

INNOVATIONS

AET OFFERS A DYNAMIC WAY TO TEST DIESEL

With the rising cost of oil, it's no surprise Advanced Engine Technology (AET) Ltd. is capturing the world's oil industry with a new way to make diesel fuel a little sweeter with a testing process that will lead to cleaner, higher-quality diesel fuel and lower exhaust emissions.



AET's Ignition Quality Tester (IQT™) for cleaner diesel fuel

With the AET's Ignition Quality Tester (IQT™) already in use in more than 100 petroleum, additive and regulatory organizations around the world, the company is now working with Carleton University in Ottawa and the Ontario Centres of Excellence (OCE) to make the IQT even better.

On a daily basis, oil refineries face the problem of complying with cetane number legislation. The cetane number (CN) is a regulated

specification that defines the ignition quality of diesel fuel. Refinery labs use testing equipment to determine CN to ensure their diesel fuel is blended properly.

However, refineries have been using the same testing methods for more than 60 years and these traditional techniques are now considered slow, inefficient and result in high process costs. These tests also have a number of limitations, including a lack of precision, the need for highly-skilled operators to carry them out and large volume fuel samples.

AET's IQT produces fast, precise and reliable measurements with a smaller fuel sample and far less instruction needed for its operation. The result: more efficient diesel fuel blending procedures that lead to higher quality fuels and lower vehicle exhaust emissions.

Committed to driving Ontario's economy by commercializing the province's most promising and innovative technologies, OCE supported AET with its own blend of research support and knowledge exchange.

"OCE has played a key part in the company's R&D efforts to help improve instrument precision and to reduce instrument test periods," said Gary Webster, P.Eng., President AET. OCE continues to work with AET on collaborative research as well as OCE student programs that enable the company to hire recent graduates.

Established in Ottawa in 1989, AET's core business activities cover R&D, manufacturing and testing of diesel engines, engine components and instrumentation for transportation and power generation. Another key activity is fuels research and exhaust emissions analysis. For more information on AET, visit www.aet.ca, and to learn about OCE programs, visit www.oce-ontario.org.



Cleanfield Energy's modular vertical axis wind turbine

FOR CLEANFIELD THE ANSWER IS BLOWIN' IN THE WIND

With smog over parts of Ontario becoming an increasing health concern, paired with the push to reduce greenhouse gas emissions and ever-growing energy costs, clean energy sources such as wind power are certainly a breath of fresh air.

However, think wind power and one often imagines giant propellers stretching to the sky. But what if they could be made smaller to power individual buildings, factories or even homes?

Working with McMaster University and supported by the Ontario Centres of Excellence (OCE), Cleanfield Energy, based in Ancaster, Ontario, has designed a small wind turbine for residential and commercial use in urban environments.

NEW ENGINEERING

Its modular vertical axis wind turbine provides homeowners and businesses with renewable, reliable electricity, emergency backup during blackouts and brownouts as well as savings on their utility bills.

The turbine can be installed on rooftops or on the ground without the need to change existing wiring, and can be used for both grid-tie and off-grid applications. And though compact in size, it's strong enough to withstand gale force winds.

The company believes its system is perfect for small commercial, industrial, institutional and residential facilities.

OCE also recognized Cleanfield's great potential and supported the evaluation, testing and redeveloping of a wind turbine prototype in collaboration with McMaster. This is just one of the hundreds of projects OCE is involved with – bringing academic and industry partners together to bring innovative Ontario technologies to the marketplace.

"OCE has been instrumental in helping Cleanfield commercialize its technology. Investors, dealers and customers have been leveraged by Cleanfield's association with OCE and given the company a great deal of credibility in a highly competitive marketplace," said Tony Verrelli, President and CEO of Cleanfield Energy.

"At Discovery 08, OCE's annual innovation and commercialization conference, OCE featured one of our turbines, which gave us great exposure. OCE has always been very proactive in increasing our profile among its contacts and networks," added Verrelli.

For more information on Cleanfield, visit www.cleanfieldenergy.com, and for more information on OCE and how it supports innovative companies like Cleanfield, visit www.oce-ontario.org.

RAPIDMIND'S MASTERY OF MULTI-CORE PROCESSORS

Imagine developing a computer solution now that computer experts say is five years away. That's what RapidMind Inc. has done, and no surprise, it's caught the attention of IBM, AMD and Hewlett Packard.

Developed from a ground-breaking idea at the University of Waterloo, RapidMind is now able to drive software applications to unparalleled levels of speed and performance by fully harnessing the power of multi-core processors.

"There was a critical shift from single to multiple core processors happening which is challenging the entire software industry and RapidMind has developed the solution to this problem," said Ray DePaul, President and CEO of RapidMind. This technology is used today in life saving cancer detection software, diverse 3D visualization, film and video content generation and financial analysis.

"In just one example, RapidMind is saving time and lives in the area of medical imaging analysis," said Dr. Michael McCool, a founder and Chief Scientist of RapidMind. "RapidMind is enabling medical researchers to develop an ultrasound technology capable of accurately identifying tumours with minimal patient impact. Highly complex image processing that used to take minutes is now a matter of milliseconds."

RapidMind's Multi-Core Development Platform also caught the attention of the Ontario Centres of Excellence (OCE) who awarded the Waterloo-based company its 2008 Mind to Market Award which celebrates the best OCE-supported, commercially successful

collaboration between Ontario's most innovative research and industry partners. OCE brings together research, industry and government partners to commercialize cutting-edge technology in Ontario to drive the province's economy.

Selected by a panel of leading minds in science and commerce from across Ontario, RapidMind won this year's OCE Mind to Market Award on the basis of its innovative technology, commercial success and market impact. "RapidMind exemplifies what happens when you bring the imagination and talent of Ontario companies together with the brilliance of our academic researchers," said Mark Romoff, OCE President and CEO. "RapidMind is an amazing illustration of what you can achieve when you provide our best and brightest with the resources and tools to drive innovation to the marketplace."

"OCE funded our initial research and provided capital to commercialize this technology. Supported by industry partners such as AMD, Hewlett-Packard and IBM, RapidMind is now considered the industry standard," said DePaul.

For more information on RapidMind, visit www.rapidmind.net, and for the Ontario Centres of Excellence (OCE), visit www.oce-ontario.org.

Innovations in Engineering articles have been submitted by the Ontario Centres of Excellence. For further information on the Ontario Centres of Excellence visit the web site at www.oce-ontario.org