

# PROCESS ECOLOGY INC

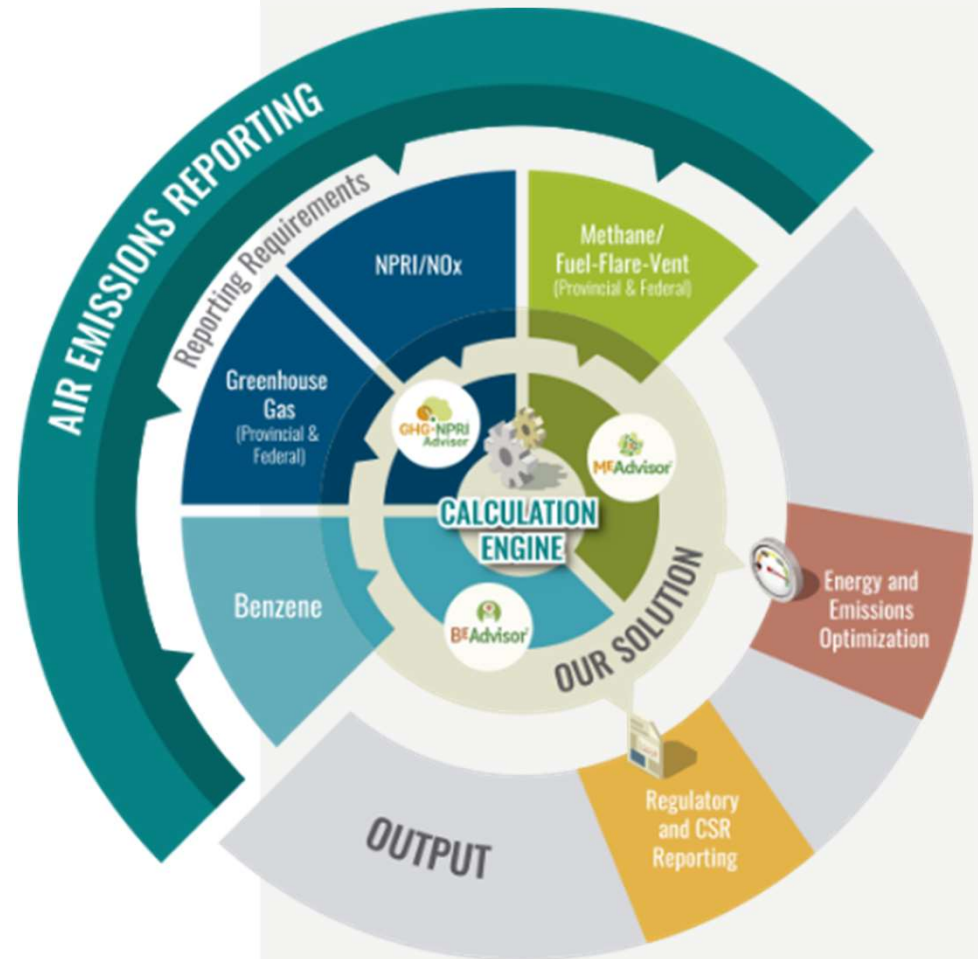
Founded in 2003, Calgary, AB

We help our oil & gas clients identify solutions that improve environmental and economic performance of operations.

The management team represents over 100 years of experience in process simulation and plant optimization.

We ensure companies achieve compliance with air emissions regulations

Accurate engineering calculations and data analytics are leveraged to identify opportunities for optimization



emissions reporting - process engineering - software development

# Estimating Tank Emissions

## The Challenges for Emissions Reporting

- Using conventional methods, **numerous parameters** may be required
- Data from the field can be very **limited**
- Without a practical methodology, calculation of flashing, breathing and working losses can be **expensive**
- Conventional methods estimate volumes – but not necessarily the venting **composition**



# Estimating Tank Emissions

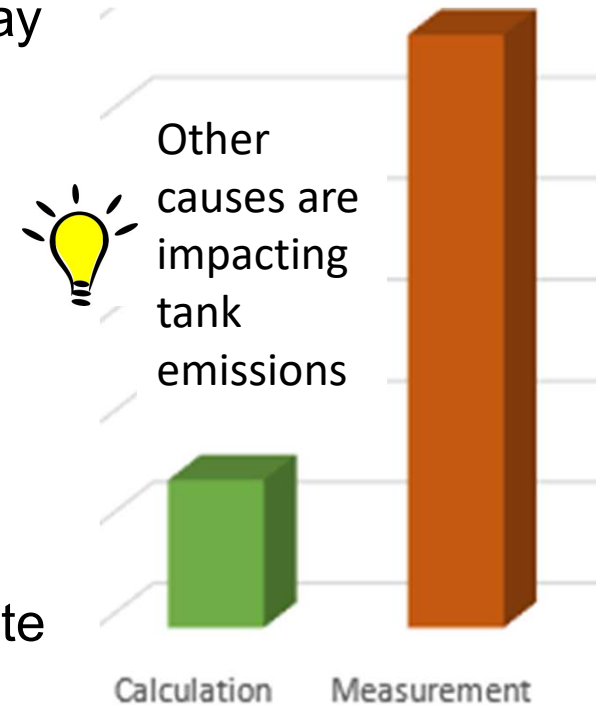
## Addressing the Challenges

Challenge	Solution
Using conventional methods, numerous parameters may be required	Use engineering judgement to make reasonable assumptions without overloading operators with data requests.
Data from the field can be very limited	Request the most necessary data and make best use of what is available. Consider: <ul style="list-style-type: none"><li>• Type of fluid</li><li>• Use of blanketing gas</li><li>• Available liquid analyses</li></ul>
Without a practical methodology, calculation of flashing, breathing and working losses can be expensive	Use of Methane Emissions Advisor enables operators to quickly evaluate calculated tank losses, for a wide range of available data.
Conventional methods estimate volumes – but not necessarily the venting composition.	If a flash calculation can be done (vs. an empirical method) there is a much better estimate of tank emissions.

# Calculation vs. Measurement

## Is the Estimate Accurate?

- As with any engineering estimate, the model may not match the reality in the field.
- There are many potential causes\*:
  - Malfunctioning Level Controller
  - Inefficient Residence Time
  - Passing Dump-Valve
- An accurate estimate, combined with an accurate measurement, can provide significant insight!



\*Investigation of Fugitives and Venting from Fixed-Roof Storage Tanks, Yori Jamin, Nov 27, 2019.