Safely Providing Quality Services
Control Your Industrial Energy Consumption.

With energy consumption rising year after year, EMW Industrial utilizes the best-in-class manufacturers, latest technology and follows industry best-practices to drive down costs.

Through our **TURNKEY Solution; Consult, Deliver and Maintain**, we increase energy efficiencies, optimize performance and improve productivity for our industrial clients.

**EMW INDUSTRIAL SERVICES**

- Top Quality & Safety Standards
- Feasibility & Energy Analysis Studies
- Process Design & Improvement Process
- Full Service Repairs & Maintenance
- Electrical Installation & Commissioning Services
- High Voltage Connections
- Comprehensive, Periodic Inspections & Audits
- LED Lighting
- Power Factor Correction Banks

**Involved. Committed. Results Driven.**

Lorne Nesault, EMW Electrical Division Manager
Phone: (306) 744-2675    Email: Lorne.Nesault@emw.ca
A Solution-Oriented Company

- Design
- Reliability Management
  - Maintenance
  - Shutdown/Turnaround
- Engineering/Drafting
- Fabrication/Coatings
- Commissioning
  - Asset Baselining
- Electrical/Controls
- Installation/Construction
- Energy Management/Consultation
Areas of Expertise

Consult

Deliver

Maintain

Safely Providing Quality Services.
In addition to our physical office locations, EMW has regional coverage across British Columbia, Alberta, Saskatchewan, Manitoba and Ontario, so that our teams can provide fast locally based services to customers.
Our Skilled Labour Force

Apprenticeships: under the SK, MB, AB apprenticeship board

- Electrical
  - Journey Persons
  - Apprentices
- Welding
  - Journey Persons
  - Apprentices
- Millwright
  - Journey Persons
  - Apprentices
- Iron Worker
  - Journey Persons
- Machinist
  - Journey Persons
- Steam/Pipe Fitters
  - Journey Persons
  - Apprentices
- Metal (formally ‘Steel’) Fabricator
  - Journey Persons
- Class ‘A’ Boom Truck Operator
  - Proficiency 4
    - Sub-trade of Crane Operator
Our Skilled Labour Force... Cont’d

Apprenticeships: *under the SK, MB, AB apprenticeship board*

- **Parts Person**
  - Journey Persons

- **Auto Mechanics/Automotive Service Technicians**
  - Journey Persons

- **Carpenter**
  - Journey Persons
  - Apprentices

- **Predictive Maintenance Technicians**

*EMW currently employs approximately 280 individuals and focuses on hiring locally in the communities in which we conduct business.*
Our Commitment to Safety

We aim to inspire a collective belief to maintain safe behaviours and endeavour to provide a safe and healthy workplace that is free from harm.

We actively seek all our staff to embrace this commitment to ensure all our work is undertaken in accordance with our *Safety Manual* and in support of **Mission Zero** – *zero lost time, zero accidents and zero incidents*.

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*EMW is ISNetworld Registered – Account #400-152899 (Dashboard A Rating)*
Memberships
EMW Industrial Ltd.
Energy Management Program
How we see the world
Energy management can give you a competitive advantage

- Save on energy costs (Overall Operational Cost)
- Improve site resilience by minimizing downtime and ensuring productivity
- Improve your environmental impact and get recognized as a “Green Company”
Our Energy Management Team
EMW & Centrica Business Solutions portfolio of energy efficiency solutions
We can manage both sides of the energy equation.

- Demand Response & Load Management
- Energy Insights
- Solar & Storage
- Redox Power Generation
- Combined Heat & Power
- Energy Efficiency
- End-to-End Energy Solutions

Supply Management

- Wholesale Power & Gas
- Power Supply
- Gas Supply
- Strategic Energy Management

Direct Energy Business

Centrica Business Solutions
We have a strong presence globally supporting customers across 34 countries

INVESTMENT: £700m
REVENUE: £28bn
RESOURCES: 12,000
ENVIRONMENT: 31m

- In distributed energy by 2020
- Centrica revenue in 2017
- Engineers across Centrica
- Cubic tonnes of CO2 saved
How we work with you
Working with you
Our tried and tested three-stage approach to engaging with our customers

**Explore**
We’ll get to understand your business and your objectives, map your sites and analyse the performance, efficiency and resilience of your existing energy systems.

**Plan**
We’ll work with you to identify options to help improve your existing energy system and meet your business objectives, develop an action plan based on the whole life-cycle, including build, maintenance, measurement and financial planning.

**Act**
We’ll partner with you to implement the solution, helping you with every aspect of the build, from permitting to commissioning as well as financing and training.
Product Highlight:

Panoramic Power
Unique sensor technology: “set and forget”

Tiny

Wireless

Self-powered

No service required
Our Solution & Technology

Quick and effective state of the art technology for device-level monitoring

1 Snap
- Non-Invasive
- Self-Powered
- Wireless
- No Disruption
- No Maintenance

2 Connect
- Plug & Play
- Cellular or Wi-Fi
- Up to 250 sensors

3 Set Up
- Role Definition
- Executive Reports and alerts
- Set Goals
- Measure Benchmarks

4 Start Saving
- Management By Exception
- Scheduled Reports
- Real-Time Alerts
- Online Analytics
- Manage Chain-wide

Data ➤ Insight ➤ Actionable Results

Full Portfolio Of Sensors & Meters
Easy to deploy in a couple of hours

Panoramic Power

Wired Solution
Intelligence at your Fingertips

Energy and operational efficiency report

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1 Executive Summary
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  1.2 Potential Savings
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  2.2 Additional Findings
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  3.3 On Versus Off Hours Consumption
4 Appendix A – Screen Shots

Panoramic Power Monthly Energy Efficiency Report
Case Studies
Distributed energy: insight-led approach

Example site
- Distribution center and cold storage
- **Challenge:** No visibility to energy data, limited backup power for critical loads
- **Solution:** Panoramic Power + LED lighting and on-site generation that provides backup power and shave peak demand

Stepped Approach

1. **Energy insights** ➔ **business case**
   - ID & Quantify DER measures
   - Simulate DER performance

2. Deploy EE measures
   - Execute quick-wins
   - Immediate OPEX reductions

3. Execute **long-term resilience plan**
   - Add **generation & storage**
   - Next-level OPEX reduction
Contact Information

EMW Industrial Ltd.
206 Commercial Street
Saltcoats, SK
S0A 3R0

Phone: (306) 744-2675
Mobile: (306) 621-7163
APPENDIX
Distribution of power consumption, %
We are a leading, international energy and services company. Everything we do is focused on satisfying the changing needs of our customers.

Through our brands - Direct Energy, Centrica Business Solutions, British Gas, and Bord Gáis - we provide energy supply, service, and solutions to homes and businesses internationally.

**Direct Energy.**
- 0.6m business supply points
- 5,827mm3m3 gas consumption
- 91TWh power consumption

**Centrica Business Solutions.**
- 543 MW under management
- Active customer sites: 3,924
- 9 regional offices

**British Gas.**
- 0.7m business supply points
- 583mm3m3 gas consumption
- 13TWh power consumption

**Bord Gáis Energy.**
- 41k business accounts
- 62mm3m3 gas consumption
- 150GWh power consumption
Powering the City of Bridgeport

Sustainable, cost effective for local government

The City of Bridgeport needed a Microgrid solution to be built with 100% Grid Redundancy at no cost to the city, while saving on long-term cost and reducing environmental impact.

The Results

A Microgrid design that included Cogeneration, stand-by power generator set and electrical power designed to provide continuous power during grid failure. The Microgrid provides power to key municipal buildings, and utilizes the engine heat loss to supply heating and cooling to critical facilities such as, City Hall, Police Headquarters and the Golden Hill Senior Center.

The team has estimated annual savings of approximately 85,554 MMBTu in energy, all while meeting several budget and city needs. The Microgrid was built with 100% redundancy at no cost to the city, with the potential for reducing environmental impact and long-term energy costs.
New Jersey hospital saves with trigeneration

Customer objective
Facing frequent cost uncertainties, a New Jersey hospital decided to reduce its electricity costs in order to release additional revenue for patient care.

The solution
• Two 1,000 kW generators
• Producing 60% of the hospital’s electricity on site
• Heat used to produce steam, chilled water and hot water
• Reduces utility bills by 35%
• Saving approximately $2M per year

“Saving 35% annually on our electricity costs directly impacts our mission to deliver high-quality, safe, affordable patient care.”

Director
Construction and Facilities Management
Partnerships are a central component of our growth strategy and we are looking for partners who can help us originate and deliver new projects

- Your strategy & growth ambitions?
- Opportunities to work together?
- Motivation for partnerships – scale, customers, complex projects, co-creation
- Fast tracking progress
How does Solar work?

1. Solar panels
   PV cells convert sunlight into DC electricity.

2. Inverters
   Inverters convert DC electricity into AC electricity—the type of electricity your business uses.

3. Generation meter
   The AC electricity is fed through a generation meter into the distribution board.

4. Distribution board
   The distribution board supplies power for your business needs. G59 relay monitors the grid to ensure safe operation during faults.

5. Site meter
   The site meter meters export to the grid or reduction in purchased electricity depending on the site load.

6. National grid
   Excess solar electricity generated is sent to the grid for the utility to use. Any additional electricity needs are pulled from the grid.
Fuelling Resiliency through Cogeneration

Presented by Howard Rosen
Head of Sales, North America ENER-G Combined Heat & Power
A little knowledge can be very helpful!!
Combined heat and power (CHP), also known as cogeneration, is the simultaneous production of electricity and heat from a single fuel source, such as: natural gas, biomass, biogas, coal, waste heat, or oil.
What is CHP (Cogeneration)

• Cogeneration uses a piece of equipment that makes electricity.
• Fuel Cell, Reciprocating Engine, Microturbine, Steam Turbine, or Gas Turbine.
• During this process, a tremendous amount of heat is created. It is this heat that is captured and used for space heating, hot water heating, process loads, and indirect fired cooling.
• In all cases, a cogeneration system can be used as back-up to the electric utility. (where allowed)
Benefits of CHP

• **Efficiency Benefits**
  CHP requires less fuel to produce a given energy output, and avoids transmission and distribution losses that occur when electricity travels over power line.

• **Reliability Benefits**
  CHP can be designed to provide high-quality and thermal energy to a site regardless of what might occur on the power grid, decreasing the impact of outages and improving power quality for sensitive equipment.

• **Environmental Benefits**
  Because less fuel is burned to produce each unit of energy output, CHP reduces air pollution and greenhouse gas emissions.

• **Economic Benefits**
  CHP can save facilities considerable money on their energy bills due to its high efficiency and can provide a hedge against unstable energy costs.
CHP Flow Chart

Water

Heat Recovery Unit

Steam or Hot Water

Absorption Chiller

Fuel

Engine or Turbine

Generator

Electricity

grid

Building or Facility

Heating

Cooling
Cogeneration will NOT be applicable if three metrics aren’t met:

**Spark Spread** – Potential customers all in electric costs must be GREATER than all in natural gas costs.

**Heat Utilization** – Potential customers must be able to use the waste heat AT LEAST 70% of the year.

**Base load** – Minimum level of demand (can be as low as 35kW)
A Look at Direct Energy Business

In collaboration with our sister company, Direct Energy Business, we offer a full suite of next-generation energy solutions for businesses.

- Supplies **24 U.S. markets** and **4** Canadian provinces
- More than **97 TWh** and more than **590 Bcf** supplied
- Serves **78%** of the Fortune 100® companies
- Serves **60%** of the Fortune 500® companies

A top supplier of energy and related services to small and large businesses across North America.

Serves more than **240,000 businesses** across North America.

#1 in natural gas supply to commercial customers in the Eastern U.S.

#2 in power supply to commercial customers in the U.S. and Canada

$10 Billion in revenues
Implementation stages

Working with EMW & Centrica Business Solutions
A simple process to rapidly move from the initial idea to onsite generation in 5 steps.

1. Site Assessment
   We work together to assess the requirements of the site to ensure the most suitable unit is selected.

2. Unit selection
   Select an appropriately sized power generation unit that ensures maximum operational efficiency and longevity. In-house design and projects teams ensure the correct fit for the site.

3. Finance
   A payment plan is tailored to requirements. We also help identify other funding sources available.

4. Installation
   Once manufactured and tested, the systems are installed onsite by specialist teams.

5. Operation
   Our mobile service technicians ensure your power systems stay up and running, offering quick response and local coverage.
Value: Health Check for BMS settings