MRT
membrane reactor technologies

REFORMING THE WAY YOU WILL THINK ABOUT HYDROGEN

Membrane Reactor Technologies Ltd. has developed and proven a proprietary technology to generate low cost, high purity hydrogen more efficiently than conventional methods of natural gas reforming.

Built around a fluidized-bed membrane reactor, the process combines hydrocarbon reforming, shift conversion and hydrogen purification in one simple step.

The company recently commissioned an industrial-grade demonstration unit and has completed the conceptual design of a Beta unit specifically aimed at the large and growing global industrial market for intermediate-scale hydrogen. MRT plans to begin constructing the Beta unit later this year.

"We believe we can beat the cost of delivered liquid hydrogen," says Michael Rushton, President and CEO of MRT. "Our process also offers significant benefits over conventional methods of natural gas reforming."

More hydrogen…

More capacity	5 to 2000 Nm^3/hr
More efficiency	82% natural gas to hydrogen 75% all-energy-in to useful-energy-out
More purity	99.99% hydrogen product
More simplicity	Reaction, purification and heat management in a single unit
More expertise	Noram: skid-mounted chemical plants Research affiliations with UBC and NRC

More than blue sky

Creating opportunities for our customers and partner

CUSTOMERS

We will beat the cost of delivered liquid hydrogen. Our goal is a 20% to 30% improvement in life-cycle costs. And with our technology, this low cost, high purity hydrogen is produced on-site.

PARTNERS

Our process offers significant advantages over conventional methods of reformation. It is efficient and simple. And we are willing to tailor it to the specific needs of your customers. We can support your goals and can fit in with your plans to our mutual benefit.

INVESTORS

You will have exposure to a technology which meets a large and growing industrial-market need today, with all the upside of the hydrogen future.

FINANCIAL RESOURCES

In April, MRT closed a $3 million financing with ARC Financial Corporation, one of Canada's leading energy investment firms. ARC, which is based in Calgary, Alberta, manages private equity funds focused on high growth, early stage companies involved in exploration and production, oilfield service, new energy and energy technology, and non-conventional energy.

MRT has recently commissioned an industrial-grade demonstration unit. The unit was designed by a joint team from MRT and **NORAM Engineering** using a fluidized reforming catalyst. It is housed at the National Research Council Institute for Fuel Cell Innovation in Vancouver.

Demonstration unit

ACHIEVING MILESTONES

In the past twelve months MRT…

Closed a $3m financing

Added depth to executive management team and Board of Directors

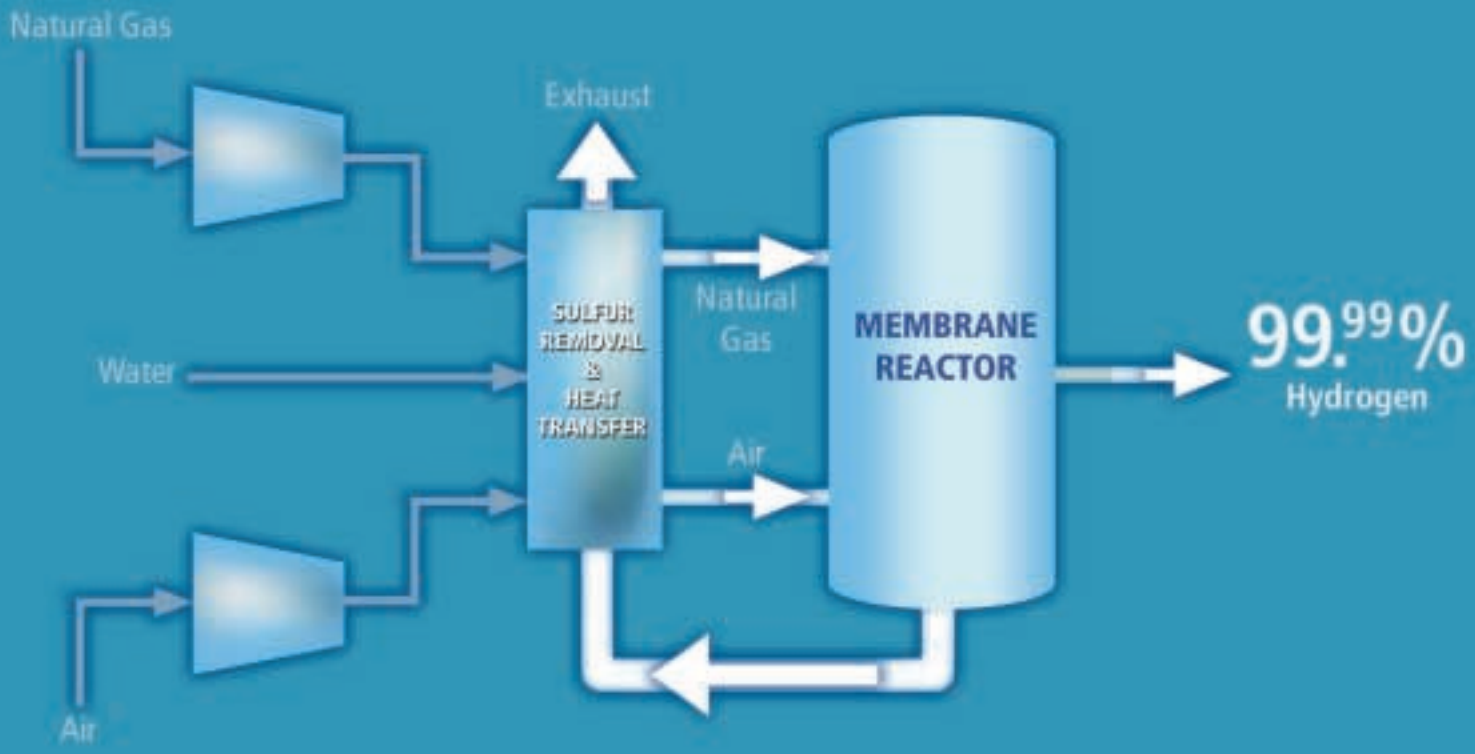
Commissioned an industrial demonstration unit

s to use hydrogen more profitably

INSIDE THE BOX

MRT's integrated hydrogen generation system includes all equipment required to convert as-supplied natural gas to pure, pressurized hydrogen. Natural gas is conditioned by sulfur removal, compression and preheating before feeding to the single step membrane reactor. A combination pre-heater, using reactor off gas as fuel, also raises the steam needed for the reforming reaction. The heart of the system is the membrane reactor where the natural gas and steam mix intimately with catalyst in a fluidized bed, ensuring optimum heat and mass transfer conditions. Perm-selective membranes within the reactor continuously withdraw pure hydrogen driving the equilibrium forward and maximizing the yield of hydrogen from the natural gas feed. Optimized internal oxydation provides additional energy to drive the reaction. Heat integration is maximized to recover energy. Compressors within the system for natural gas, air and hydrogen are selected based on the available supplies and to meet the needs of the end user.

The system is designed for automated and unattended operation with key parameters monitored and controlled for fail-safe operation by an on-board controller. The unit is designed for compactness and ease of access and is delivered on a self-contained, enclosed skid.



Completed a conceptual design for a Beta unit

Improved the performance of the membrane and catalyst

Strengthened its intellectual property position

Who are we?

Membrane Reactor Technologies Ltd. is a Vancouver-based private company that is focused on creating opportunities for customers and partners to use hydrogen more profitably. The company has patented a process that combines the reforming of natural gas, shift conversion and the purification of hydrogen in one simple, cost effective step. The system achieves higher yields of pure hydrogen than conventional reformers. The company and its partners are operating an industrial demonstration unit as a step to meeting the growing need for hydrogen in the intermediate-scale market and are rapidly moving towards commercializing MRT's technology.

To learn more about how MRT can work with your company, visit our website or contact us.

Membrane Reactor Technologies Ltd.
170 E–3250 East Mall
Vancouver, BC
Canada V6T 1W5

T | 604.822.4343
F | 604.822.1659
E | info@membranereactor.com

PROPRIETARY TECHNOLOGY
Operating in an industrial demonstration unit.

SIMPLE PROCESS
Membrane reactor combines hydrocarbon reforming, shift conversion and hydrogen purification in one simple step achieving higher yields of hydrogen than conventional reformers.

COST-EFFECTIVE DELIVERY
Low cost, high purity hydrogen for the intermediate-scale market.

OUTSTANDING PEOPLE
Proven management and a strong technical team. Partners and shareholders enhance MRT's business opportunity.

SOLID FINANCES
Sufficient resources to deliver.

GLOBAL MARKETS
Large and growing industrial market. Meeting this need today will position MRT to be the fuel supplier of choice for the hydrogen economy.