



# New cogeneration approach for Fort Providence

*Bowman Charge Air and Exhaust Gas heat exchangers have been installed in an upgraded cogeneration system which brings vital power and heat to Fort Providence in the Northwest Territories of Canada. This small hamlet of about 800 people is situated on the MacKenzie River, about 2,000km north of the Canada-USA border, reports WIP.*

As with many northern communities, winters are very cold, with temperatures falling as low as  $-40^{\circ}\text{C}$ . Power and heat are highly valued and very expensive commodities.

In 24 of 32 communities in the Northwest Territories, electricity is produced using diesel generators. The commercial rate per kilowatt hour ranges between \$0.51 and \$0.61 CDN, which is four or five times the utility rates in southern Canada. Diesel is trucked or sea-lifted long distances from the south, hence the high cost of power.

At the heart of Fort Providence is the Snowshoe Inn (SSI) which was founded by the Philipp family in 1965.

SSI had previously used a cogeneration diesel power plant to provide all required off-grid electricity and heat for its operations, comprising two diesel generators (120kW/208v) for power, with waste heat captured from the cooling water and the exhaust gases for heating.

However, during the coldest months of the year, additional heat from a 900,000 BTU waste oil burner was required to ensure indoor temperatures were maintained.

In 2013, working closely with one of Canada's best custom fabricators - Pratt Diesel in Ottawa - Jeff Philipp oversaw a major upgrade to the cogeneration system, replacing the old 120kW/208v diesel gensets with new 150kW/600v state-of-the-art gensets.

The first generator has already been installed and upgraded to cogeneration

### Charge Air Cooler



*Temperatures can fall as low as  $-40^{\circ}\text{C}$ : Deh Cho Bridge, Fort Providence.*



using a Bowman Exhaust Gas Heat Exchanger and Charge Air cooler, whilst a second came on stream in Autumn 2014. A third, back up generator is also planned.

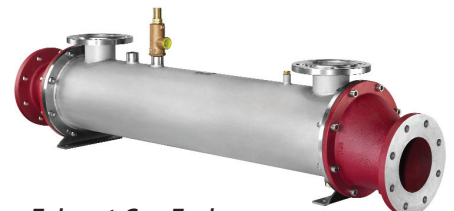
The combination of high efficiency gensets fitted with Bowman heat exchangers has delivered huge savings in heat capture - results that have implications for scores of other remote communities in Northern Canada.

"The Bowman units are performing extremely well, with at least a 60% gain in heat capture due to the massive improvement in efficiency," says Jeff Philipp.

"This is reflected in a reduced need for back up heat from the waste oil burner. In fact, due to improved heat capture, the 900,000 BTU waste oil burner will soon be replaced by a modern 500,000 BTU unit.

"Today, Snowshoe's amortized cost per kWh is \$0.24 compared to \$0.51 for commercial grid power - and climbing annually - a 52% saving."

The savings speak for themselves but the Fort Providence cogeneration system is



*Exhaust Gas Exchanger*

just the start of an initiative to modernise power production in the Canadian North, according to Jeff Philipp - and one in which Bowman heat exchanger technology could play a key role.

"Most of the electricity in Canada's North is generated by diesel and the cost per kWh is excessively high, consuming a large percentage of community revenues which could otherwise be used for much needed economic and social development projects. There are 100+ remote diesel plants - none of which capture and utilize the waste heat," he concludes.

WIP

### Internet link

[www.ejbowman.co.uk](http://www.ejbowman.co.uk)