

News & Intelligence

INTERVIEW: UK heat recovery start-up looks for up to £15 million to finance production

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UK-based start-up Clean Development Projects Ltd. (CDP) intends to launch a financing round of up to £15 million in the summer to fund the construction of its inaugural production facility for solid-state heat energy recovery devices, the company's Director Neil Faulkner told Clean Energy Pipeline.

"We would need to establish a production facility, and that would be a very expensive adventure [costing] tens of millions perhaps," he said.

"Considering the time it takes to put [financing] through the pipeline, we're starting to talk about it now. We're going to propagate figures and start working on [financing] so there is no lag after the demonstrators. We will look to launch a financing round in the summer."

Founded in 2010 as a spin-out of Essex-based biodiesel technology developer VE Power, Hertfordshire-based CDP has developed a patent-pending lab-top prototype heat recovery device that it claims can produce approximately 4 watts (W) of electricity from a single 55 ml cup of coffee at a temperature of less than 90 degrees Celsius. It hopes to boost the energy recovery rate through refining its production methods.

"We've not invested in any high-tech construction or cutting methods, [but] we are still getting good results," Faulkner said. "When we refine our production methods, we expect to see 4 W increase to 5 or 6 W."

CDP anticipates that the capex of its heat recovery technology will be approximately 10% lower than competing technologies such as organic rankine cycle machines. It will also have low operational costs due to its lack of moving parts and flexibility.

"In terms of the operational expenses, we don't have any moving parts and the working fluid is very flexible," said Faulkner. "We can take process water from a system and run it through. You don't need to use dangerous gases such as isobutene.

"There are no real limitations in size. We have been looking at technologies where we can [recover heat] on a micro scale, which is very suitable for watches and the like. One of the spin-offs of that was to think about extraction of heat from a laptop, for example taking some of that heat and using it to boost the battery rather than use the battery to cool it."

CDP discovered by accident that its solid-state technology could harness thermal energy effectively from the sun, making it a potential thermal alternative to photovoltaics (PV) when combined with parabolic trough technology.

"We were drying one of the early prototypes and noticed it was generating power at the window...; the voltage increased disproportionately to what we would have expected," said Faulkner. "We think we understand how [this happens] but need to do more experiments."

The company will pursue the application of its technology as a solar battery that could provide round-the-clock solar thermal power in partnership with VE Power, which has developed a thermal battery for the biofuel industry.

CDP is now working on designs for its first commercial solar and heat recovery demonstration projects, which it expects to complete by the summer. It is already in talks with a number of potential investors regarding nearly £1 million of funding that it needs to finance two 1 KW demonstration projects.

"We are in talks with potential investors," said Faulkner. "The next step beyond that would be a rollout. We would begin to market the [technology] as a proven solution and look at [building] our own power plants. These would probably be solar combined with a battery, or a geothermal source."

One of CDP's potential co-investors is an unnamed Netherlands-based geothermal company that wants to use heat recovery to enable wells with cooler rocks to produce larger volumes of power through recovering heat from steam. The Dutch company is looking to invest as an equity partner and intends to set up a special purpose joint venture with CDP.

"The first design that we developed was for 300 KW, but we have interest from people wanting to do 20 MW and 30 MW geothermal plants," said Faulkner.

"The geothermal project would be in the US or Turkey. They are talking about several projects. The hot rocks they have aren't very hot, so the standard high pressure steam system isn't plausible. We can run on temperatures going quite low, so it is very effective."

CDP intends to lease a research and development centre in Hertford, near its current bases, and eventually set up a production base in Harlow. It may consider a public listing once it has firmly established commercial operations.

"We're not 100% on a Series A now, but there is talk of an initial public offering," he said. "That's something that has been talked about for a couple of years down the line."

For more information regarding the possibility of partnering with Clean Development Projects, Director Neil Faulkner can be reached at neil@gpcplc.co.uk.

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