
Convertus™
Closed Loop Organic Waste Processing
Annie Ironmonger / April 2022

The Convertus Group Goals

1. To be the leading and most advanced organic waste operator in Canada.

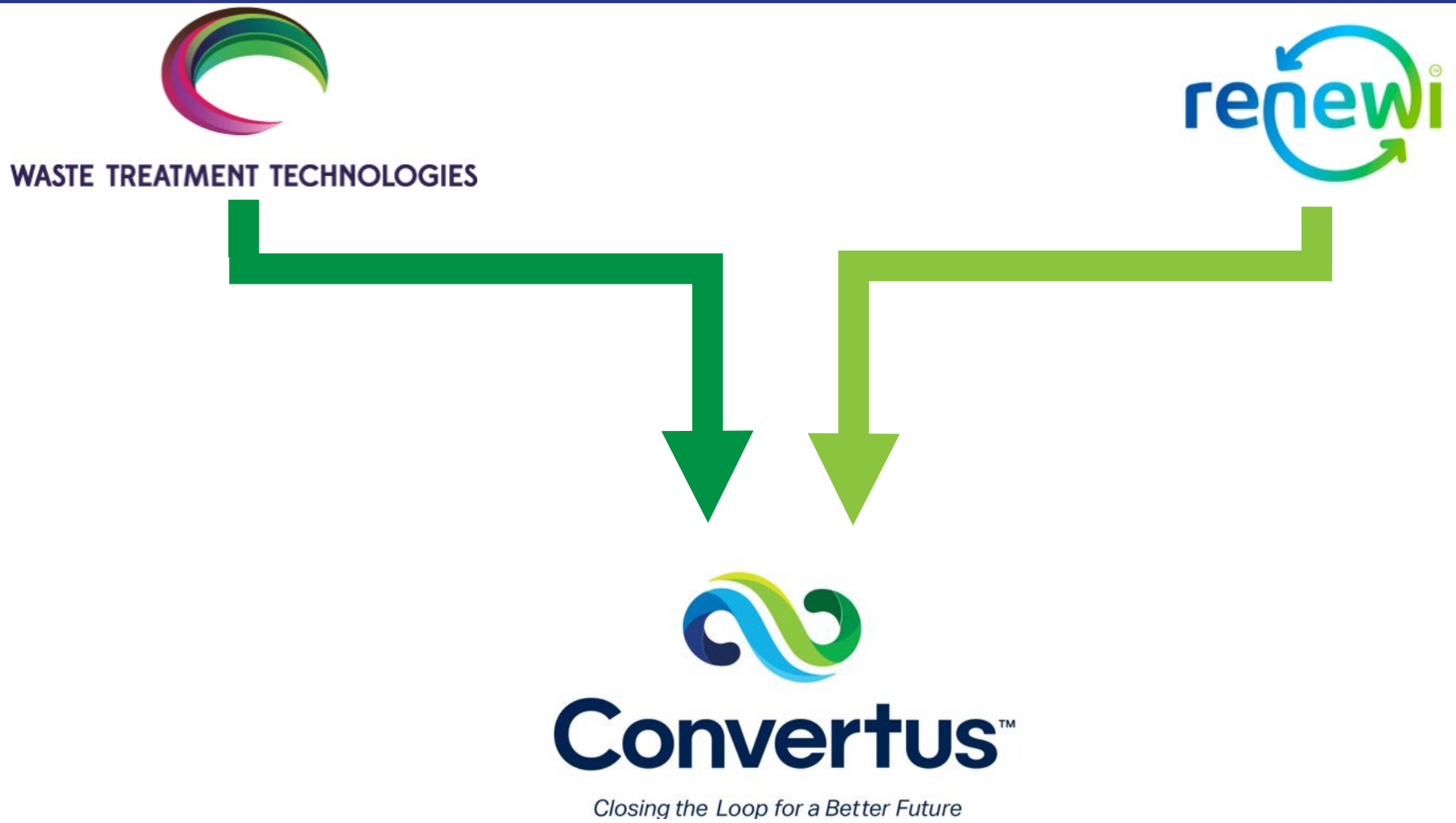
2. To act as a key component of the circular economy by maximizing the re-use of nutrients in the food chain and utilize their renewable energy potential.

3. To play a meaningful role in reducing methane emissions by supporting landfill diversion mandates.

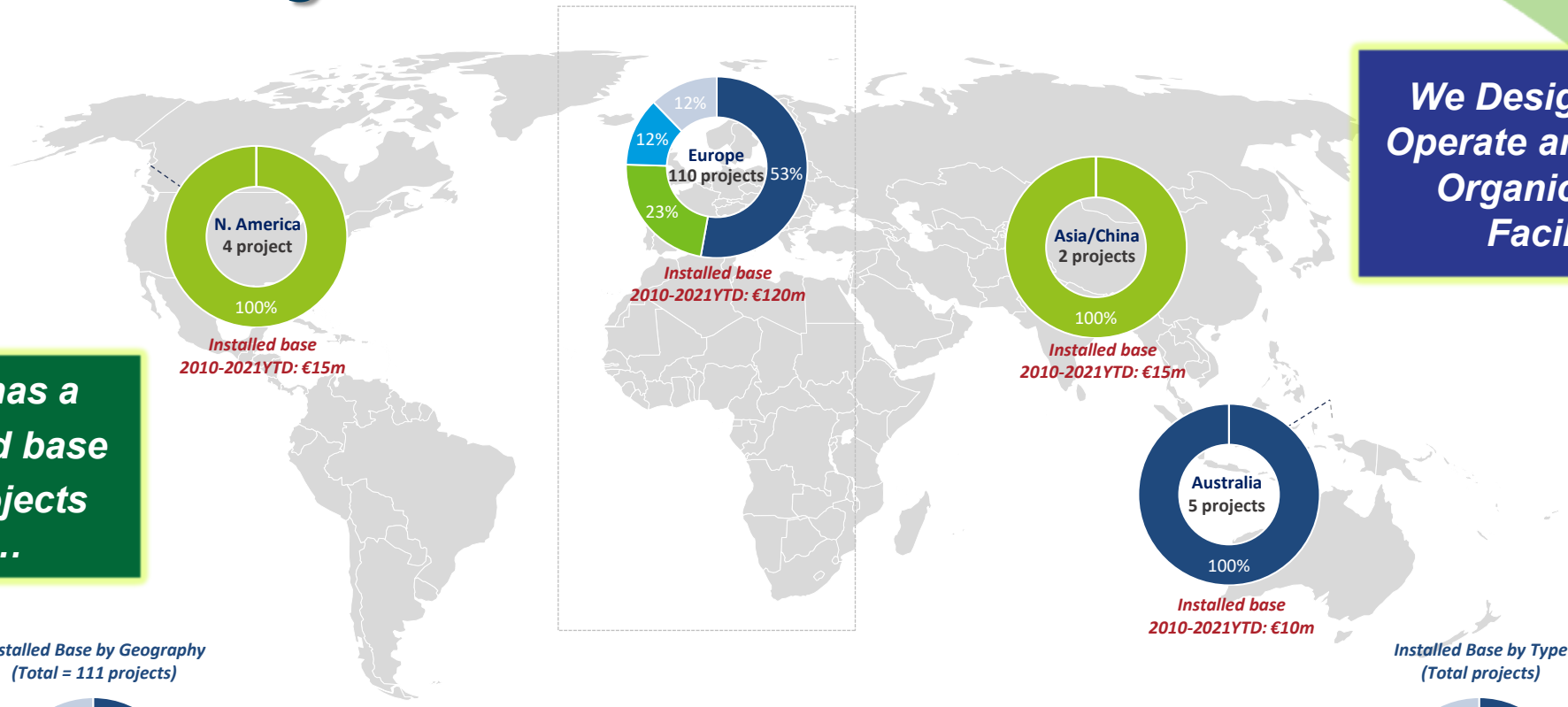
4. Partner with local communities to design-build-service and operate sustainable organic waste management solutions leveraging our unique European engineering and advances in technology and operations.

WHO WE ARE

Convertus was created in 2019 by the merger of Renewi Canada and Waste Treatment Technologies ("WTT"). Together, we provide our customers with a complete solution for all of their organic waste sector needs. We have the in-house expertise to Design, Build, Finance, Operate, Service any type of organic waste treatment facility.



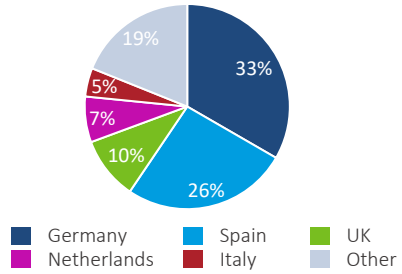
Global Projects



We Design, Build, Operate and Service Organic Waste Facilities

Convertus has a large installed base over 120 projects globally…

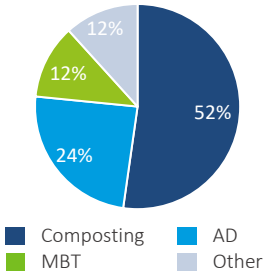
Installed Base by Geography (Total = 111 projects)



Selection of Blue Chip Clients

ALBA · attero · FCC Environment · REMONDIS · sacyr · suez environnement · VEOLIA · urbaser ltd

Installed Base by Type (Total projects)



Growth in North America and Australia initiated on the back of existing European customers active in the respective geography.

CONVERTUS GROUP

Operated Facilities

Surrey BC

Anaerobic Digestion

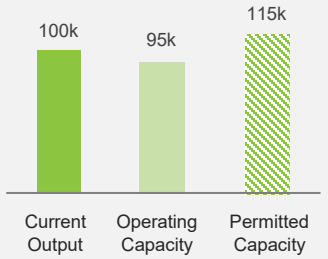
+ Tunnel Composting

Built: 2016

Size: 5 ha

Composting tunnels: 7

AD/Hybrid tunnels: 10



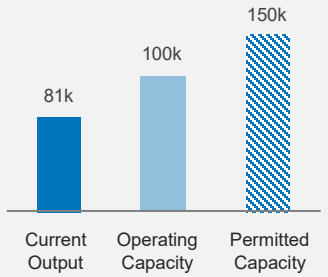
Ottawa ON

Tunnel Composting

Built: 2010

Size: 10 ha

Composting tunnels: 6 → 8



Nanaimo BC

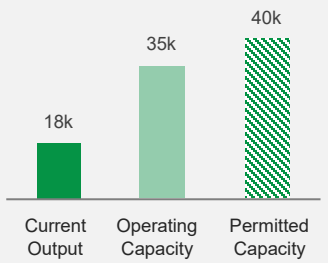
Tunnel Composting

Built: 2003

Size: 2.3 ha

Composting tunnels: 4

Maturation Base: 3



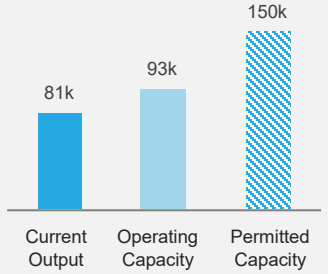
London ON

Tunnel Composting

Built: 2006

Size: 5 ha

Composting tunnels: 12



CITY OF SURREY
the future lives here.

Convertus™

The Surrey Biofuel Facility: North America's first closed-loop organic waste facility

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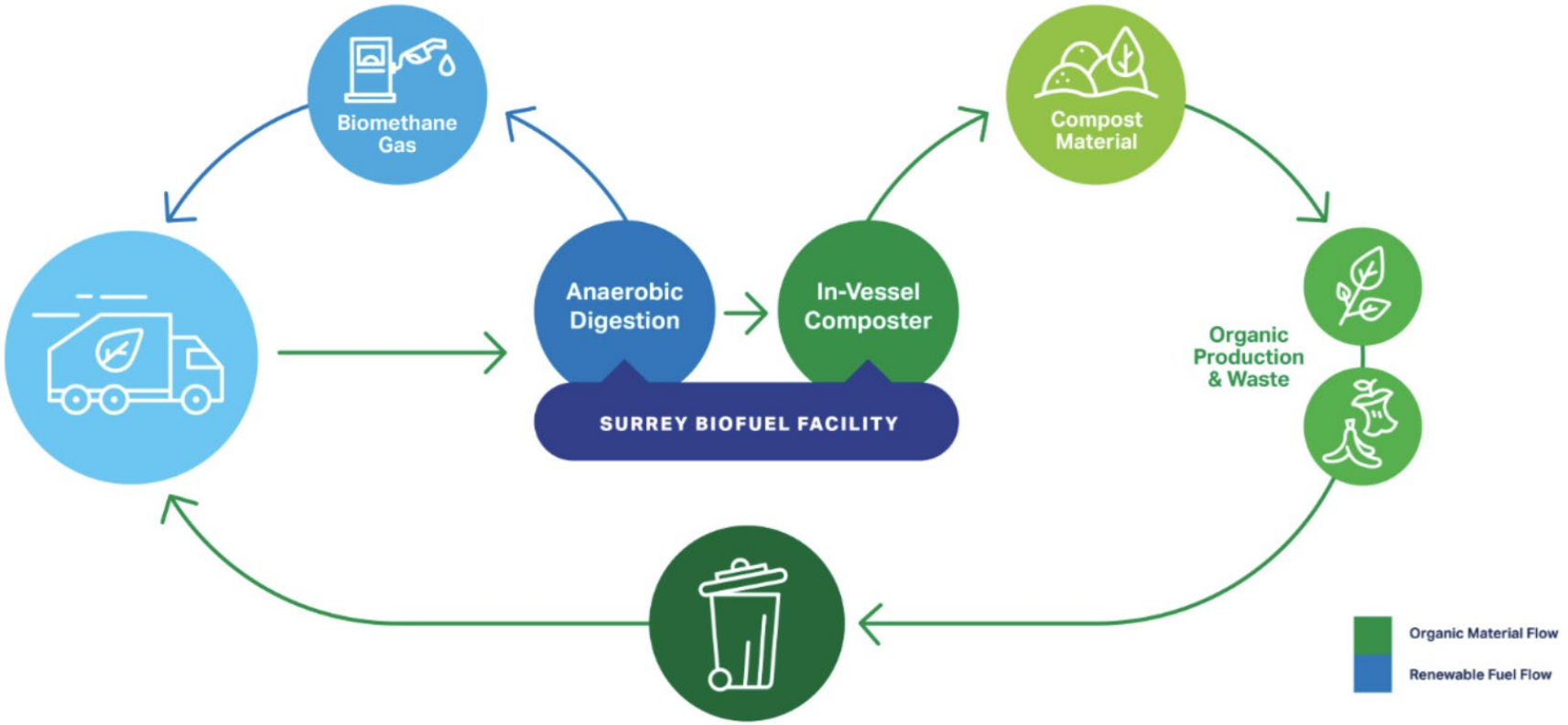
The Surrey Biofuel Facility

Technology	Tunnel composting, dryAD, Hybrid vessel Advanced Odour abatement and biofuel production
Feedstock	SSO, L&Y waste, ICI
Odour Abatement	Ammonia scrubbers + Humidifiers Biofilter + 70m dispersion stack
Number of tunnels	7 in-vessel composting tunnels 10 dryAD tunnels (4 of which are hybrids)
Days stored in tunnels	10 – 14 composting 21 – 28 dry AD gas production
Outputs	Renewable Gas: 120,000 Gj/y Grade A Compost: 30,000 to 40,000 tpy
Permitted capacity	115,000 tpy
P3 Contribution	$12.5
Capital Costs	$67.6
Size of location	6.6 Acres
Project Completion	2018

Closing the Loop in Surrey

Convertus Group is the only organics processor in Canada with **in-house technology, funding and operating capability.**

We are proven around the world with **122 projects on five continents.**



The Closed Loop: Technology

DryAD (AD)

- Dry anaerobic digestion technology is best suited for complex organic waste streams that are typical with Municipal customers, including processing leaf and yard waste
- To date biogas production of 1.4GJ/t using Municipal waste, which is upgraded on-site and exported directly to the local utility gas grid

Hybrid Tunnels

- Hybrid tunnels allow the flexibility to switch technologies between AD and compost to create additional throughput during peak seasons and generate additional biogas volumes when capacity is available

Wet Fermentation Tanks

- Additional biogas production from leachate that is recirculated through the fermentation tanks and acts as an inoculant in the AD tunnels when resprayed, creating further breakdown of organics and improved AD gas production
- Additional processing capacity for commercial liquid waste streams

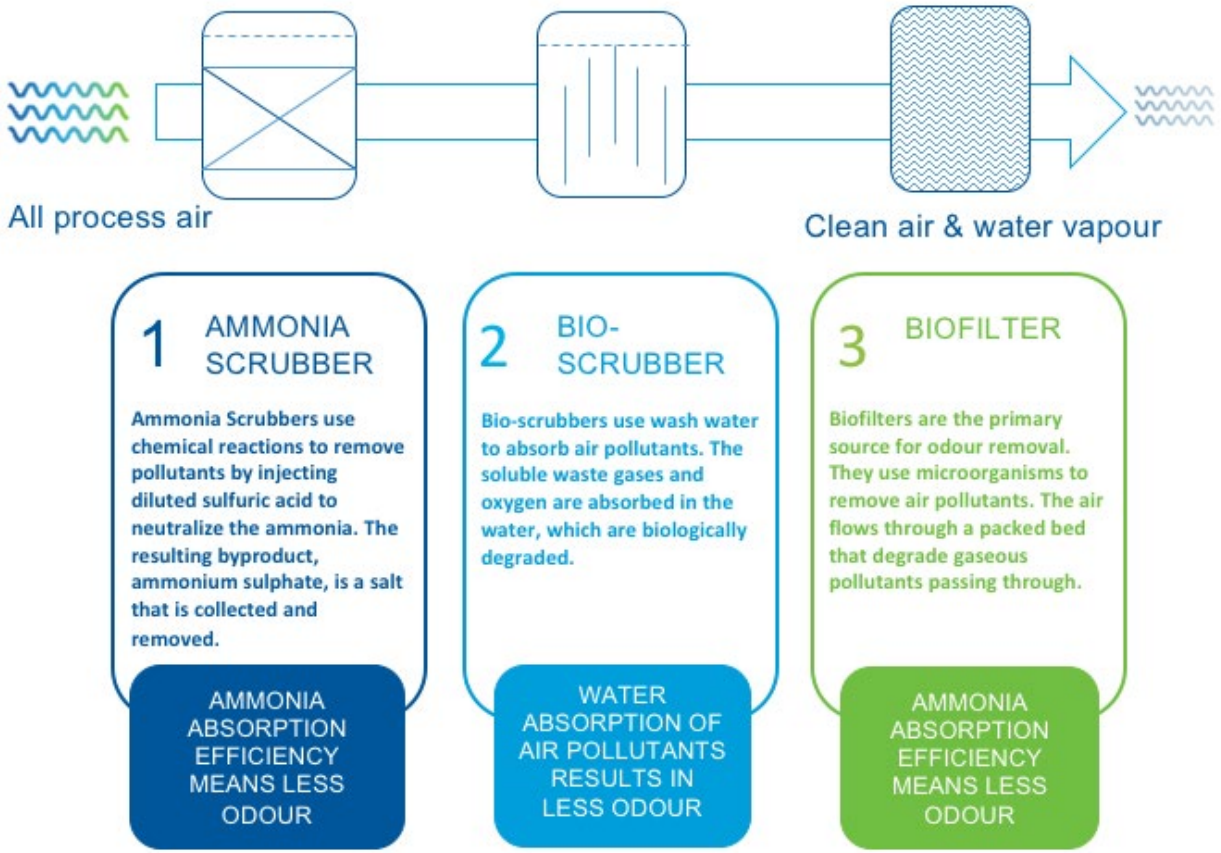
Tunnel Composting (IVC)

- Combined with dryAD, further process the digestate bi-product from the AD tunnels creating nutrient rich compost that is distributed to various outlets across the lower mainland

The Closed Loop: Odour Abatement

World Class Technology

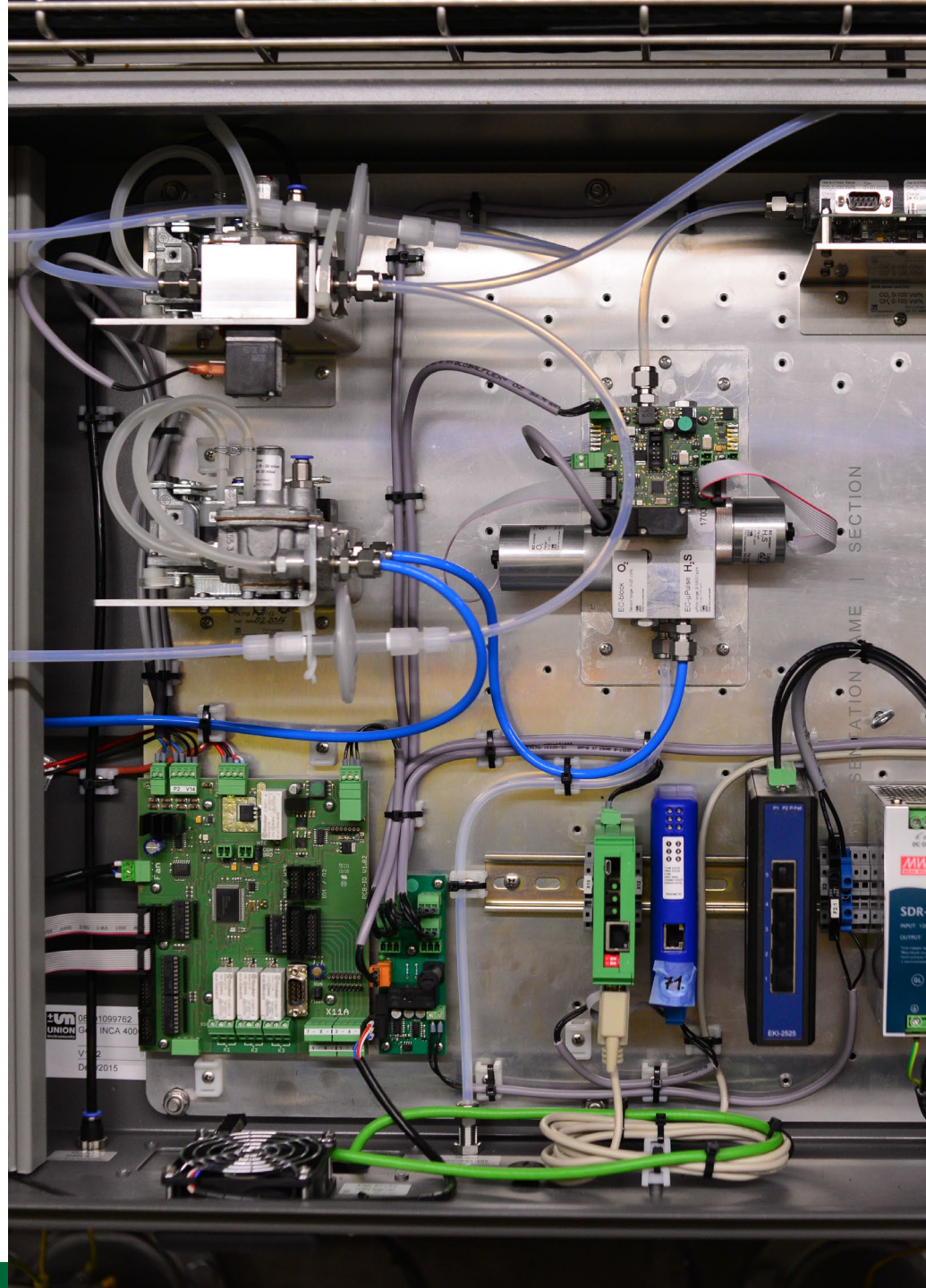
- Sophisticated negative air pressure system draws air into the facility when the loading doors open to admit the waste collection trucks.
- Each tunnel is sealed with gas tight door.
- As air is expelled from tunnels it is channeled first through an ammonia scrubber.
- After air is cooled & humidified, it passes through a woody bio-filter where a group of microorganisms absorb remaining odours.



Turning organic waste into renewable resources has big environmental benefits, but managing odours at composting facilities takes, skills, science and specialized equipment

Design Objectives

- Safe, robust and flexible design
- Process a total of 100,000+ tpy of City waste
- Maximize biogas production from City organic waste and solid/liquid ICI waste
- Biomethane to Fortis B
  - Methane quality (>96% CH4)
- Maximum recycling of residual products
- Production of class A compost
- Maximum energy efficiency
- State-of-the-art odour abatement process



Circular Economy

- Up-to 115,000 metric tons of organic waste diverted from landfill/year
- Compost is used by local food growers & landscapers
- Annual savings in waste collection service: $3 million
- City secures long-term fixed price certainty on organic disposal rate and RNG source
- City fleet will run on 100% RNG
- 40,000 metric ton/year reduction of CO2e annually eliminating City's corporate carbon footprint of 20,000 metric ton/year

Environmental Benefits

- 100,000+ metric tons of organics diverted from landfill/year
- Compost is used by local food growers & landscapers
- City collection fleet runs on 100% RNG
- 40,000 metric ton/year reduction of CO2e
- Eliminates City's corporate carbon footprint of 20,000+ metric ton/year

Sustainable Benefits

Economic

- Construction (two-years)
  - 5.5 FTE design/engineering jobs
  - 63,809 person-hours or 35 FTE construction jobs which include high-skilled workers such as electricians, mechanical contractors and carpenters
  - Approximately $2 000 000 in labour costs

Operational

- 12 to 15 full time jobs
- 2 to 3 FTE student jobs (includes engineering co-op and research positions) using local universities
- Numerous spin-off opportunities

Return on Climate Investment (ROCI)

There's nothing more important than how your city chooses to *invest tax dollars. Nothing is just a cost; every expense returns an impact.*

How can your city make the biggest impact with your climate investment? With turn-key organic diversion. Dollar-for-dollar, and impact-for-impact, investing in sustainable organic waste processing is one of your city's best climate investments.

Convertus™

Closing the Loop for a Better Future

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