



### Delphi Energy - Tower Creek

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- Engineering, design, and project management of a 25 MMSCFD sour mole sieve dehydration facility, power generation, grassroots facility, pipeline, remote wellsite, SCADA.

### Devon Canada Corp

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#### Rycroft

- Design and project management of a 24 MMSCFD sour gas plant including 125 USGPM amine sweetening, 350 HP refrigeration, C<sub>5+</sub> production, 3000 HP primary gas compression, 250 HP acid gas injection, and 1200 KW power generation.
- Acid gas composition: 70% H<sub>2</sub>S, 29% CO<sub>2</sub>. Acid gas compression: 250 HP at 1220 psia discharge. Acid gas pipeline: 500m with 1218 psia wellhead pressure.

#### Gunderson

- Design, procurement, and project management of a 50 MMSCFD sour gas plant at 15% H<sub>2</sub>S. Units included mole sieve, inlet slug catcher, power generation, and vapour recovery unit.
- Design and project management for the addition of one 20 MMSCFD, 1600 HP sour gas compressor.

#### West Culp

- Design and project management of a 20 MMSCFD sour gas plant including 125 USGPM amine sweetening, 350 HP refrigeration, LPG production, oil battery modifications, solution gas compression, 3000 HP primary gas compression, 250 HP acid gas injection, and power generation.
- AENV permit application.
- AEUB permit application and audit manual.
- Acid gas rate: 2190 lb/hr. Acid gas composition: 53% H<sub>2</sub>S, 45% CO<sub>2</sub>. Acid gas compression: 250 HP at 1220 psig. Wellhead pressure 800 psi.

Enco Gas Ltd. - Sierra West

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- Design and project management of a 25 MMSCFD sour gas dehydration facility including aerial cooler and power generation.
- Design and installation management of a 6" diameter, 5 km sour pipeline.

Energorozwój S.A - Poland

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- Performed conceptual study of plasma gasification of solid waste for combined heat and power cycle. Prepared initial research report on plasma gasification technology, feasibility analysis, vendor information, and defined the scope of the project. Project is underway.

Keyera Income Fund (formerly Keyspan)

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**Caribou, B.C.**

- Engineering, design, and project management of a 40 MMSCFD sour gas plant expansion to 105 MMSCFD c/w 250 gpm amine system, 300 Hp refrigeration train, 800 Hp acid gas injection, 1500 Hp sales compression, inlet system conversion, flare system replacement, heat medium, 550 KW power generation, LPG production, and new H-P DCS system.

**Strachan**

- Provision of design, procurement, and project management services to manage the retrofit of a 25,000 kg/hr waste heat boiler with an economizer bypass system. Utilization and modeling of a modified 17,500 HP LM gas turbine.

Maxim Power – HR Milner Power Station

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- Gas Liquids Engineering Ltd. was contacted to design a new cooling tower structure for the coal fired Milner Power Station. The requirements were to reuse the existing inlet pipes, outlet pipes, and water sumps from the previous tower to keep costs low. Laser scanning was used to accurately model the existing facility and to incorporate the new design.
- To reduce evaporation coming off the cooling tower basin 60,000 4" black plastic balls were used. The balls float on the surface of the water, and are cheaper than a swimming pool cover.

### Murphy Oil – Tupper West, NE BC

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- EPCM scope currently underway for a 23 MW power generation station adjacent to the 180 MMSCFD gas plant. The power generation station is being constructed as a parallel project to the gas plant and will feed the plant with 13.8 kVA power. The project includes all civil works, design, and construction of the generator building and associated HVAC system, design of the generator cooling and air intake subsystems, and design and procurement of the generators
  - Engineering for the project which consists of the installation of eight 3.3MW reciprocating engines.
  - Conducted the preliminary design and cost assessment of the generation options evaluating gas-turbine engines versus reciprocating engines to meet the power requirements.
  - Prepared the RFQ for the purchase of the generation units and was responsible for the bid process and evaluation.
  - Evaluated proposals on a Net Present Cost basis for the life of the project. The analysis included comparisons of costs such as the engines, installation, maintenance, fuel gas, salvage, carbon tax, and spare parts.

### Numac Energy Inc. - Martin Creek, BC

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- Design and project management of a 30 MMSCFD compressor station including inlet separation, glycol dehydration, 3200 HP compression, heat medium, and power generation.

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#### Polish Oil and Gas Company - Dębno, Poland

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- Design basis memorandum and project specifications for a 45,000 SCM/Hr sour gas plant including fractionation and sulphur plants. Economic evaluation of 200 cum/d fractionation train options.
- Project management of a US \$70 million gas plant development involving 21 wells and the production of 45 MMSCFD gas, 6000 BPD oil, 120 t/d sulphur, 600 BPD LPG, and 200 BPD condensate.
- Fabrication and construction inspection.
- Pipeline system design and evaluation.
- HAZOP evaluation. Start-up and operations support.
- Training – plant management and Dębno Plant Operations personnel.

#### Sherritt International Corporation - Cuba

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- Revamping a multi-skid gas plant / power generation unit including: compression, sweetening, refrigeration, steam system, and turbine driven electrical power generation.

#### Sherritt International Corporation - Varadero, Cuba

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- Phase 1 (US 20 million) - Responsible for the re-engineering, 25% of the procurement, 50% of project management, 100% of construction troubleshooting, commissioning, and start-up for a 35 MW gas-fired power generation facility involving a 110 kV substation, a GEMS6001 turbine, and two 25 km transmission lines. A 15.5 MMSCFD gas plant - 25% mechanical design, 50% of the procurement, commissioning, and start-up by GLE. The design provided recovery of 192 bbl/d of LPG and 133 bbl/d of condensate as well as 40 t/d sulphur.
- Phase II (US 30 million) - Responsible for 75% of the engineering, 75% of the procurement, 75% of the project management, 100% of the commissioning, and start-up for a 70 MW gas-fired power generation facility involving two GEMS6001 turbines and a 25 km transmission line. A 27.5 MMSCFD plant - 25% of mechanical design, 50% of procurement, commissioning, and start-up by GLE - supplied the gas feed. The design provided recovery of 413 bbl/d of LPG and 286 bbl/d of condensate as well as 70 t/d sulphur.

- Phase III (US 100 million) - Responsible for the detailed engineering of the interfaces between three supplemental fired 400+ MMBTU/hr waste heat recovery boilers and the three GE-MS6001 gas-fired turbine generators. Also primary responsibility for engineering of the reverse osmosis (176 US gpm) water treatment system and its interface with the steam generation system, detailed engineering of the interfaces between the steam turbine generator/condenser/cooling water, and detailed engineering of the sea water intake and water desalination make-up. Field procurement of the equipment.

#### Sherritt Power Corporation - Boca de Jaruco, Cuba

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- Phase IV - Responsible for the engineering, procurement, project management, commissioning, and start-up for a US \$15 million, 35 MW gas-fired power generation facility involving a 110 kV substation, a GEMS6001 turbine and a 5 km transmission line. A 15 MMSCFD gas plant designed by GLE supplied the gas feed. The design provided for recovery of 166 bbl/d of LPG (C<sub>3</sub> & C<sub>4</sub>) and 115 bbl/d of condensate as well as 15 t/d sulphur.
- Integrated within the Cuba projects were the interconnection of the substations into the UNE National grid and the upgrading of the communications link to microwave. This modification became the backbone of a whole new system in Cuba and involved the MMI remote control interface in Havana, towers, and the transmission system.

#### Total Austral S. A. - Aguada Pichana, Argentina

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- Design/fabrication co-ordination, commissioning, and performance testing for a 280 MMSCFD dew point control plant with refrigeration and 9 MW power generation.