

## ThermalFrost Inc. | Ottawa

# Ottawa start-up turns waste heat into cool business

### ThermalFrost's new technology uses waste heat to generate refrigeration

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President and CEO  
ThermalFrost Inc.

An Ottawa-based start-up company has developed an innovative technology that captures and recycles waste heat from diesel engines to power refrigerators. For fishing companies looking for a better way to freeze fish at sea—the savings from lower fuel consumption are a cool benefit.

ThermalFrost Inc.'s Double Mechanism Sorptive Refrigerator (DMSR) could be modified to satisfy most of the world's refrigeration needs from waste heat—from fish refrigeration to running refrigerated trucks. That could result in big savings in fuel costs as well as significant reductions in greenhouse gases.

DMSR consists of a thermal compressor unit that can generate deep refrigeration as low as  $-30^{\circ}\text{C}$ , even in harsh conditions. The technology is the brainchild of engineering professor Dr. Junjie Gu, and international refrigeration expert David Li.

Ontario Centres of Excellence (OCE) recognized the potential of ThermalFrost's DMSR and invested \$100,000 in early stage research, giving the founders the chance to develop the technology and a prototype.

OCE also connected the founders with corporate strategist Steven Donaldson, now ThermalFrost's CEO, and invested a further \$150,000 to help the startup complete a market assessment, write a business plan, protect its intellectual property, enhance prototype development, and relocate to a larger laboratory.

“OCE was there early on with networking and

market research assistance that helped us select the fishing industry as our first target market,” says Donaldson. “With OCE's guidance we were very quickly able to achieve a partnership with the Peixe Verde consortium in Spain.”

An international leader in the fishing industry, Peixe Verde had been struggling to find an environmentally friendly refrigeration system for its fishing vessels that reduced their reliance on diesel. Peixe Verde and ThermalFrost collaborated and agreed to work together to test a commercial 30 kW prototype at sea.

This decision has already been rewarded with other partners that have not only expressed interest in collaborating with ThermalFrost to commercialize the compressor for the fishing industry, but also the use of DMSR to produce air conditioning systems using solar technology.

The future is looking bright for ThermalFrost. Donaldson anticipates the first sales of DMSR units in 2011. Meanwhile, the company is already looking at recycling waste heat to satisfy refrigeration needs for luxury cruise liners, food processing plants, commercial air conditioning applications, and refrigerated trucks.

“This technology has the ability to revolutionize refrigeration worldwide and I'm hopeful that Ontario can be recognized as a world leader for bringing this technology forward,” says Donaldson. “We have exciting expectations for Ontario in terms of tax dollars and employment.”

