



Wireless ROI

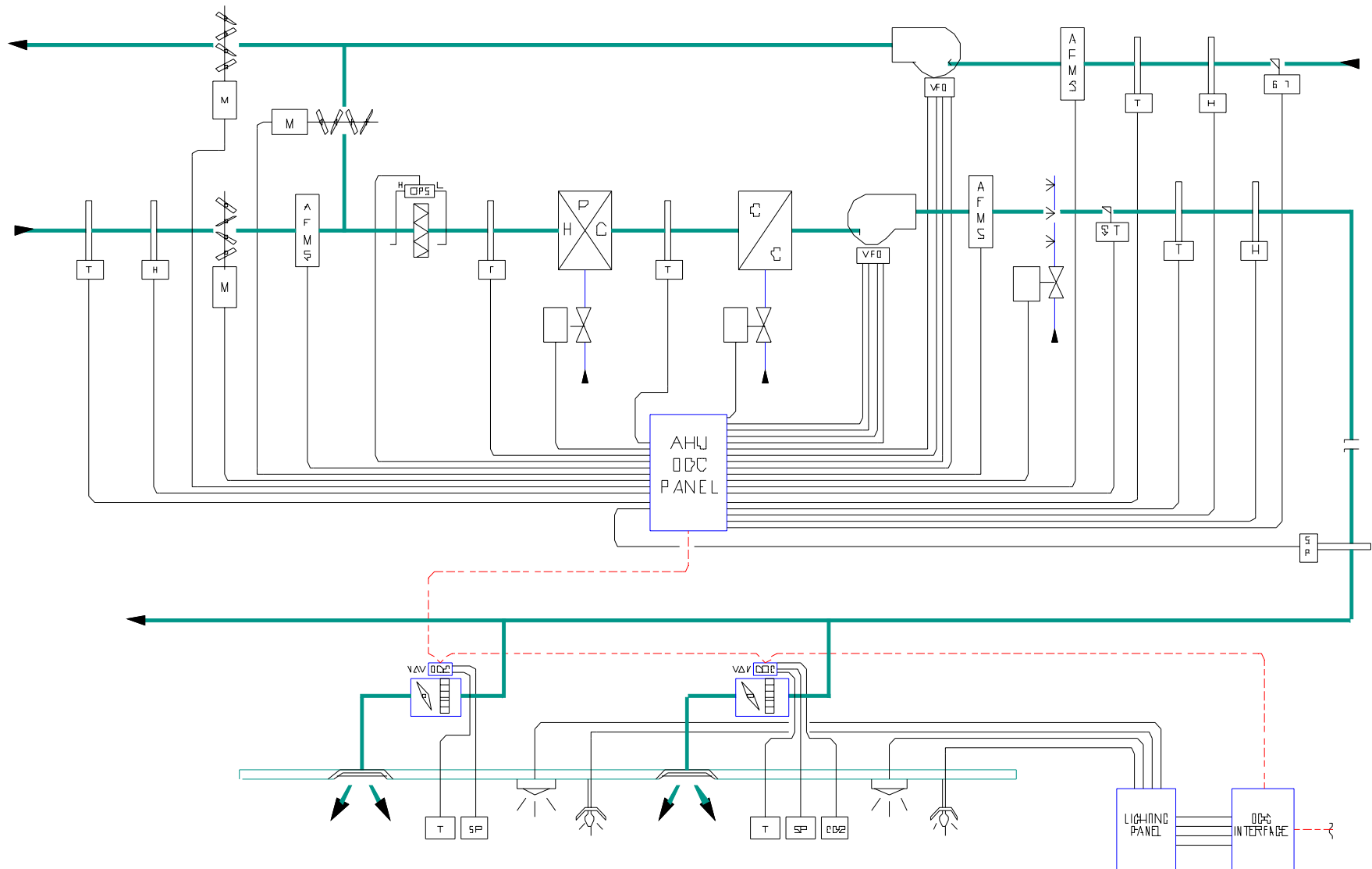
THE INSTALLATION COST ADVANTAGE

- All building and industrial control costs are driven by two components
 - Hardware Costs
 - » 50% of total system cost
 - » Most of the excess cost reductions already realized
 - Installation Costs
 - » 50% of total system cost
 - » Electrical sub-contractor costs driven by the cost of pipe, wire and labor
 - Steadily increasing, not under the control by the OEM
 - » This is where ZigBee has its greatest impact

BENEFITS OF A ZIGBEE WIRELESS BASED SYSTEM

- Reduced cost of wiring installation
- Reduced cost of panel equipment, CPU's and fabrication
- Device level intelligence enhances fault tolerance
- Avoidance of cost impact associated with growth requirements beyond panel capacity
- Direct integration to non HVAC sub-systems

Conventional DDC Control Diagram



Conventional Installation Costs

- **Conventional Panel Based System:**

- Total points = 29
- Total Devices = 25
- Total Wiring (25'/dev)=725'
- Wiring Costs (\$12/ft)=\$8,700
- Panel Costs:
 - » Panel = \$ 300
 - » Processor = \$1300
 - » Internal Dev = \$ 300
 - » Fabrication = \$ 612
 - » Testing = \$ 102
 - Total Panel = \$ 2,614

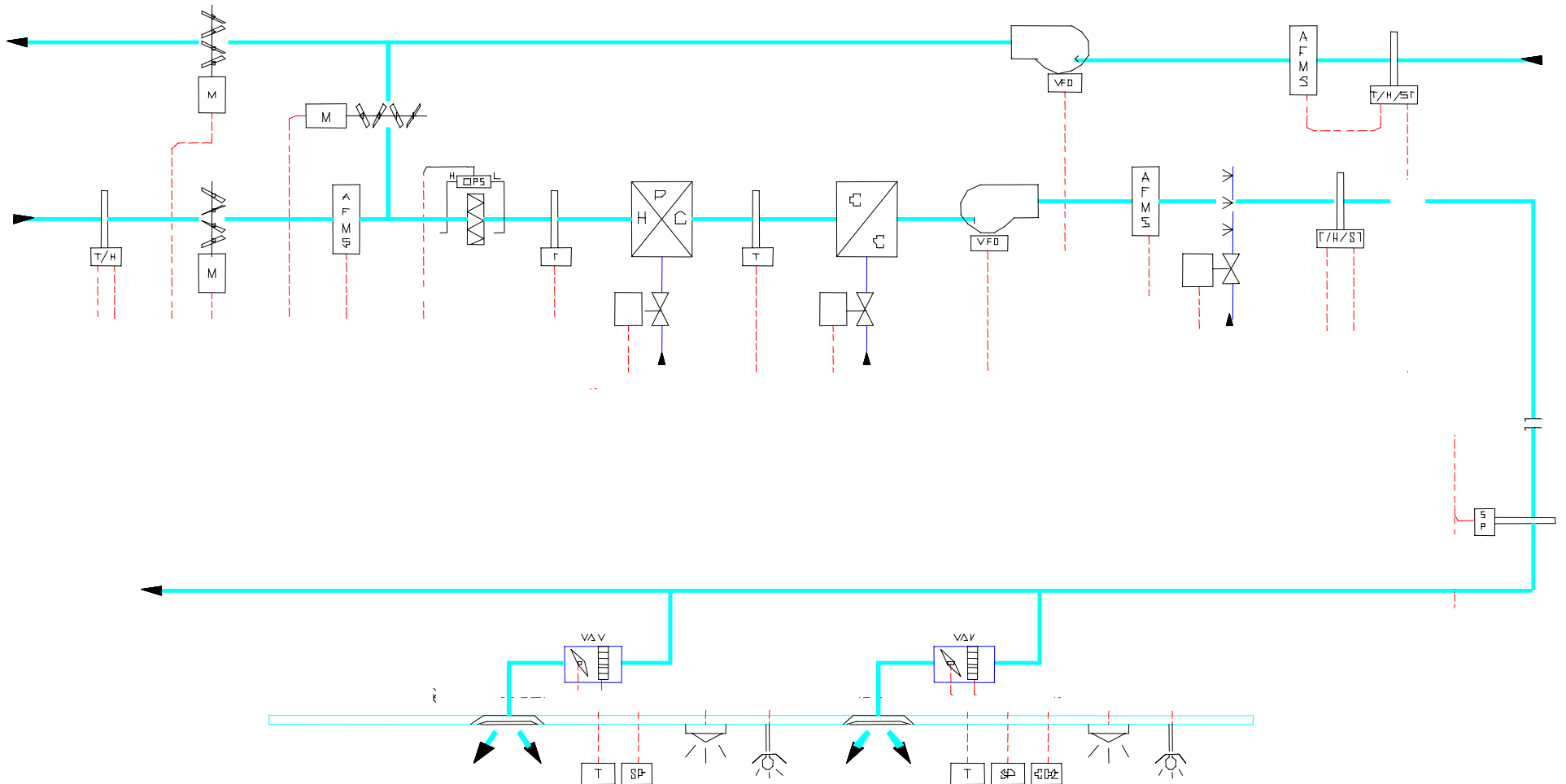
- **Total Panel and Wire = \$11,314**

Fieldbus Installation Costs

- **Fieldbus Based System:**
 - Total points = 29
 - Total Devices = 18
 - Total Wiring (25'/dev)=240'
 - Wiring Costs (\$12/ft)=\$2,880
 - Panel Costs:
 - » Panel = \$0
 - » Processor = \$0
 - » Internal Dev = \$0
 - » Fabrication = \$0
 - » Testing = \$0
 - Total Panel = \$0
 - **Network Binding.Config = \$720.00**
 - **Total System Install Cost = \$3,600**

ZigBee Wireless Network Control Diagram

SENSOR/ACTUATOR NETWORKED AIR FLOW DIAGRAM



ZigBee Wireless-Based System

- **ZigBee Wireless Based System:**

- Total points = 29
- Total Devices = 18
- Total Wiring (25'/dev * 6)=125'
- Wiring Costs (\$12/ft)=\$1,500
- Panel Costs:
 - » Panel = \$ 0
 - » Processor = \$ 0
 - » Internal Dev = \$ 0
 - » Fabrication = \$ 0
 - » Testing = \$ 0
 - **Total Panel = \$ 0**
- Network Binding/config = \$720

- **Total System Install Cost = \$2,200**

Results

- Panel Based System Cost = \$11,314
- Fieldbus-based system = \$ 3,600
- ZigBee Wireless System Cost = \$ 2,200
 - **Savings over panel-based... \$ 9,114**
- Based on 18 Devices in ZigBee Wireless System
 $\$ 9,814.00 / 18 = \506.00 per device saved with ZigBee Technology