



# Why Emerald Kalama Chemical chose to be the launching customer for the Botlek Steam grid?

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# Who is Emerald Kalama Chemical?

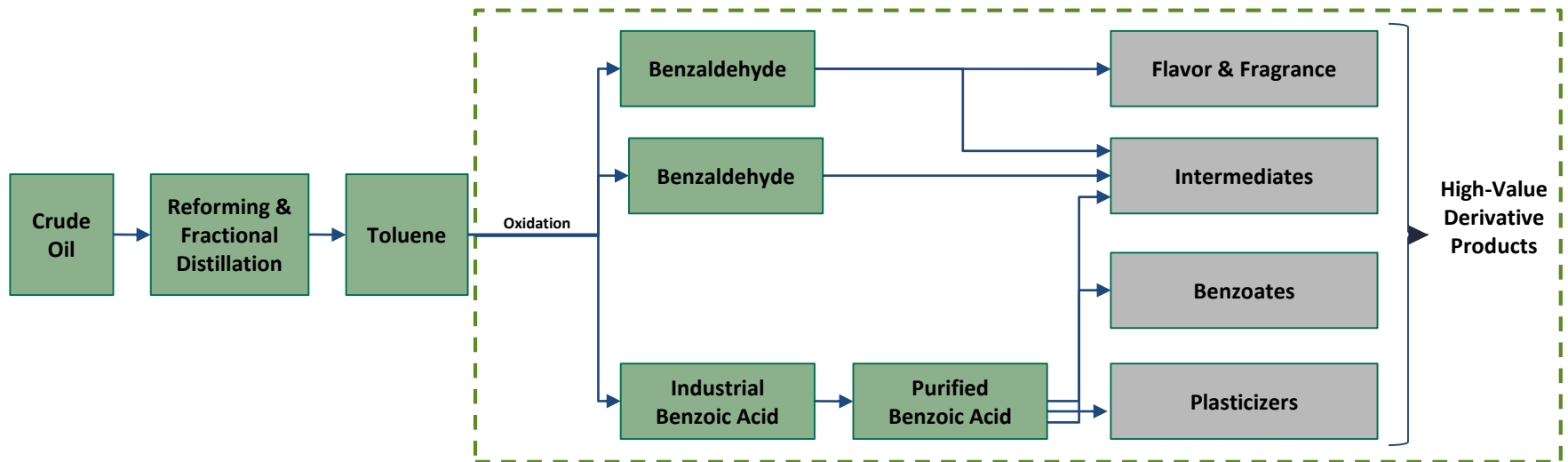
Emerald Kalama Chemical is the world leader in toluene oxidation chemistry and a trusted supplier of specialty chemicals focusing on:

- flavor & fragrance ingredients,
- benzoate plasticizers,
- food preservatives,
- and fine chemical intermediates.



# Emerald & Steam?

- ▶ Emerald uses 25-40 tons steam an hour at 39 barg (400 dC) for process heating of distillation columns to separate and purify products
- ▶ Benzoic Acid freezes at 120 C; all lines and vessels are 10 barg steam traced and insulated



# Why Emerald chose to become launching customer outsourcing Steam Supply?

- ▶ Before 2013 Emerald generated all steam in-house by incinerating wastes and natural gas on 2 steam boilers
- ▶ Both steam boilers were outdated and the option arose to have 1 (eventually 2) boilers replaced by steam generated by domestic waste incineration at AVR
- ▶ A collaboration between AVR (supplier) and several companies in the area (consumers) would provide this and reduce the CO2 footprint
- ▶ AVR, Stedin and Emerald took the initiative to develop a steam grid (common carrier) for the area in 2009, supported by the Harbor Authorities and the Industrial Cluster Association (Deltalinqs)

# Why Emerald chose to become launching customer outsourcing Steam Supply?

What's in it for Emerald?

- ▶ Raw Material Yield Improvement, Reduction of Waste
- ▶ Reduction of Natural Gas Usage by 10 million m<sup>3</sup>
- ▶ Reduction of CO<sub>2</sub> emission by 30 thousand metric ton (could potentially go up to 65 thousand MT)
  
- ▶ Eliminate a non core Operation
- ▶ Efficient use of residual heat in condensate
- ▶ Develop a Utility grid in the area

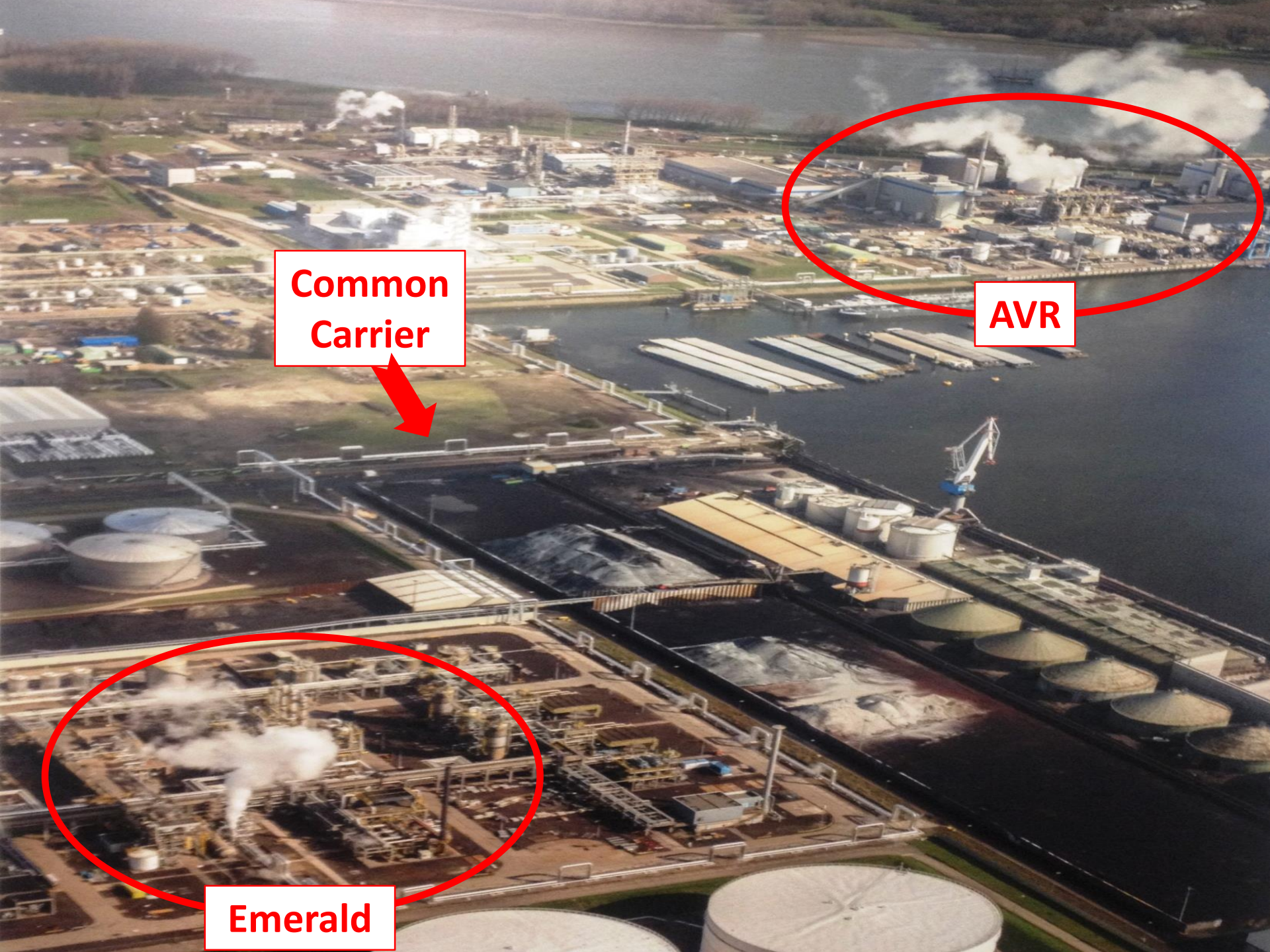


*Site Rotterdam-Botlek  
CEFIC Responsible Care  
Award 2013*

# Why Emerald chose to become launching customer outsourcing Steam Supply?

What's Next?:

- ▶ Add more suppliers and consumers to the grid
- ▶ Emerald and AVR have started Basic Engineering to replace also the second steam boiler by steam supplied by AVR



**Common  
Carrier**



**AVR**



**Emerald**