



*ETC*  
*Evaporative Cooling Process*

***Beaumont Environmental Systems***

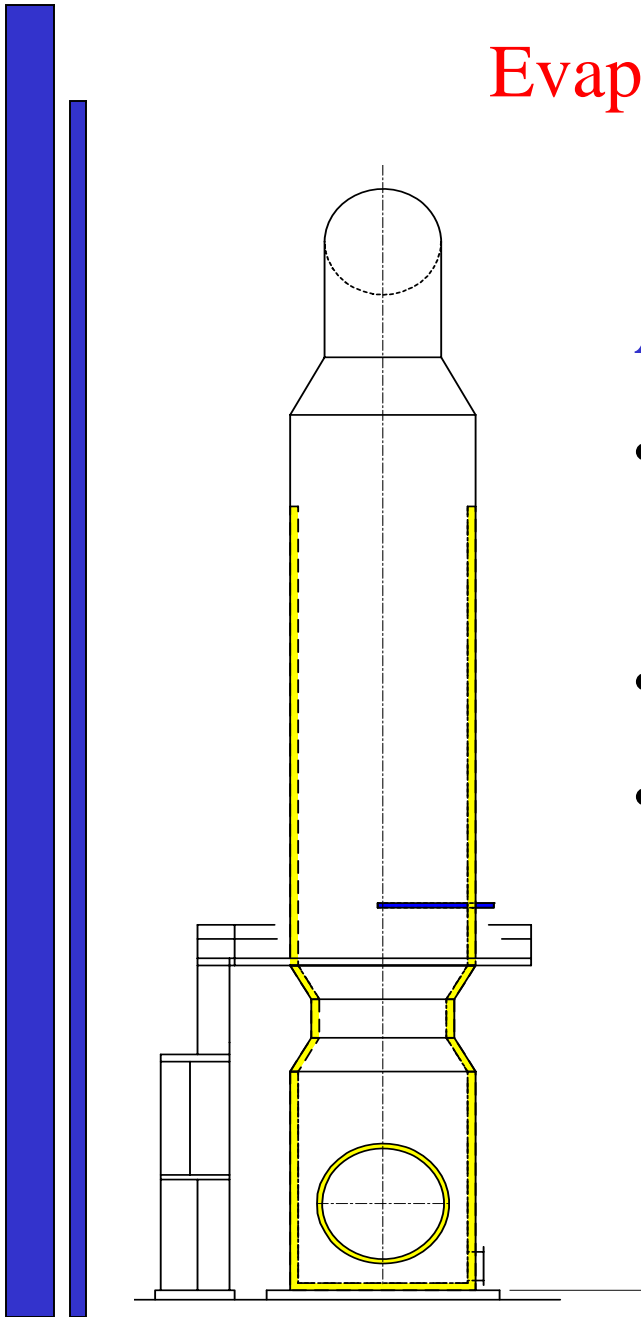
# Evaporative Cooling System

Available as:

- Vertical – Down Flow (Standard Design)

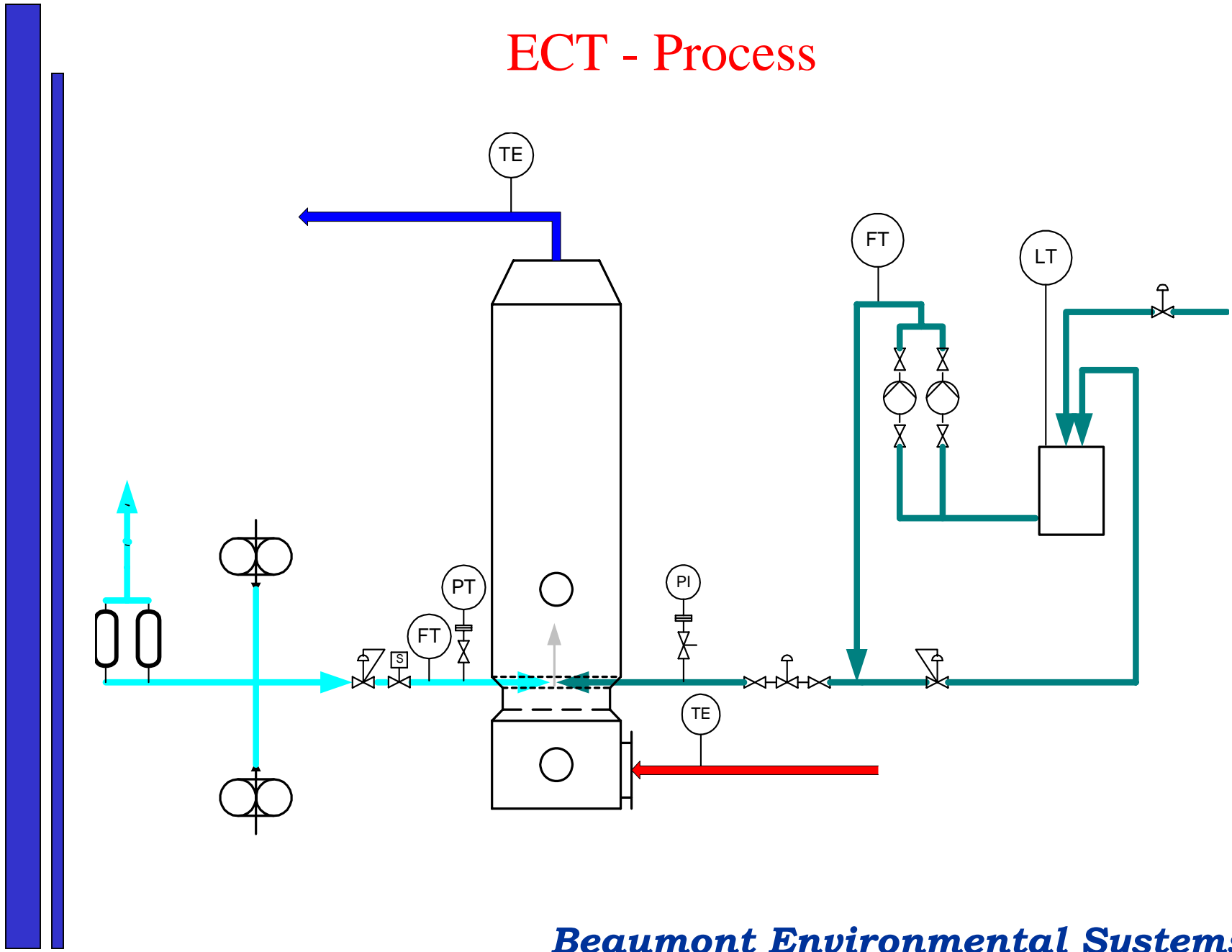
-or-

- Vertical – Up Flow
- Horizontal



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# ECT - Process

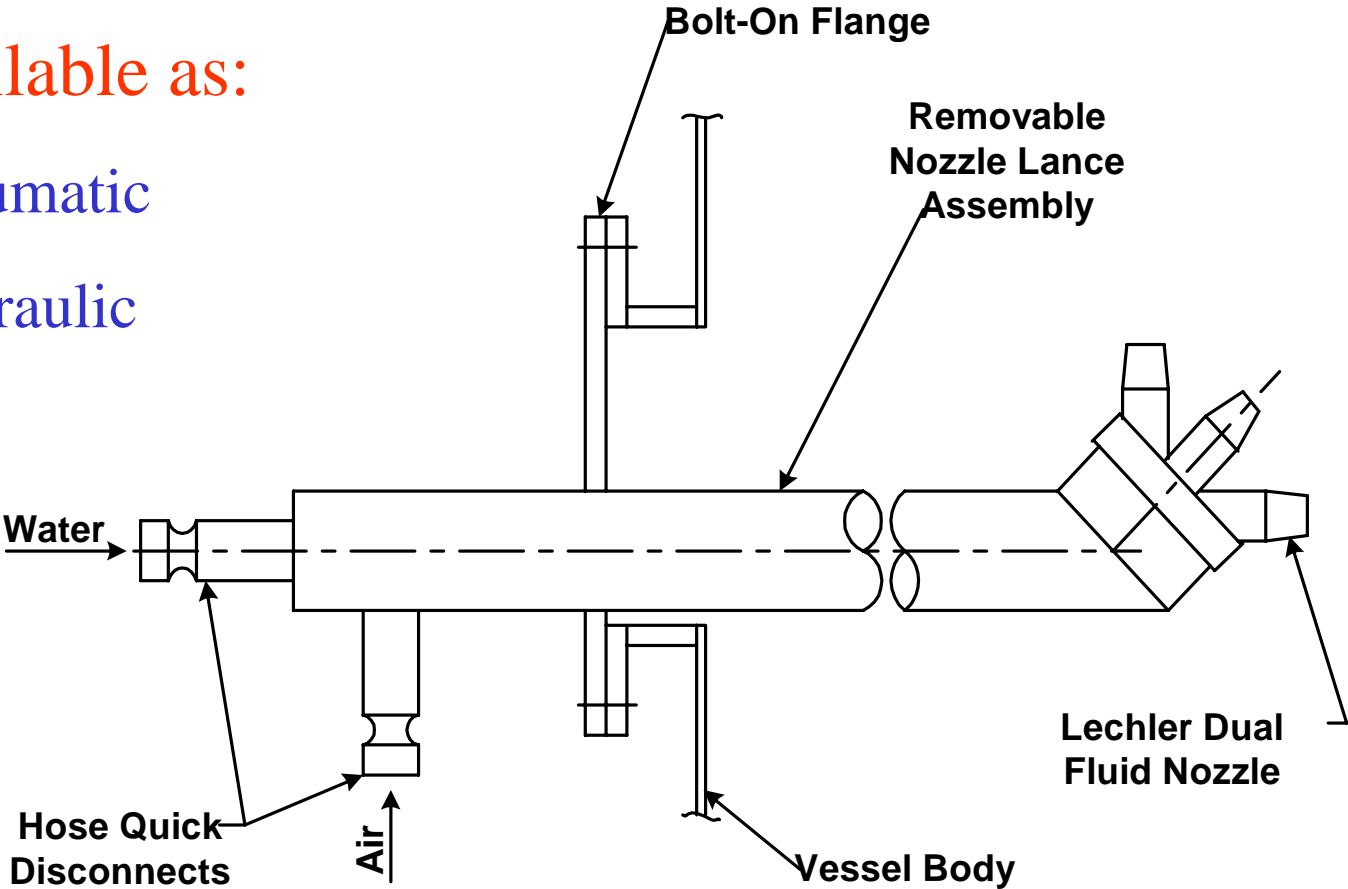


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ECT - Lances & Nozzles

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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## **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