Environment Hamilton

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Executive Director

www.environmenthamilton.org

STACKWATCH

REPORTING AIR EMISSIONS IN OUR COMMUNITY

Do you see visible pollution emissions?
Do you smell an offensive odour coming from the industrial area?

TAKE ACTION! REPORT IT!

Ministry of the Environment, Conservation and Parks (MoE)

Hamilton District Office (Mon-Fri, 9am-4:30pm)
905-521-7650

24/7 Spills Action Centre
1-866-663-8477

Email your photos
moe.tips@ene.gov.on.ca

You can contact industry directly or copy them on your reports to the MoE

ArcelorMittal Dofasco
905-548-7200 x0
environment.dofasco@arcelormittal.com

Stelco
905-528-2511 x2268
environment@stelco.com

Need more info on how to effectively report a pollution problem? Visit **environmenthamilton.org/air_quality**

Environment Hamilton

CROWN POINT

Local Air Quality Regulation Compliance Approaches

There are currently **three** compliance approaches for industrial facilities:

❶ Demonstrate **compliance with the air standards** by the phase-in period.

Assessed using approved air dispersion models or through modelling and monitoring.

OR

❷ Request and meet a **site-specific standard.**

Available to eligible facilities affected by new or existing requirements. Assessed using approved air dispersion models or through modelling and monitoring.

OR

❸ Register under and meet a **technical standard** for specified contaminants.
Available if the Ministry has developed a technical standard that applies to the sector and those contaminants.

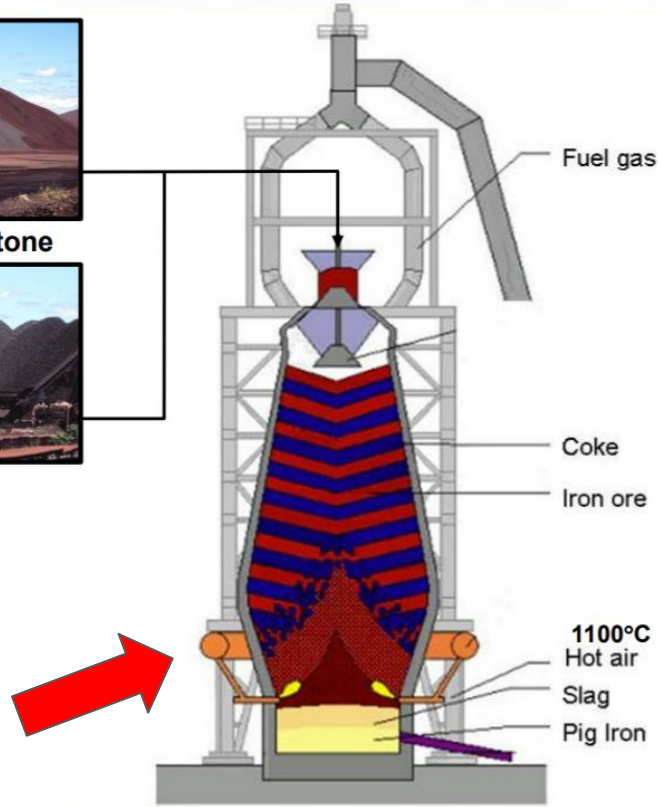
STELCO
Lake Erie Works

Google 100% TerraMetrics NOAA Camera: 9,376 m 42°47'57"N 80°01'08"W 171 m

Producing Iron from Iron Ore

Iron ore & limestone

Coke



'Tuyere'

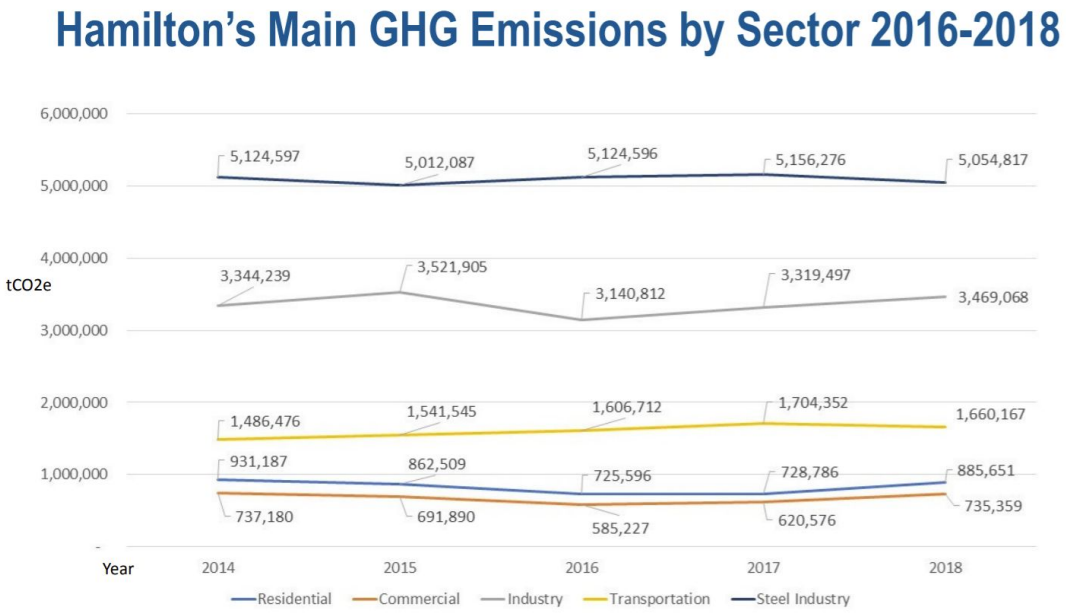
$$Fe_2O_3 + 3CO \rightarrow 2Fe + 3CO_2$$

- The Blast Furnace converts iron ore into molten iron metal at 1450°C for Steelmaking
- Blast Furnace gas is used for steam & electricity

Source - Stelco Inc. CLC Presentation

Canada's Steel Sector & Climate Change

The 'Climate Elephant In The Room'



Source - City of Hamilton

CSPA ACPA CANADIAN STEEL PRODUCERS ASSOCIATION

Climate + Energy

Energy consumption has dropped 12% in 2018 from 1990 levels.

Absolute greenhouse gas emissions are down over 17%.

Canada's steel producers have the ambition to achieve net-zero CO2 emissions by 2050.

Greenhouse Gas Performance

Canadian steel producers are committed to the reduction of greenhouse gases. The industry has a proven track record for reducing carbon emissions achieved through improving its overall operational performance; adopting strong energy practices, such as heat recovery an cogeneration; improving energy efficiency throughout its operations; and optimizing raw material selection and use.

Blast Furnaces & ‘Novel Reductants’

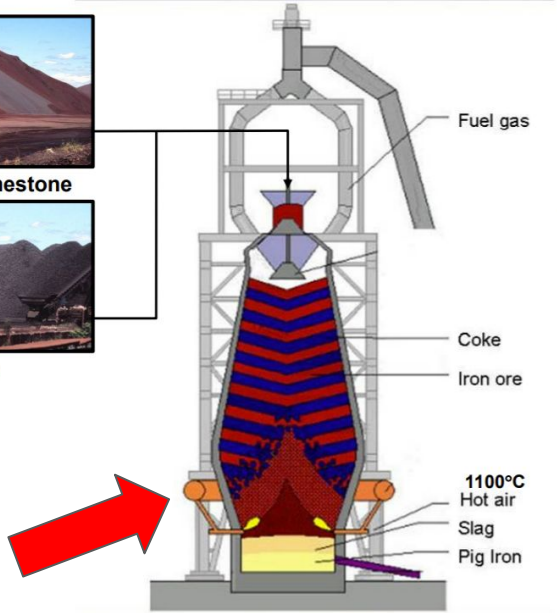
- The iron-making process **requires a reductant - coke (pure carbon) + the injection of ‘pulverized coal’ (PCI) into tuyere + oxygen**.
- The need to realize greater gHg emission reductions has motivated **exploration of the use of ‘novel reductants’ including plastic waste and ‘high carbon materials’ like bio-char**. *(Wang et al, 2013)*
- **Bio-Char vs Plastic Waste** - research points to **greater gHg emission reduction potential with bio-char** *(Feliciano- Bruzual 2014, Ahmed et al 2020)*
- Use of plastic pellets **increases heavy metal levels** - including increased mercury emissions to air and increased levels of heavy metals mercury, cadmium, lead and zinc in blast furnace waste materials going to landfill.

(Trinkel et al 2015)

Producing Iron from Iron Ore

Iron ore & limestone

Coke



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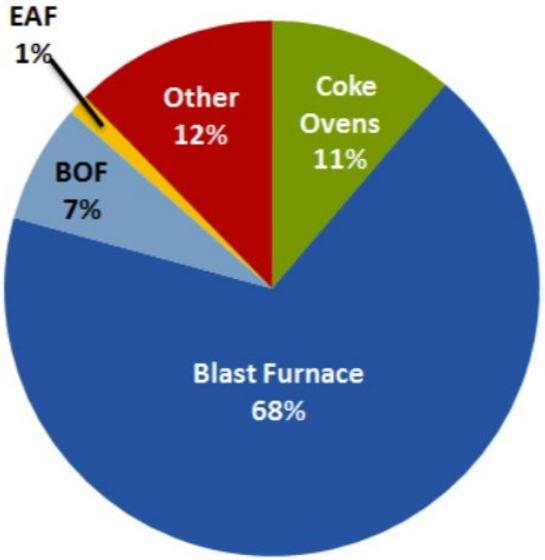


(CSPA Presentation March 30, 2016)

Source - Stelco Inc.

Stelco - A Recent History of Climate Innovation

COMPANY INVESTORS TECHNOLOGY INDUSTRY

First Commercial Carbon Abatement Algae Plant to be built at Stelco

Dec 11, 2017

pond technologies
working green

PRESS RELEASE

Markham, Ontario, December 8, 2017: Stelco Algae Holdings Inc., a wholly owned subsidiary of Stelco Inc. (TSX:STLC)., and Pond Technologies Inc. of Markham Ontario are pleased to announce their collaboration for the construction of the world's first commercial algae plant utilizing industrial greenhouse gas emissions. The plant will be located at Stelco's Lake Erie Works steel mill in

Contact

Pond Technologies Inc.
250 Shields Court, Unit 8
Markham, ON
L3R 9W7
Canada

(416) 287-3835
info@pondtech.com

News & Updates

Join our mailing list to receive the latest news and updates from Pond

First Name

OCE Project #27602: Utilization of Bio-Carbon to Reduce Fossil Carbon Input Requirements for Coke Production

Solution Provider: Walker Environmental - Thorold, Ontario

STELCO

walker environmental

CCRA Corporate Members in 2019-2020:

-ArcelorMittal Dofasco Inc
-CanmetENERGY
-Teck Resources
-Stelco Inc.
-Algoma Steel Inc.
-SunCoke Energy

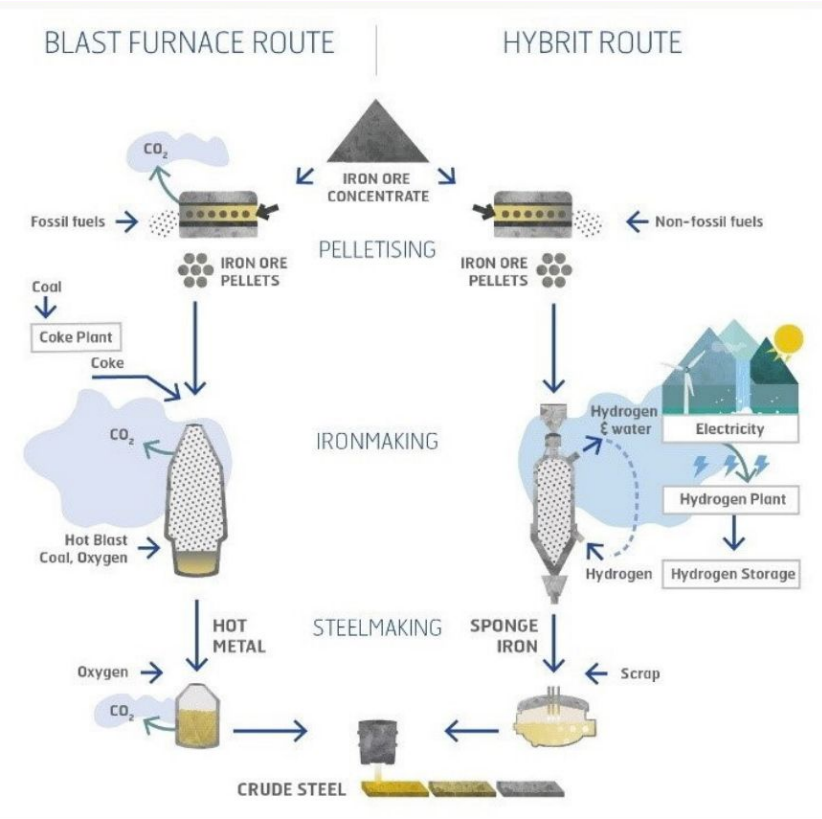
Research Target: Short Term Goals (2020)

- **Integrated Ironmaking**
  - 5 - 10% substitution metallurgical coal in cokemaking by renewable bio-carbon in slot ovens
  - 100% replacement of injection coal in blast furnace ironmaking by renewable bio-carbon
  - *Corresponds to ~25% reduction in GHG emission associated with both cokemaking and ironmaking*
- **Integrated Steelmaking**
  - Small impact and what is developed for EAF could translate for the BOF
- **EAF Steelmaking**
  - 100% replacement of injection carbon (for slag foaming) and charge carbon (for supplementary energy) in EAF steelmaking by renewable bio-carbon
  - *Corresponds to >50% reduction in direct GHG emission associated with EAF steelmaking*

FCHEA
Fuel Cell & Hydrogen Energy Association

Sweden

Three Swedish companies, steel manufacturer SSAB, mining company LKAB, and energy company Vattenfall are exploring the use of hydrogen in steel production processes. This joint endeavor is known as HYBRIT, short for Hydrogen Breakthrough Ironmaking Technology. To make the process fully fossil-free, the hydrogen used will be generated from renewable electricity.



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Thank You!

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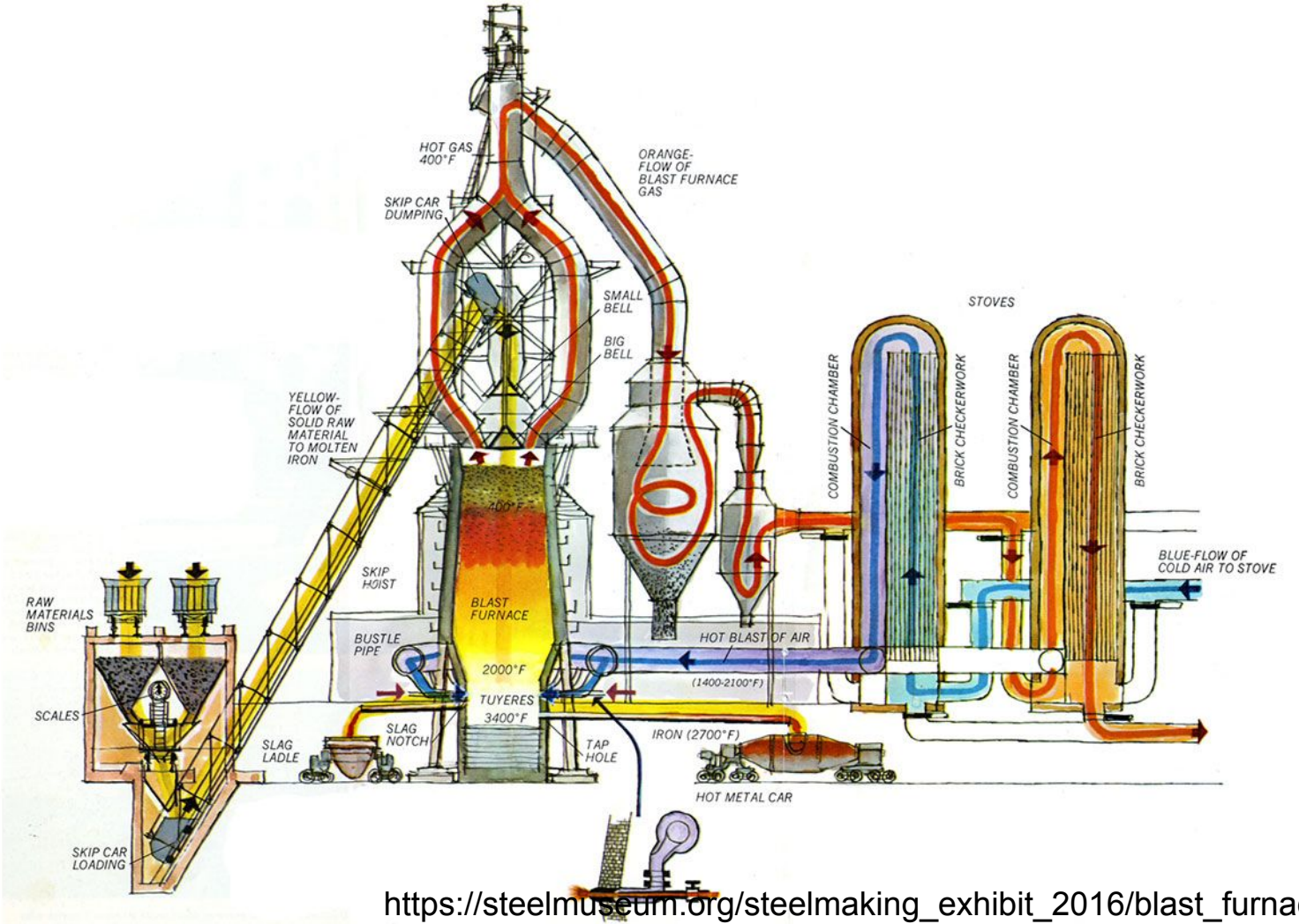

https://steelmuseum.org/steelmaking_exhibit_2016/blast_furnace.cfm