

## PARTNER PERSPECTIVE

# R&D Drives Oil Sands Innovation at Syncrude



Canada's oil sands industry has come a long way since a washing machine first successfully demonstrated hot water extraction. In the decades that followed, conscious investments in research and development have transformed the oil sands into a viable, innovative and responsible industry.

Syncrude Canada Ltd., one of Canada's top R&D spenders, has always maintained a leadership role in creating and developing innovative technologies to responsibly mine, extract and upgrade high quality crude oil from the oil sands, and to reclaim the land it uses.

When Syncrude was first established in 1964, it was really a research project designed to prove that oil could be produced economically from the oil sands deposits in Northern Alberta. Research was at the fore 14 years before the first barrel of oil was ever shipped, with the effort focused on the environment and developing technology to address

the unique challenges of oil sands mining and extraction.

It was an industry in its infancy where solutions to unlocking the mysteries of the oil sands needed to be imagined, tested and implemented because they simply didn't exist.

"There isn't a lot of off-the-shelf technology for this industry. It was all invented here," says Glen Rovang, Manager of Syncrude's Research & Development Centre, in Edmonton.

Today, R&D continues to open doors to new and better ways to manage the oil sands resource.

Syncrude is one of only a few oil sands operators with a dedicated R&D facility. More than 100 scientists and technologists work there and many more are engaged in research at a fundamental level through their work at universities and research institutes.

In 2013, Syncrude invested \$192 million towards new technologies and processes to improve the reliability and capacity of its operation, reduce costs and address environ-

mental issues. In fact, over half of its research expenditures are directed to environmental projects including a reclamation research program that focuses on landscape creation and performance, with emphasis on watersheds.

The Sandhill Fen Watershed research project, located in a portion of the former East mine, is a unique example in that it is the world's first fen watershed built on a foundation of Composite Tailings. "It can take a very long time for a fen to evolve naturally, and we're trying to speed that up through reclamation," said Jessica Piercey, Project Leader. "The lessons we learn here will help us develop future wetland areas equal in productivity to what was here before mining occurred."

Eight multi-year research programs involving a number of universities are collecting data on hydrology, wetland and terrestrial plant response, carbon dynamics and climate conditions associated with the fen. Early results are encouraging

and the information being gathered will improve wetland reclamation best practices for Syncrude and the oil sands industry.

Sharing research results is an important aspect of Syncrude's R&D program. Despite receiving more than 150 Canadian and U.S. patents for their technology developments, Syncrude openly shares its research and technologies through collaborative industry groups such as Canada's Oil Sands Innovation Alliance (COSIA). Syncrude also collaborates on research projects with universities, government laboratories and agencies, industrial research networks and consortia, private research organizations, and its Joint Venture owners.

Sharing knowledge makes Syncrude a better performer operationally and environmentally, and advances the oil sands industry in general. A dedicated effort to research and development, both financially and collaboratively, ensures the oil sands industry remains at the forefront of innovation.

Photos:

Left: Syncrude's Sandhill Fen watershed research project was built on a foundation of mine tailings in a 54-hectare portion of a former oil sands mine. It was re-vegetated in 2012-13 with many types of native plants and their performance is comparable to the same plants on a natural site. Fens are an important Boreal forest peat land and this large-scale reconstruction effort underscores Syncrude's commitment to returning the land it uses to a condition similar to that prior to disturbance.

Right: Syncrude is leading research to remediate oil sands process water using a process by-product called petroleum coke. The treated water is clean and clear and can support aquatic life. A pilot project is underway to assess treatment efficiency, answer technical questions and inform potential commercial-scale implementation.

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