SIGMA ENERGY STORAGE

Dispatchable Power Solutions

Store electricity whenever it is produced,
regenerate when it is needed.

Sigma Energy Storage: a brief history

- 2011: Sigma Energy Storage incorporates in Sherbrooke, QC
- 2013: Business development begins
- 2014: Friends & family financing
- 2015: HT-CAES Alpha completed
  - Prototype scale (50 kW) built, fully tested
- 2016: SDTC grant, NRC (IRAP), CRSNG
- 2016: Technoclimat grant, DEC
- 2017: Sigma HQ opens in Montreal
- 2018: MOU signed with major industrial client

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We have built a dedicated team of innovators from around the globe.

- Seasoned leadership
  - CEO Martin Larocque (Leadership, Commercialization)
  - Executive Chairman Richard Boudreault (Serial entrepreneur and innovator)
  - Exec.VP Carmine Marcello (Energy Expert, former CEO Hydro One)
  - Exec. Consultant Jon Sorenson (Project Development)
- 14 employees
- 90% of FTE hold advanced degrees
  - Engineering (5 PhDs), Physics, Communication, Environment, and Business

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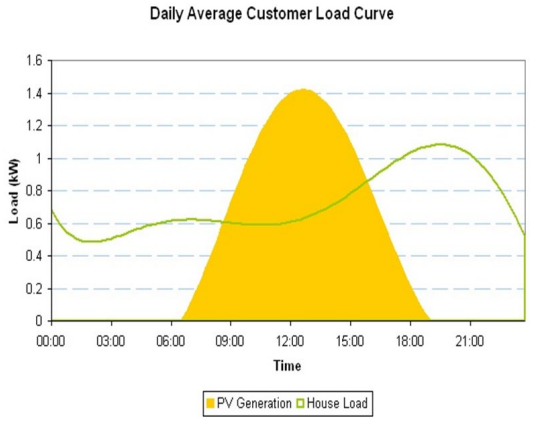
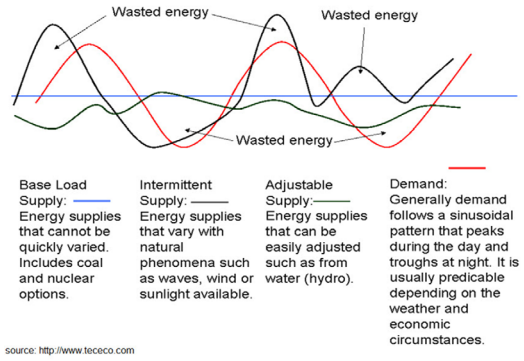
Why renewable energy needs our solution

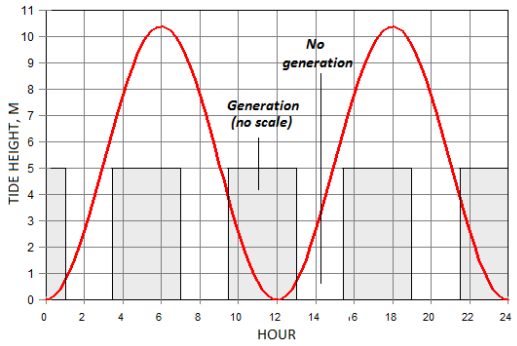
Solar



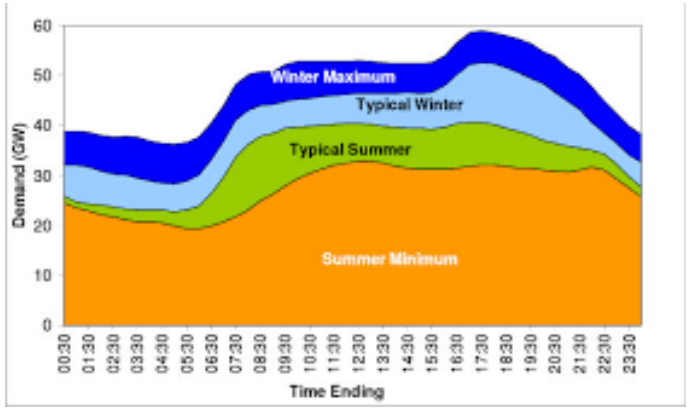
Wind



Tidal



Typical Load Profile



Misalignment between production & load: a key market driver for energy storage

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Two valuable solutions, Three applications

1. Microgrids (HT-CAES)
   - Integrate intermittent renewables to reduce diesel use for remote villages, mines, and military sites
2. Bulk Storage (HT-CAES)
   - Large-scale grid balancing
3. Industrial Energy Solutions (CP-TES)
   - Recover waste heat & provide electricity strategically

HT-CAES: Hybrid Thermal-Compressed Air Energy Storage
CP-TES: Combined Power-Thermal Energy Storage

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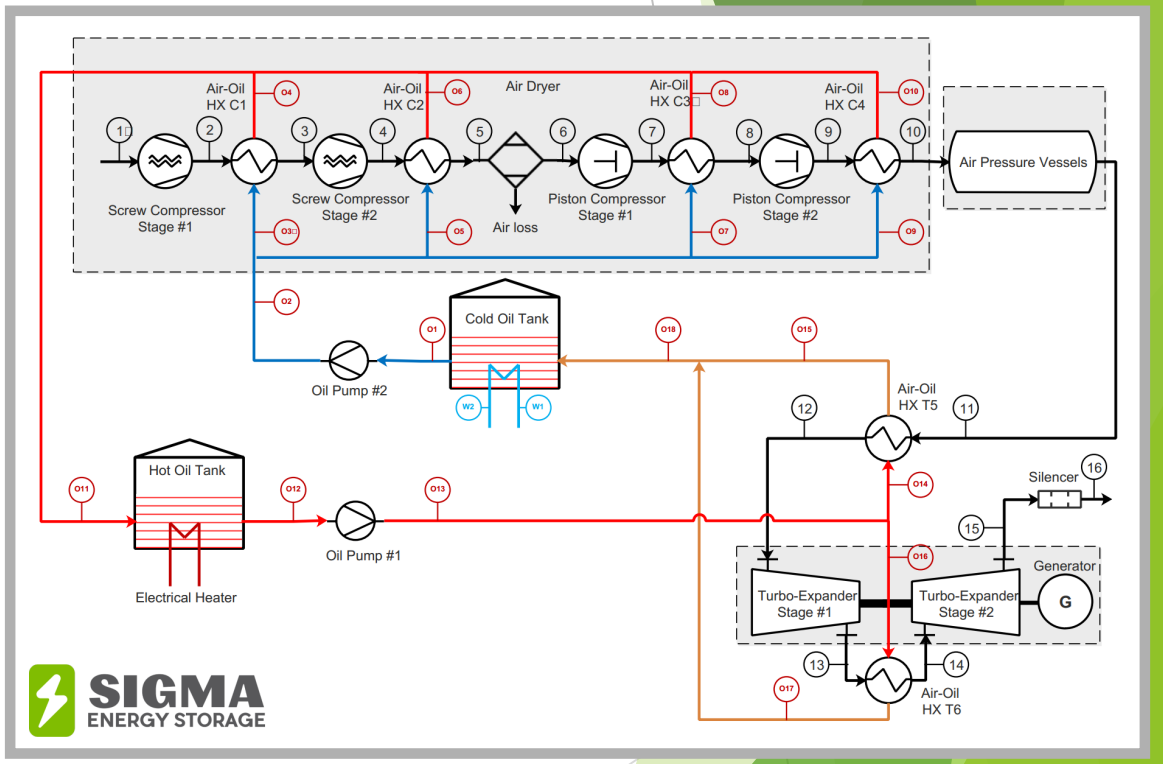
How does HT-CAES work?

It's a straightforward concept:

1. Use electricity to compress air
2. Recover heat loss from compression
3. Store heat & compressed air until electricity is required
4. Release and reheat pressurized air to run a turbine-generator



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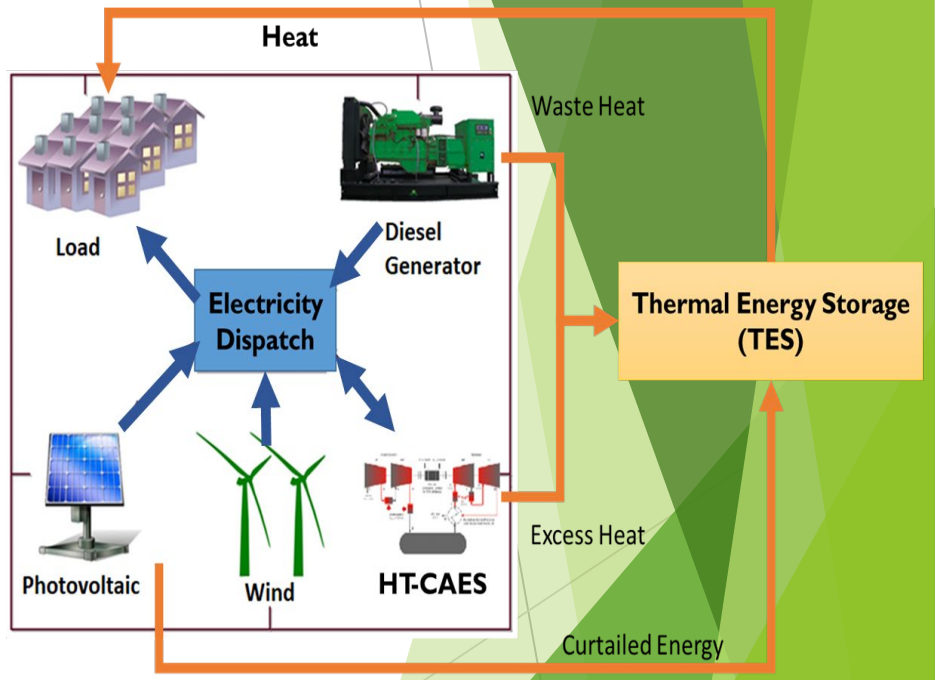
Microgrids: HT-CAES stabilizes intermittent generation and provides heat.

- MW/MWh scale
- Install anywhere (uses certified pressure vessels)
- Reliable, climate-resistant energy storage solution
- HT-CAES + renewables reduces diesel 40-60%
  - Heat recovery
  - CO_2 capture & liquefaction
- Recyclable at end of life – no toxic chemicals
- Expected payback period less than 7 years



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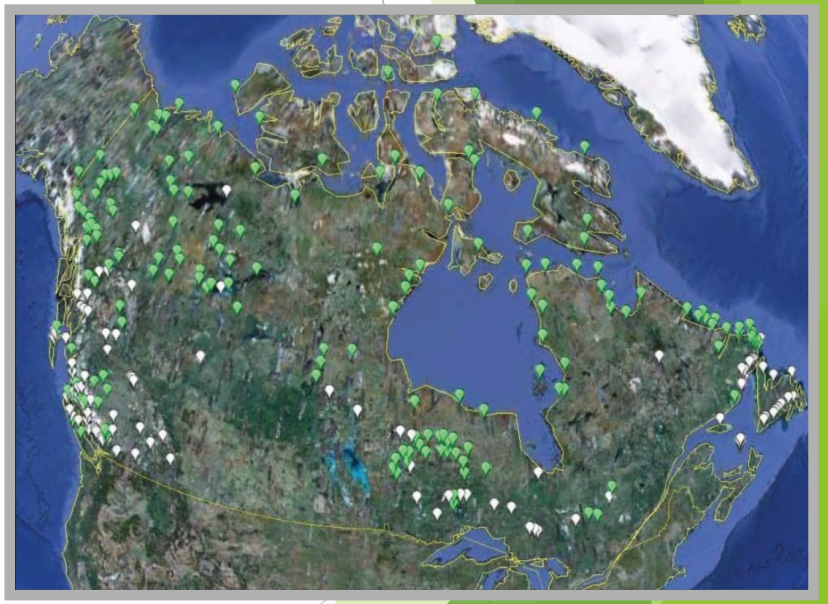
Microgrids: HT-CAES reduces diesel dependence

- 270 Canadian diesel-dependent remote communities[1]
- 15,000 mines and military bases in North America[2]
- 25,000 diesel-powered systems worldwide
  - **22.5 GW global diesel generation capacity[3]**
- Diesel is costly and risky
  - 1 litre diesel = 2.7 kg greenhouse gas (GHG) emissions
  - Fuel delivered by air or ice road



1 Natural Resources Canada
2 Greentech Grid
3 Reiner Lemoine Institut

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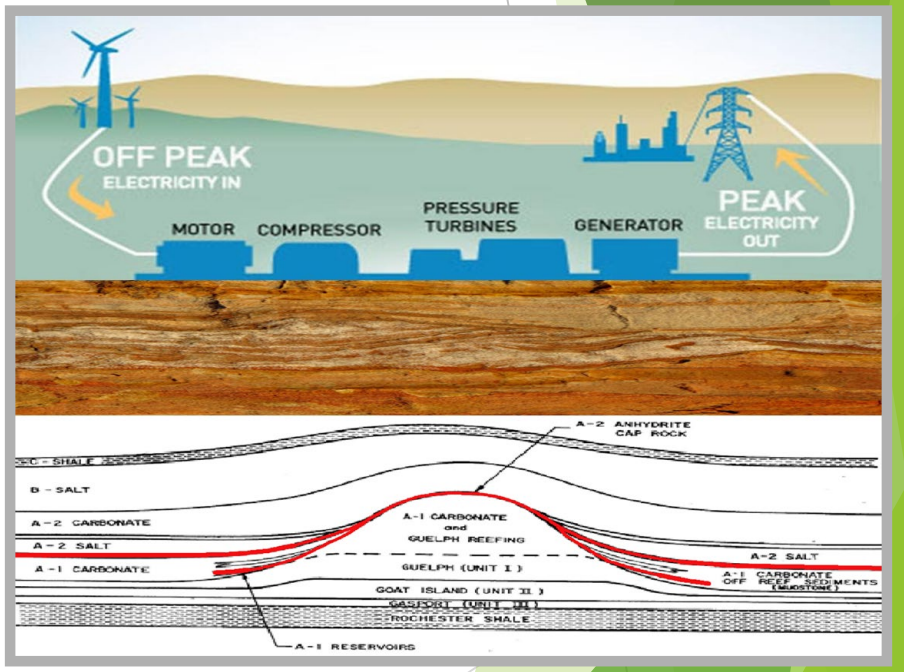
Bulk Energy Storage: utility-scale HT-CAES balances the grid

- **Scale**
  - Power in MW/GW
  - Storage Capacity in GWh/TWh
- **Cost**
  - <$0.05/kWh at scale

- Balances grid-level intermittent renewable generation
  - Solve issue of curtailment
  - Reduce or eliminate negative pricing
  - Displace natural gas peaking power plants



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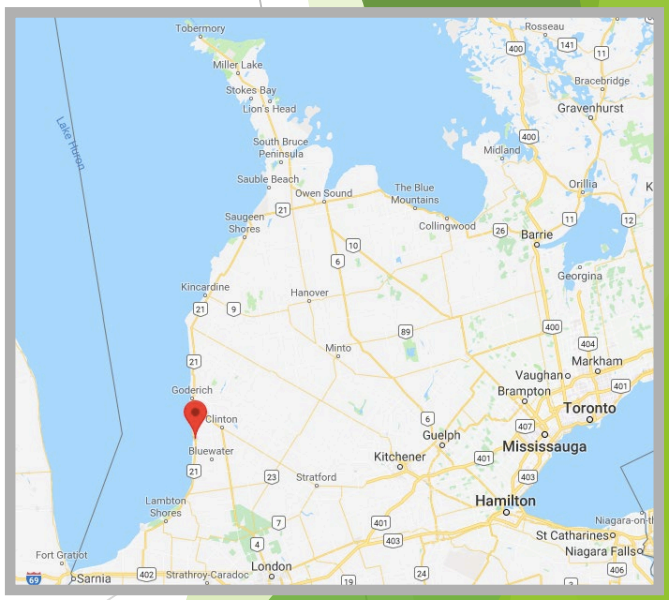
Bulk Energy Storage Market Potential

- Sigma has exclusive right to multiple rock pools in Ontario
  - Porous rock formations
  - Former natural gas storage (already pressure rated)
  - Exclusive study in Ontario (with IESO)
- High-potential sites available worldwide
  - Alberta, Nova Scotia, New Brunswick, Indonesia, Finland, Bolivia, China, Australia, etc.
- Multi-Billion-Dollar Infrastructure Projects
  - Power Purchase Agreements (PPAs) 30 years +



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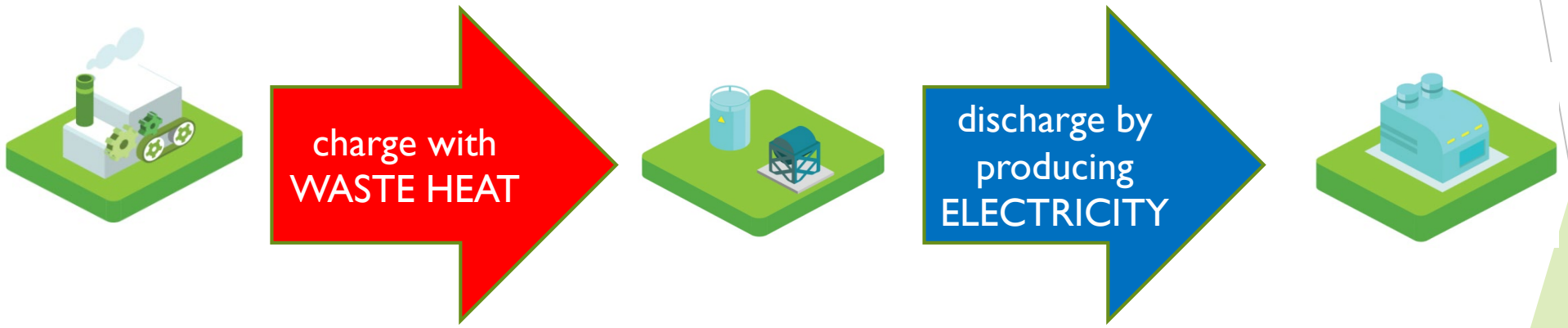
CP-TES stores waste heat and provides dispatchable electricity.

1. Charging Cycle (continuous operation, 24 hours)
   - Transfers waste heat (excess energy) to thermal storage unit



2. Discharge Cycle (average peak is 4 hours)
   - Uses stored thermal energy to generate power strategically

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Industrial Energy Solutions: Combined Power-Thermal Energy Storage (CP-TES)

- Reduces energy costs and GHG emissions
- Provides electricity during high demand (high price) hours
- Behind the meter solution
- Ideal for industrial electricity consumers in areas where peak consumption is penalized (Ontario, New York, Hawaii)

Use Case for Ontario Industrial

CP-TES installed to provide electricity during extremely costly annual demand peaks and to improve manufacturing process efficiency

- Annual Electricity Cost Savings: $6 M
- Annual Natural Gas reduction: $400 K
- CP-TES: $3 M annually, 20 years
- Annual Net Savings: $3.4+ Million
- **20-year savings: $68+ Million**

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Sigma's Competitive Advantages

1. **Mechanical**
   - Long-lasting & reliable = **low levelized cost of energy**
   - **Scalable** & modular
   - Operable in all climates
2. **Store & use heat**
   - Maximize efficiency
3. **Clean** throughout life cycle
   - **Non-emitting** dispatchable power
   - Recyclable at end of life

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Thank you!

Let's continue the conversation.

Martin Larocque, CEO

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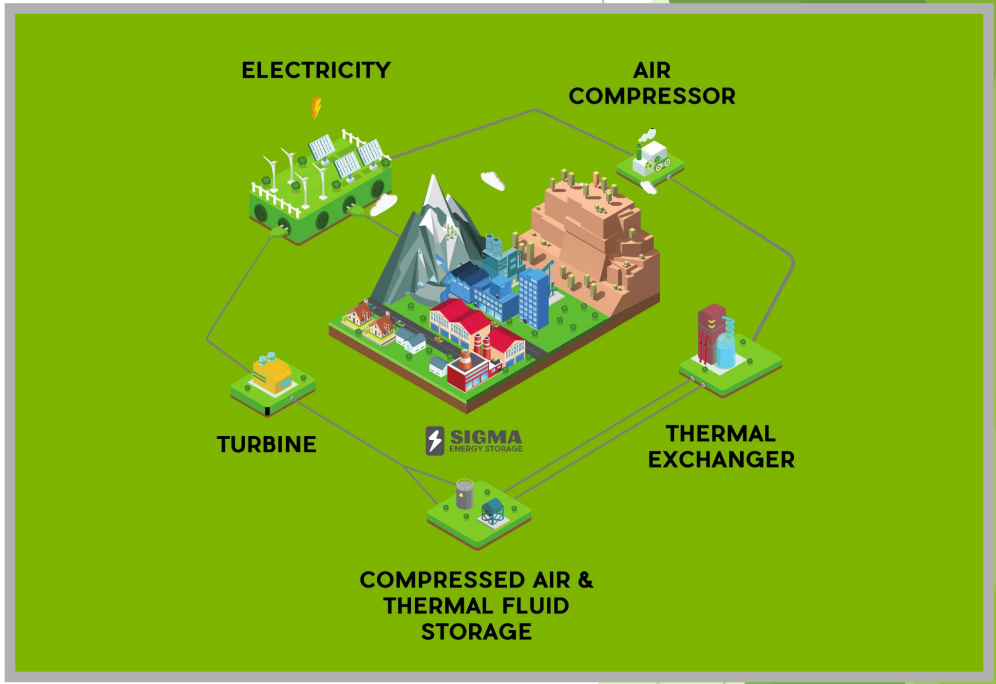

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