financial and environmental benefits.

We are focused on advancing a portfolio of technologies that have significant market potential globally.

ECT's business plan is currently focusing on two major projects:

- 1) Zero-Net Emission COLDry Commercial Demonstration at Bacchus Marsh, Victoria, Australia
- 2) Zero-Net Emission Hydrogen Refinery Project at the Latrobe Valley, Victoria, Australia

About our Technology Suite

COLDry

COLDry is the gateway enabler of higher-value applications for waste biomass and lignite.

These streams are a rich source of valuable hydrocarbons. However, they suffer from high moisture content that must be reduced to enable higher-value upgrading and conversion to solid fuels, liquid or gaseous hydrocarbons.

Drying is easy. However, drying efficiently, cost-effectively, and with a low emission footprint has been the challenge. COLDry meets this challenge through a combination of 'substrate densification' and waste heat utilisation, delivering the world's first low temperature, low pressure, low cost, zero CO₂ emissions drying process.

HydroMOR

The HydroMOR process has the potential to revolutionise primary iron making.

HydroMOR is a simple, low-cost, low-emission, hydrogen-driven technology that enables 'low value' feedstocks to produce primary iron. HydroMOR is the transition solution to a "green steel" future.

COHgen

The COHgen process has the potential to deliver a lower cost, lower emission method for hydrogen production from lignite and other waste biomass streams.

COHgen is currently advancing through fundamental laboratory development intended to form the basis for a patent application ahead of scale-up and commercialisation.

COHgen aims to decouple hydrogen production from CCS, accelerating the race towards <\$2kg production costs with little to no emissions.

CDP-WTE

The catalytic depolymerisation-based waste-to-energy process converts low-value resources into higher-value diesel and other valuable by-products.

CDP-WTE can be deployed as a standalone solution or integrated with the COLDry process to deliver higher-value, lower-emission energy solutions to lignite resource owners.

Forward-Looking Statements

Statements in this release, particularly those regarding possible or assumed future performance, revenue, costs, dividends, production levels or rates, prices or potential growth of ECT, are or may be forward-looking statements. Such statements relate to future events and expectations and, as such, involve known and unknown risks and uncertainties. Therefore, actual results and developments may differ materially from those expressed or implied by these forward-looking statements depending on various factors.