



ETC
Evaporative Cooling Process

Beaumont Environmental Systems

Evaporative Cooling System

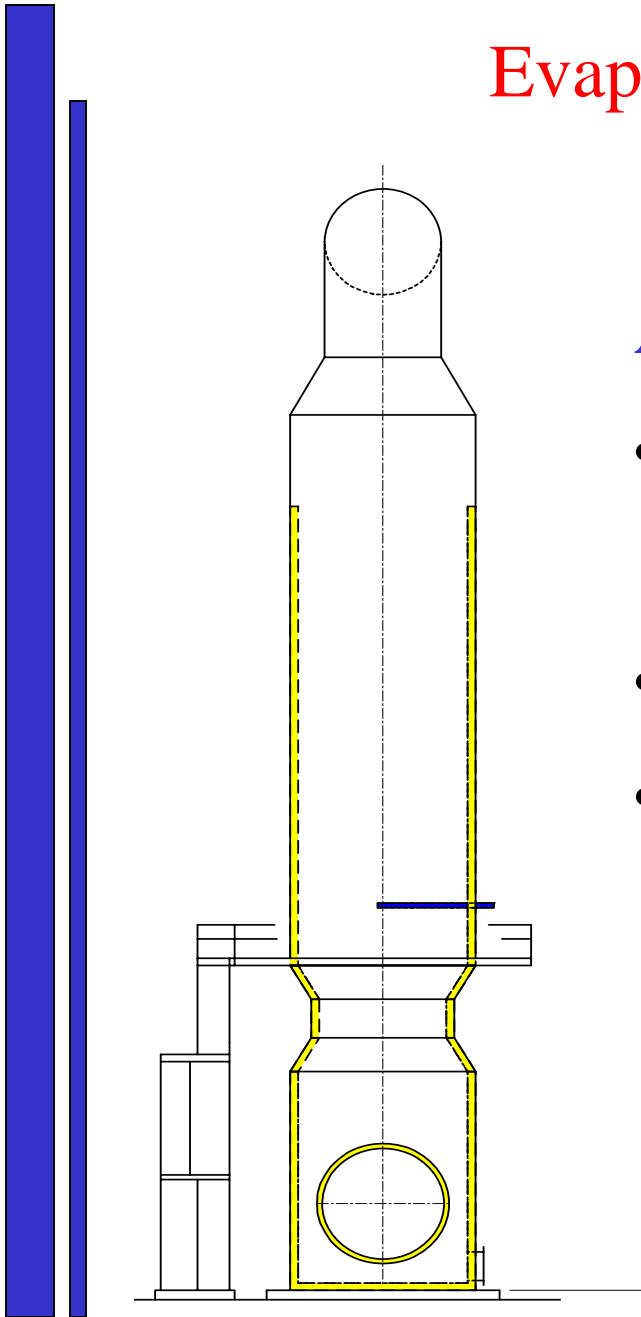
Available as:

- Vertical – Down Flow (Standard Design)

-or-

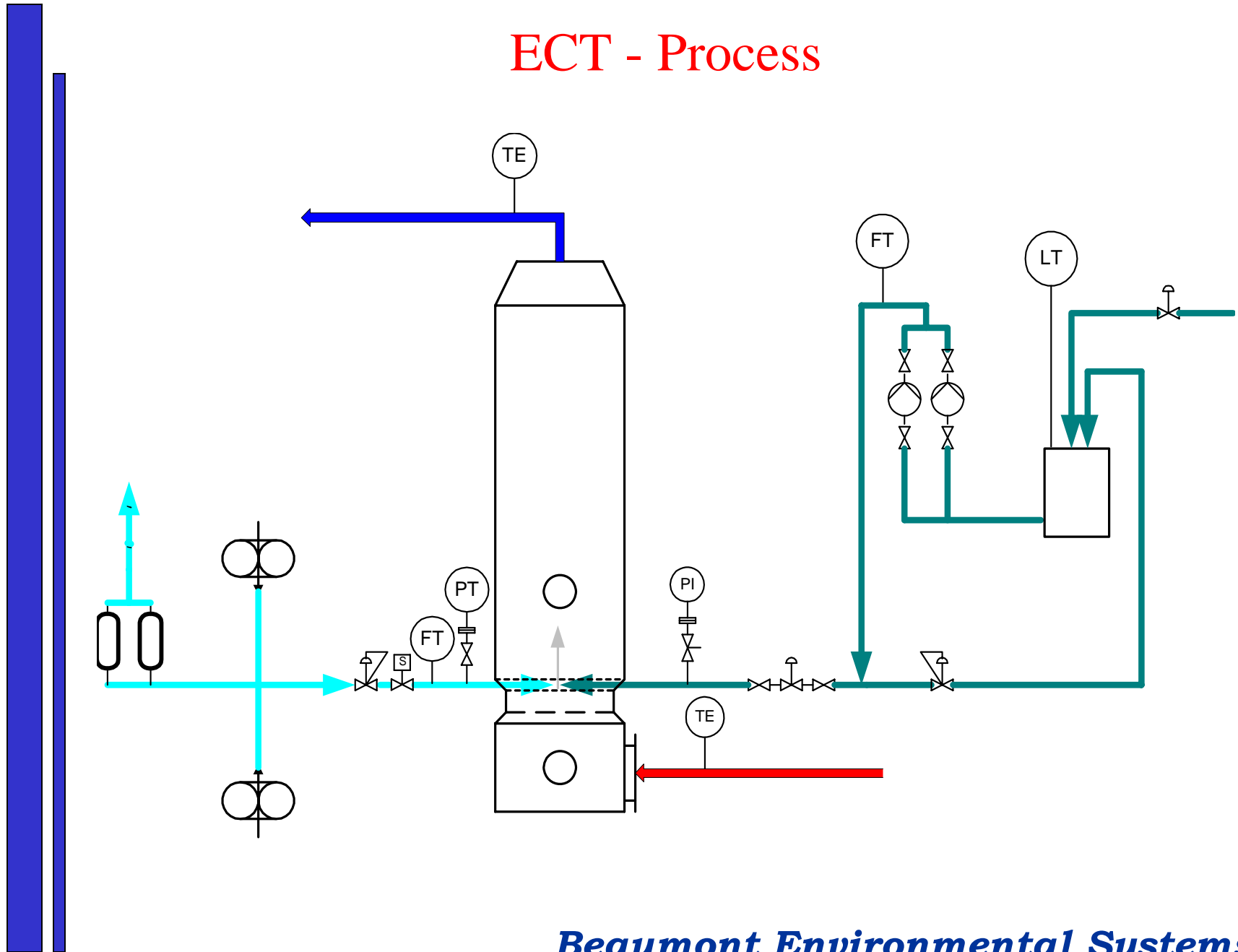
- Vertical – Up Flow

- Horizontal



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ECT - Process

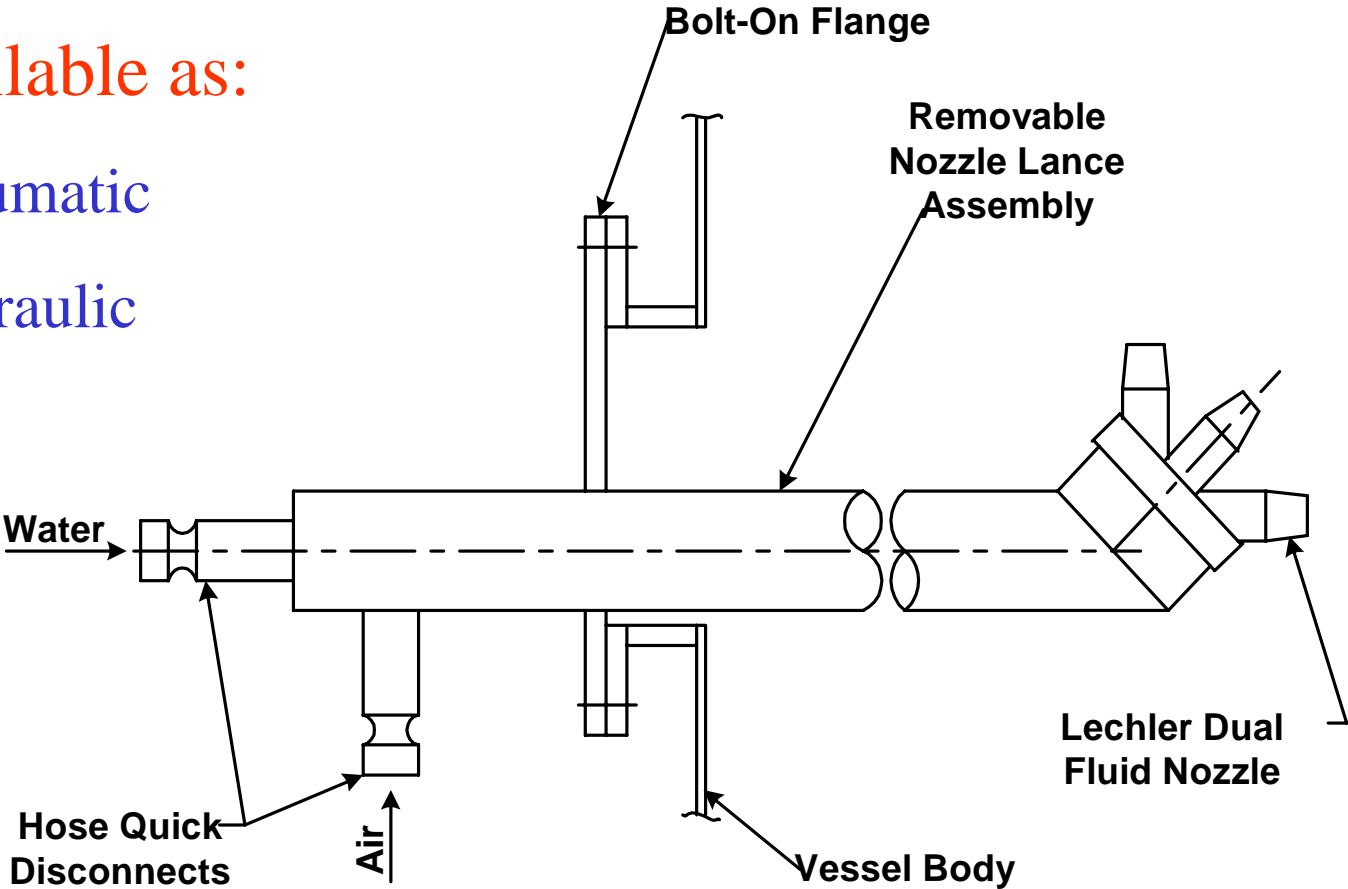


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ECT - Lances & Nozzles

Available as:

- Pneumatic
- Hydraulic





Experience

- Used at low outlet Temperatures (<1000 F)
- Low Outage Level - Low Maintenance
- Complex Maintenance
 - Easy Access
 - Limited Build-Up
- Established Nozzles Design and Nozzle Feed System
 - Design must Protect Against Wall Wetting
 - Design Must Maintain Spray Droplet size
 - Design Must Consider Gravity
 - Difficult Must Consider Upset Condition Operation
 - Sprays can Handle Temperature Variations
 - Design for Turndown
- Operations
 - Long Lining Life
 - Low Outage Requirement
 - Routine Maintenance

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A decorative vertical bar on the left side of the slide, consisting of two parallel blue lines of different heights.

Vertical Spray Cooler

ADVANTAGES

- Uses limited Plan Space

DISADVANTAGES

- Great Deal of Experience
- Use at low outlet Temperatures (<1000 F)
- Maintenance
 - Access is open
 - No Duct Build-Up
- Established Nozzles and Nozzle Feed System
 - Minimum Wall Wetting
 - Handles Upset Condition Operation
 - Handles Temperature Variations
 - Handles Turndown Operations
- Operations
 - Low Potential to Require Relining
 - Low Outage Potential
 - Routine Maintenance

Horizontal Spray Cooler

ADVANTAGES

- Uses available horizontal duct run – cost savings

DISADVANTAGES

- Limited experience - Limited Operating Data
 - Limited Use at low outlet Temperatures (<1000 F)
 - High Outage Level - High Maintenance
- Complex Maintenance
 - Access is complex due to Geometry
 - Potential Build Up Along Full Duct Length
- Difficult to Design Nozzles and Nozzle Feed System
 - Design must Protect Against Wall Wetting
 - Design Must Maintain Spray Droplet size
 - Design Must Consider Gravity
 - Difficult to Design for Upset Condition Operation
 - Sprays at Temperature Variations - Pose Design Problem
 - Design for Turndown is Difficult (to Prevent Dropout)
- Operations
 - High Potential to Require Relining
 - High Outage Potential
 - Difficult Routine Maintenance