

# Bolt-On Jacketing Solutions

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**Controls Southeast, Inc.**



# Agenda

- CSI Overview
- Component Heating Considerations
  - Fluid Heating Medium
  - Electrical Heating
- ControHeat Bolt-On Heating
  - Design / Production
  - Installation
  - Ordering Considerations

# CSI Products/Services



## Heated piping/equipment systems

- ControTrace® / ControHeat®
- Jacketed piping
- Flexible metal hoses



## Process piping

- Up to 200 spools/week



## Specialty fabrication

- SxSeal, seal legs
- Code pressure vessels
- Precision manifolds, skids, modules, weld-on jackets

Engineering Services

# CSI Products/Services



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Engineering Services

# CSI Customer Example

| Oil & Gas   | Petrochemicals / Chemicals   | Engineering & Construction  | Other  |
|---|--|---|--|
|                 |             |                 |             |

# CSI Customer Locations



# CSI Sample Process Experience

## Refineries

### Sulfur Recovery Units

- Liquid lines
- Look boxes
- Seal legs
- Vapor lines
- Tanks
- Vessels

### Heavy Residuum

- Delayed Coker
- Rose Units
- Asphalt Transport
- Tanks

## Chemical

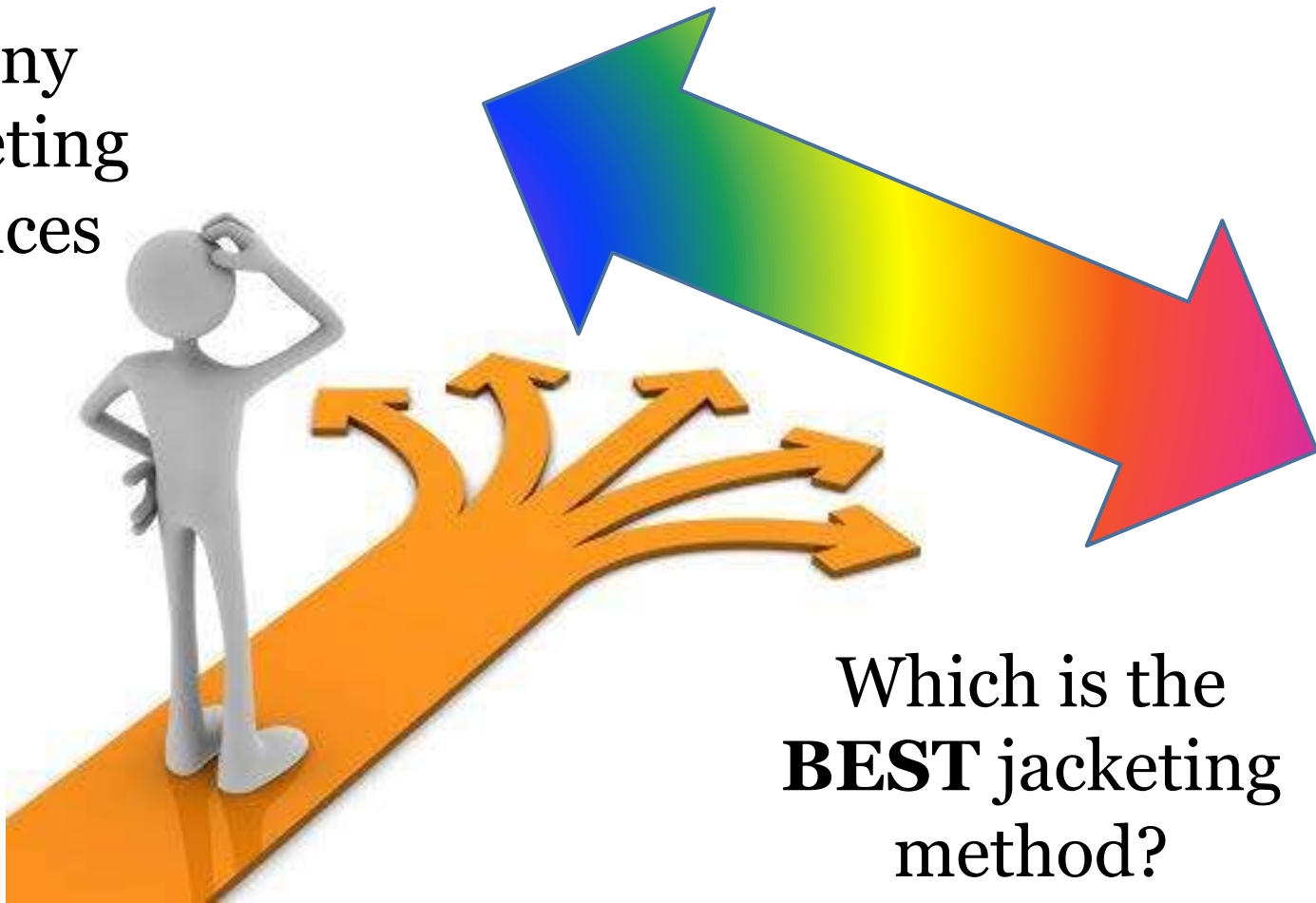
- Caprolactum
- PET
- Fibers
- Sulfuric Acid Production
- Adhesives
- Phosphoric Acid
- Sterol
- Ethanol
- Polymer plastic
- Ultam plastic
- Polyester
- Carbon Fiber
- Titanium Oxide
- Ethyl Alcohol
- Bisphenol-A

## Food

- Sugar
- Chocolate
- Chicle
- Edible oils

# Full Spectrum of Heating Options

Many  
jacketing  
choices





# Tube Traced Valves

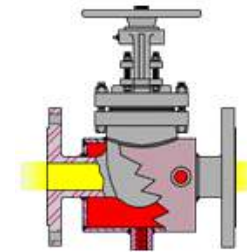


- Point contact (TT→Valve)
- Performance unpredictable
- Degrading performance over lifetime

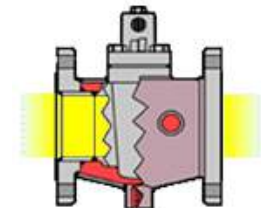


## Weld-on Jacketed Valves

- Piping design effected by valve takeout
- Long lead times
- High cost
- Non-compliance with welding specification and code
- Cross contamination risk



Partial jacket  
Core-size flanges

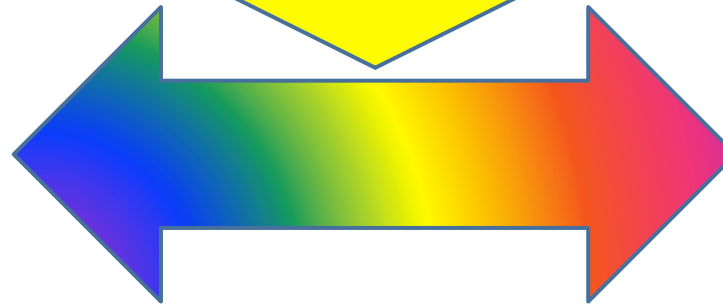


Full jacket  
Jacket-size flanges

# Full Spectrum of Heating Options

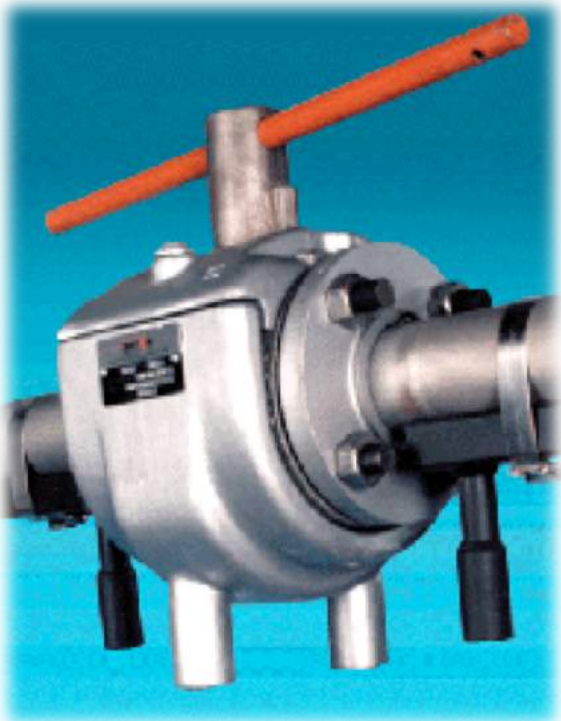


**BEST** Technically  
**BEST** Commercially  
**BEST** for Engr. Client  
**BEST** for End User



## ControHeat®

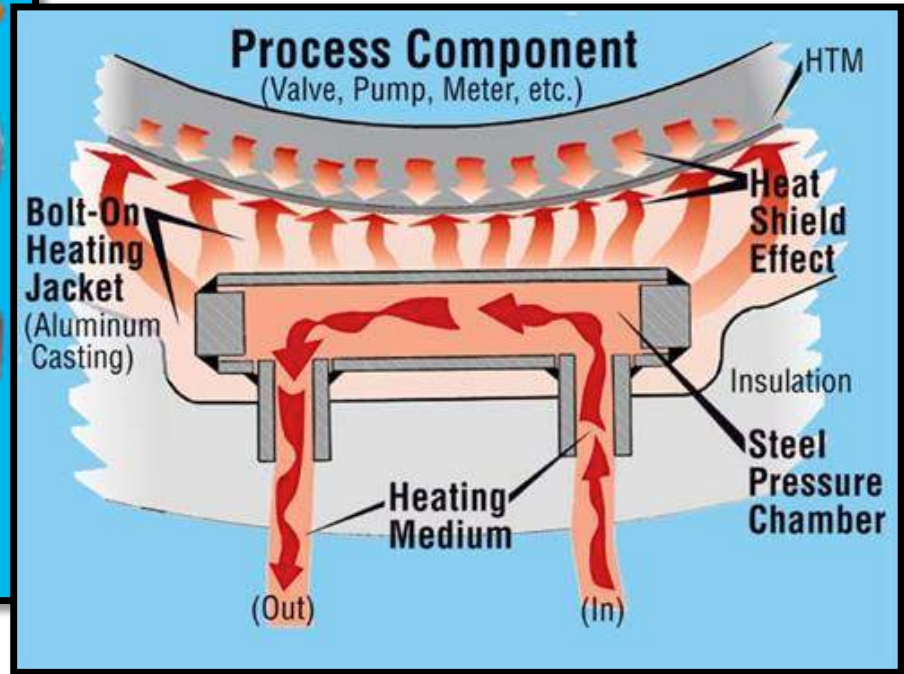
### ControHeat® for Valves, Pumps, & Instruments:



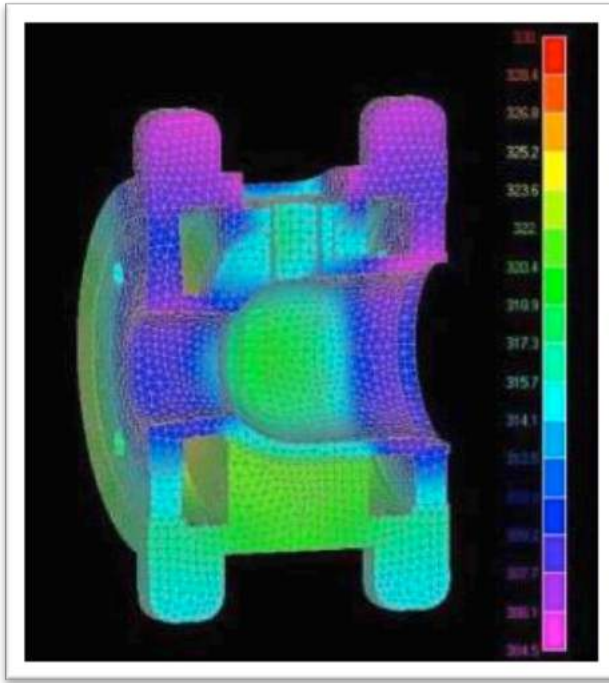
- Lower cost
- Shorter lead times
- Easy project execution
- Excellent heat transfer
- Line size components (no special design)
- Lower steam consumption
- No modification to original equipment
- 100% surface area coverage achievable
- No risk of cross contamination

# ControHeat (Fluid Heating Medium)

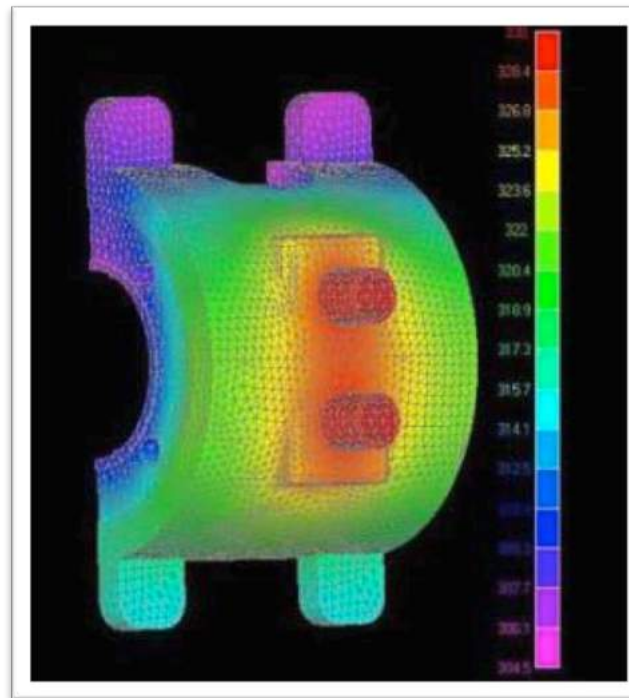
## ControHeat™ Bolt-On Jacketing Systems



## ControHeat (Fluid Heating Medium)

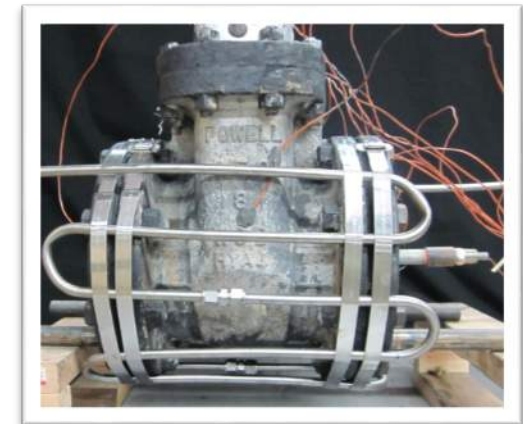
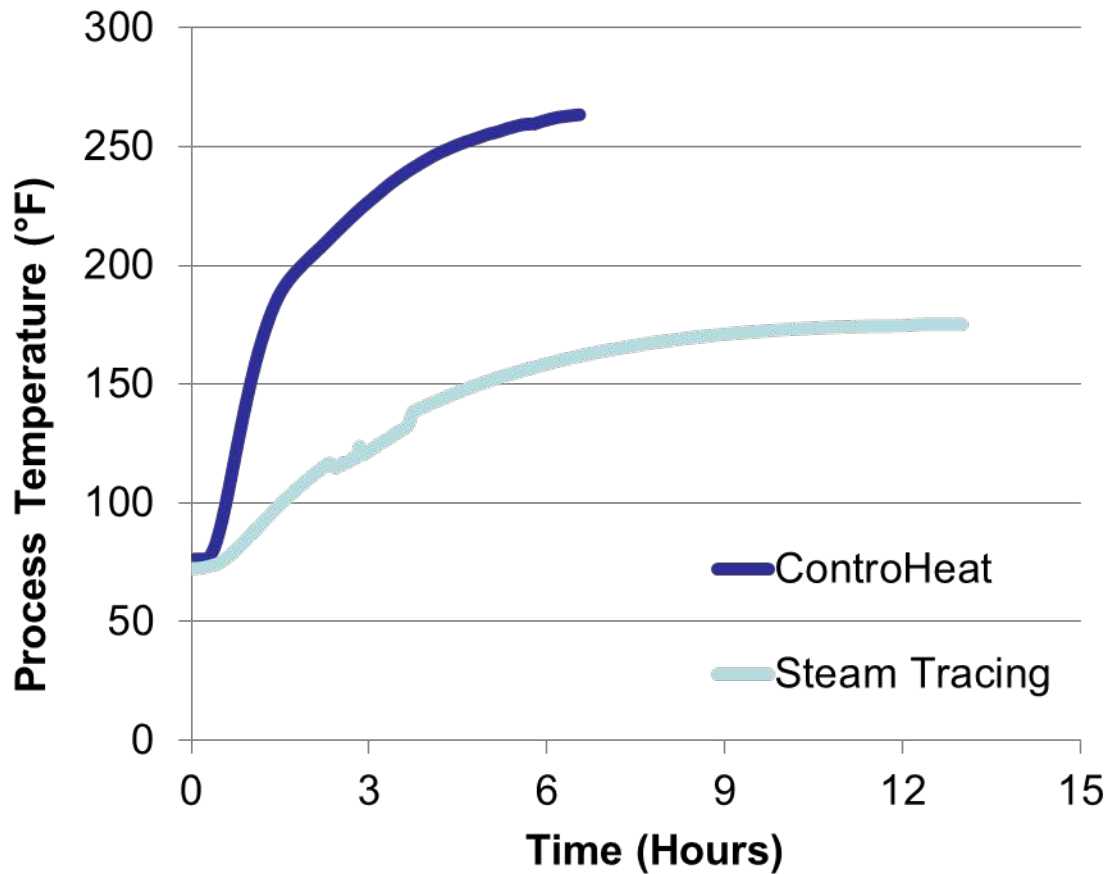


- Kitz ball valve
- Process maintenance at 290F - PA service
- Heating medium 90psig steam



# TT Valve vs. CH Valve

## ControHeat vs. Tube Tracing



# ControHeat<sup>®</sup> = Less Cost, Shorter Schedule

## Cost Comparison



|                              | Valve +<br>Weld On Jacket | Valve +<br>ControHeat | Savings with<br>ControHeat      |
|------------------------------|---------------------------|-----------------------|---------------------------------|
| 3" 150# Xomox<br>Plug Valve  | \$3,400                   | \$1,400               | <b>\$2,000</b><br><b>(59%)</b>  |
| 12" 150# Xomox<br>Plug Valve | \$70,000                  | \$15,500              | <b>\$54,500</b><br><b>(78%)</b> |








## Schedule Comparison



|                              | Valve +<br>Weld On Jacket | Valve +<br>ControHeat | Savings with<br>ControHeat      |
|------------------------------|---------------------------|-----------------------|---------------------------------|
| 3" 150# Xomox<br>Plug Valve  | 16 weeks                  | 7 weeks               | <b>9 weeks</b><br><b>(56%)</b>  |
| 12" 150# Xomox<br>Plug Valve | 50 weeks                  | 17 weeks              | <b>33 weeks</b><br><b>(66%)</b> |



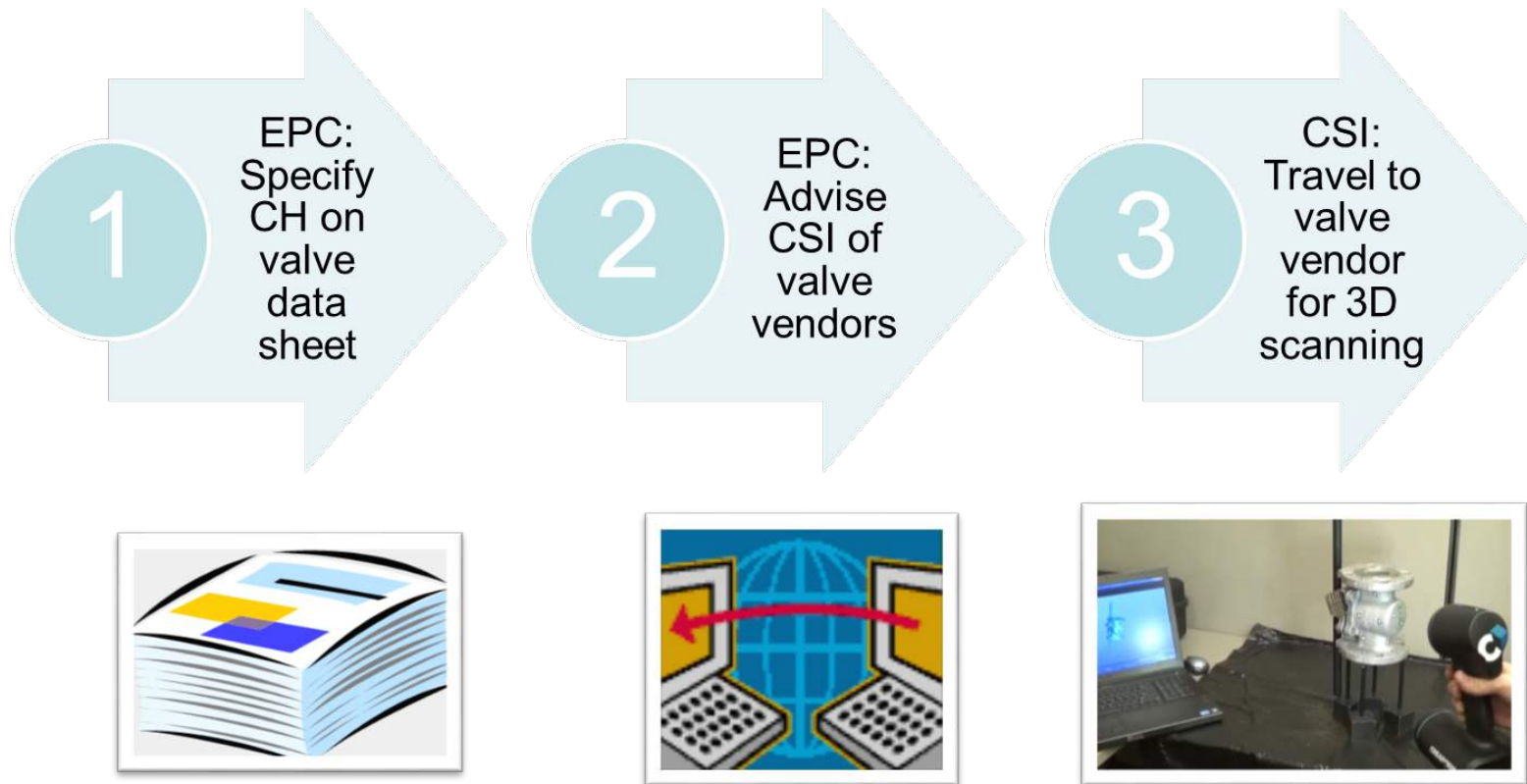
# ControHeat® = Easy Project Execution

|                               | Option 1:<br>Weld on Jackets             | Option 2A:<br>CSI = ControHeat<br>supply only   | Option 2B:<br>CSI = ControHeat +<br><i>Valve</i> supply                               |
|-------------------------------|--|---|---|
| Valve procurement             | Engineering Company                      | Engineering Company   |    |
| Jacket spec compliance        | Engineering Company<br>or Valve Vendor   |    |    |
| Valve takeout design review   | Engineering Company                      | Not required  | Not required  |
| Jacket design / fabrication   | Valve Vendor<br>(not heating specialist) |    |    |
| Jacket connection integration | Engineering Company                      |  |  |



# ControHeat<sup>®</sup> = Easy Project Execution

## Option 2A: CSI supply ControHeat jacket only

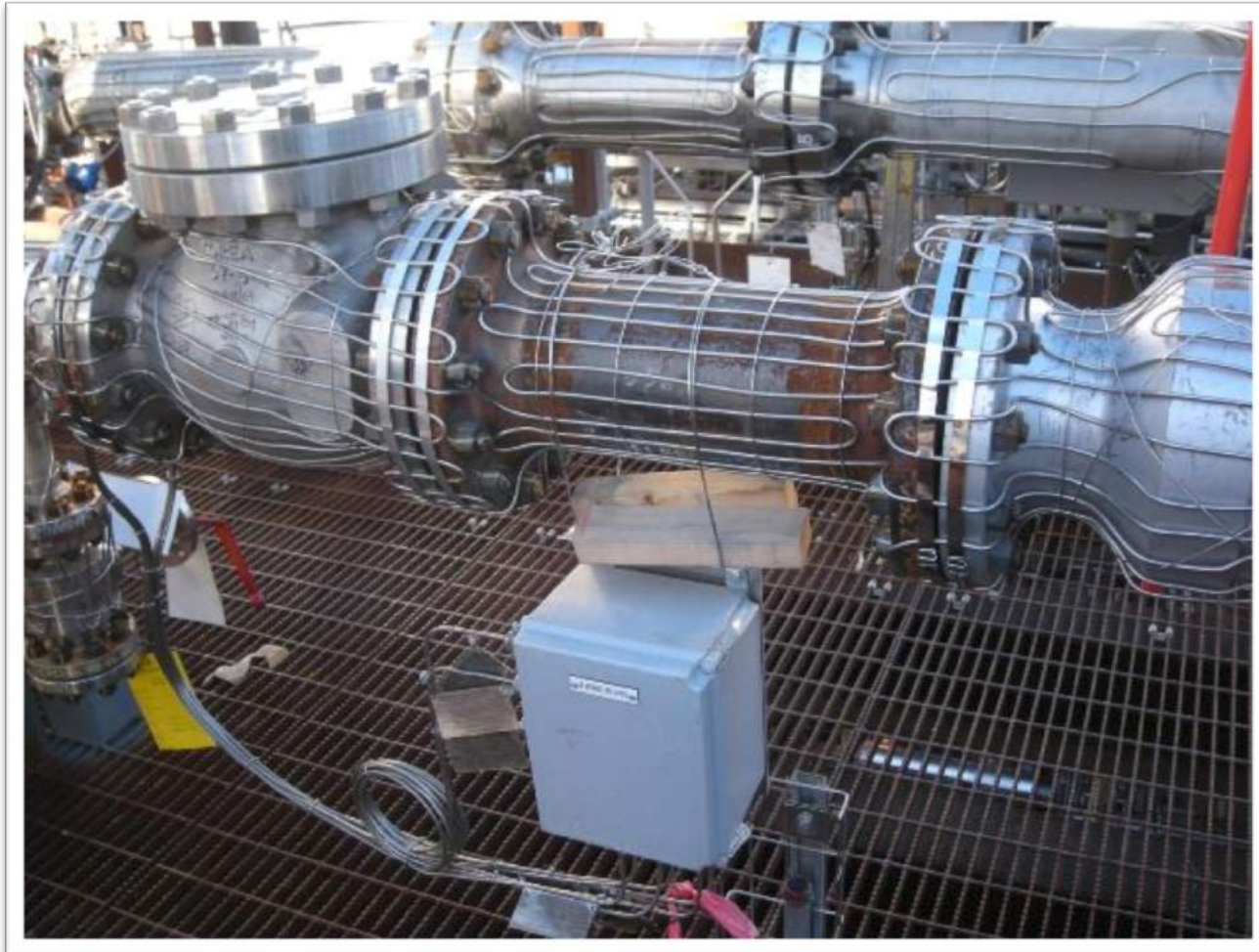


# ControHeat<sup>®</sup> = Easy Project Execution

## Option 2B: CSI supply ControHeat jacket + Valve

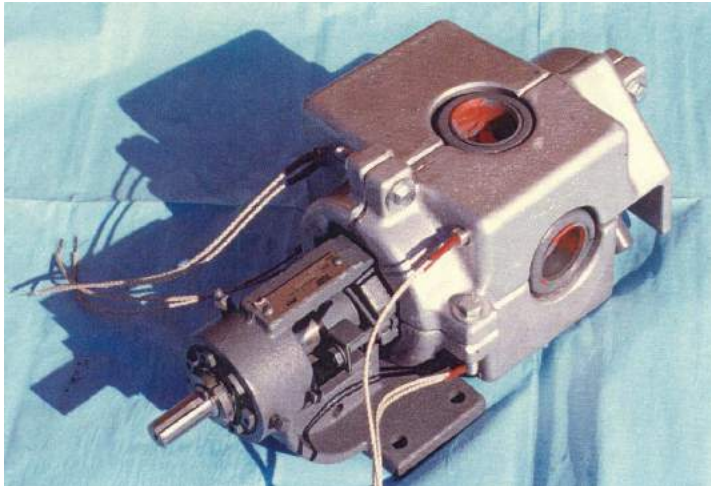


# Electric Valve Heating



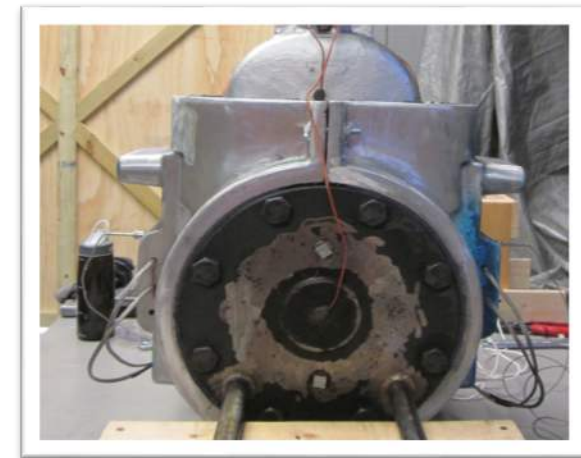
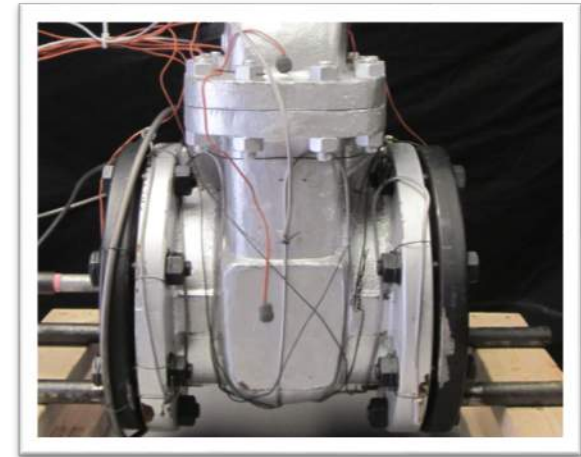
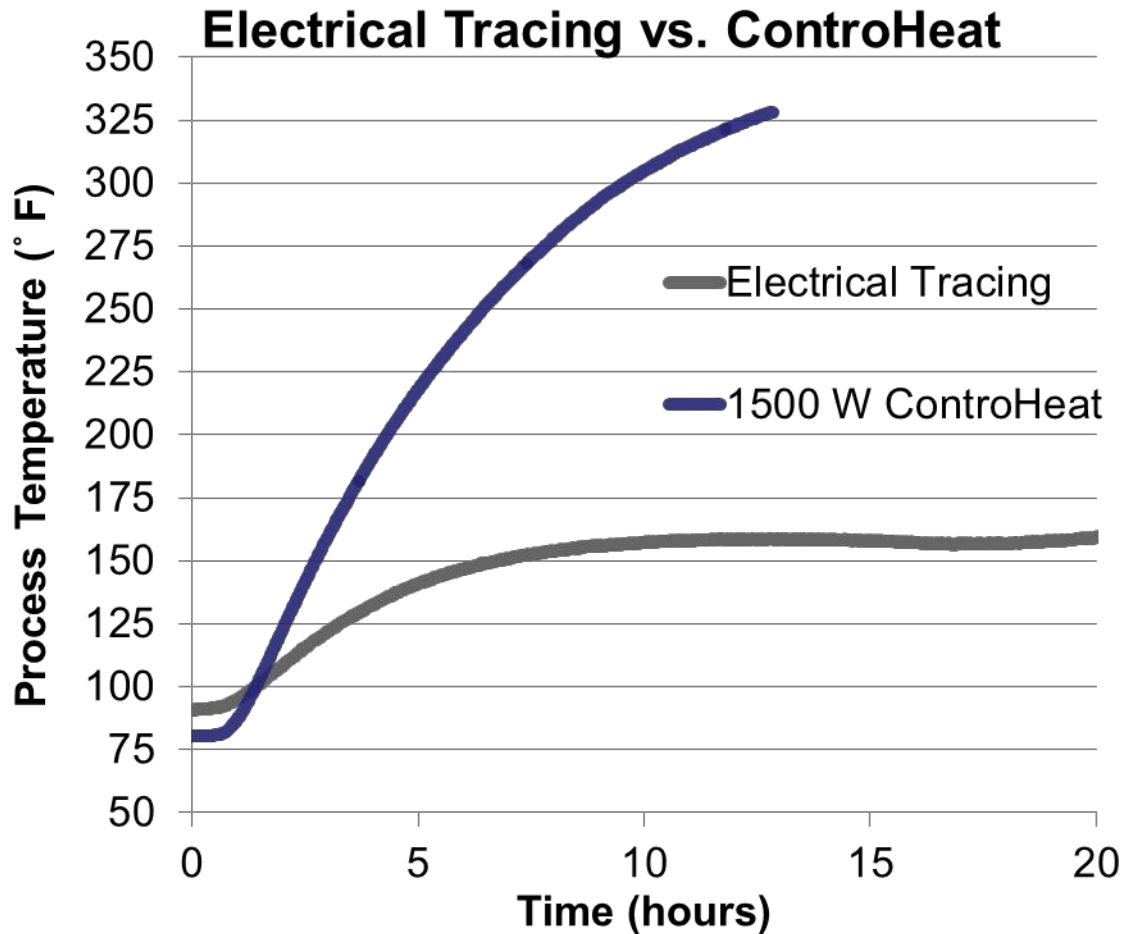
## ControHeat (Electrical Heating)

### ControHeat for Valves, Pumps, & Instruments:



- Excellent heat transfer
- Wide component selection
- Line size components
- No modification to original equipment
- 100% surface area coverage achievable
- Beneficial in critical heat-up applications

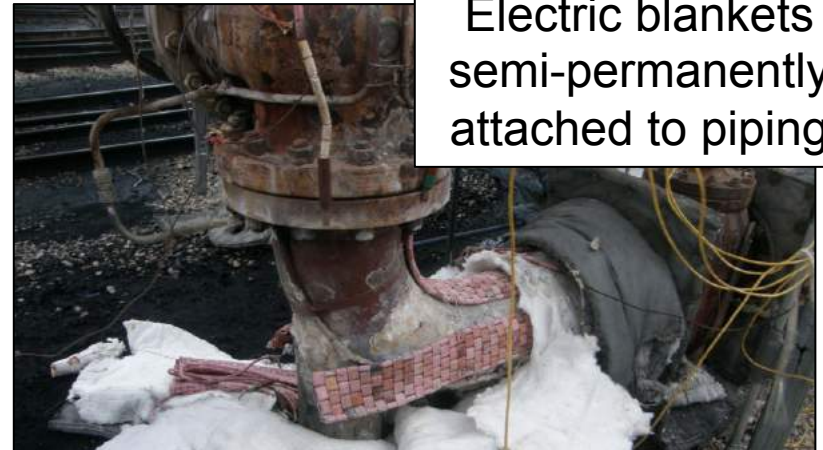
# ET Valve vs. CH Valve



# CSI Solution Example

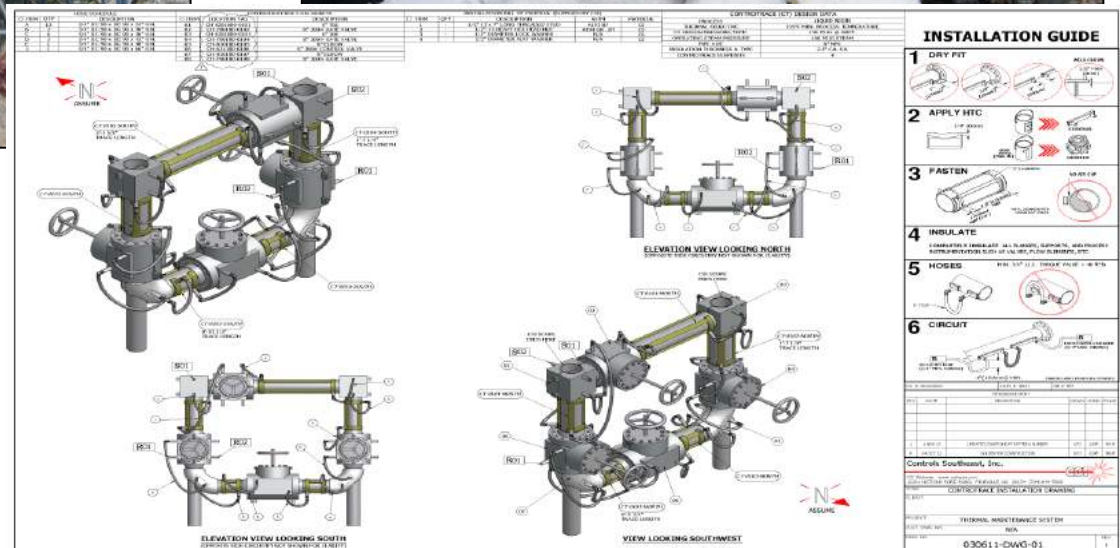


Modified setup  
(TT/Elec blankets)



Electric blankets  
semi-permanently  
attached to piping

**CSI bolt-on technology  
(ControTrace / ControHeat)  
provides solution for hybrid  
Tube Tracing / Electric  
Blanket heating of coker line**



# ControHeat Examples



## ControHeat Bolt-On Jackets for Instruments and Meters



# ControHeat Examples

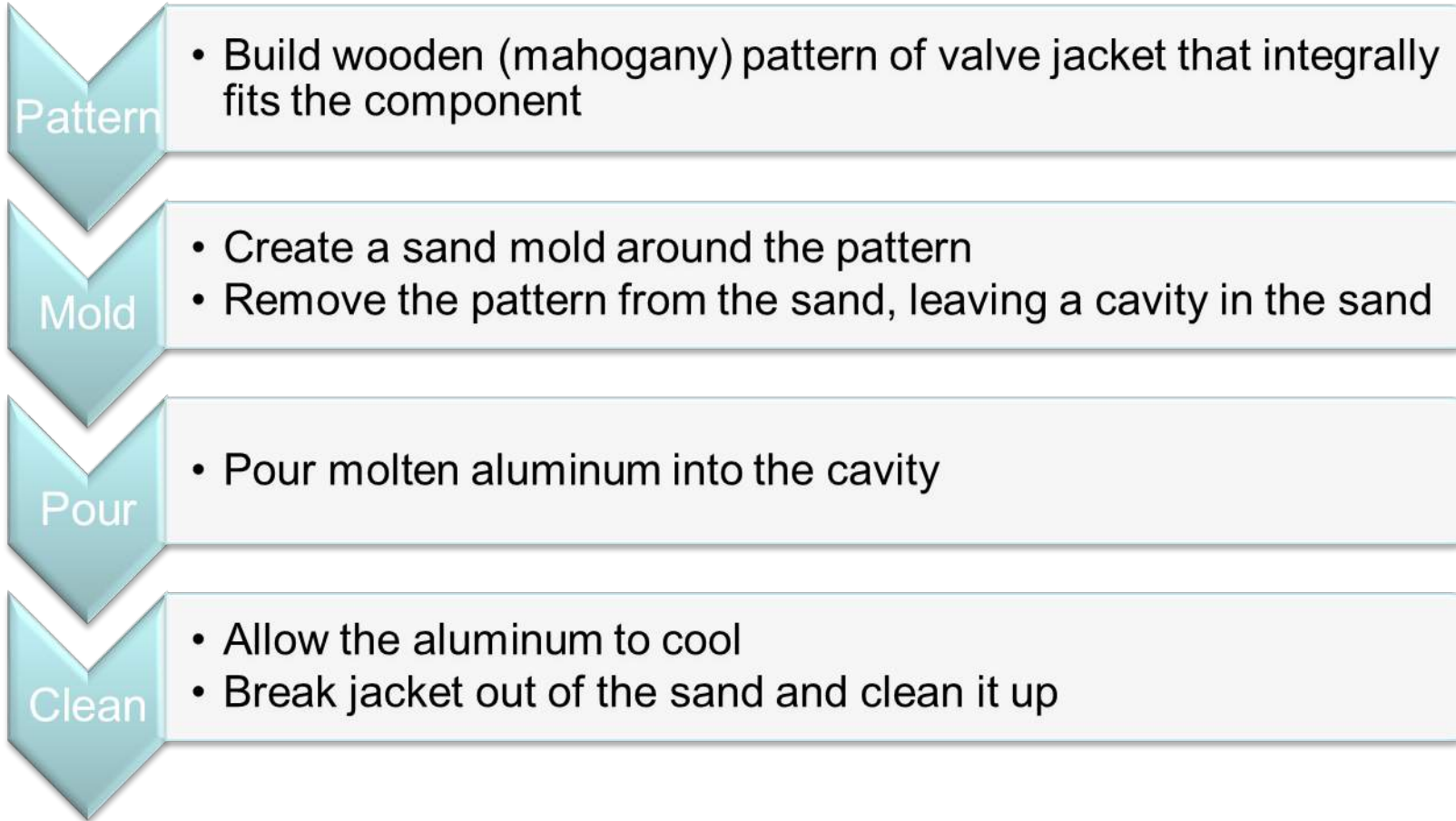


## ControHeat Bolt-On Jackets For Pumps and Blowers

# ControHeat (Jumbo)



# Production Cycle



# Pattern Development

① Scan component at valve vendor **OR** CSI purchase valve direct



② Construct pattern for casting



## Pattern Storage



More than 8,000 patterns are held in inventory at CSI

## ControHeat Pressure Insert



Embedded within each jacket is a pressure chamber that is built and tested in accordance with ASME Section VIII, Division I.

## ControHeat Mold Process



Embedded within each jacket is a pressure chamber that is built and tested in accordance with ASME Section VIII, Division I.

## ControHeat Mold Process



ControHeat jackets are cast daily in the CSI foundry



# ControHeat (Fluid Heating Medium)

## Design Options

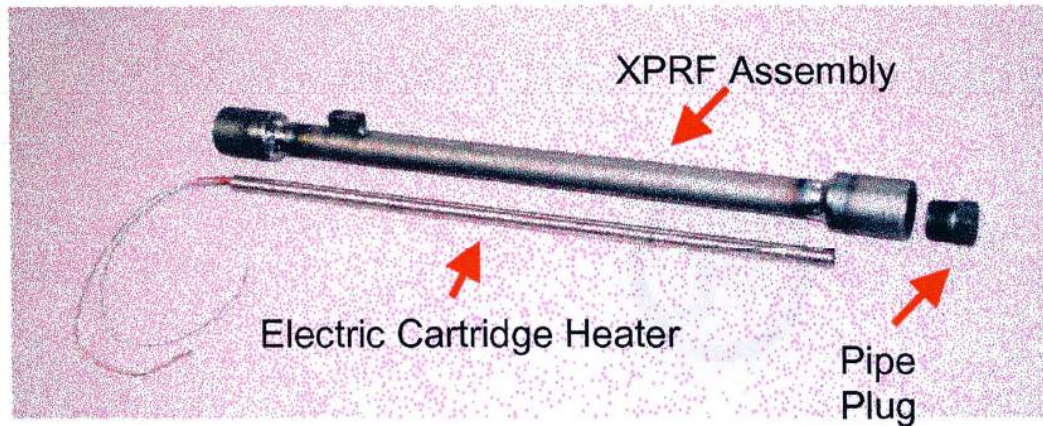
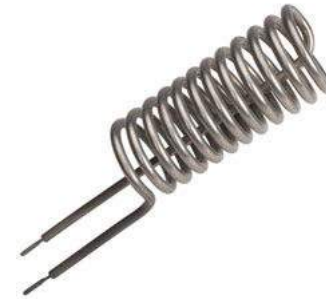
- Insert Material (C/S std, S/S option)
- Connection Type (Thrd std, Flanged option)
- Press./Temp. (150psig @ 400°F std)
- Testing Requirements (Hydro std)



# ControHeat (Electrical Heating)

## Design Options

- Cal-Rod
- Cartridge
- UL Rated, Explosion Proof



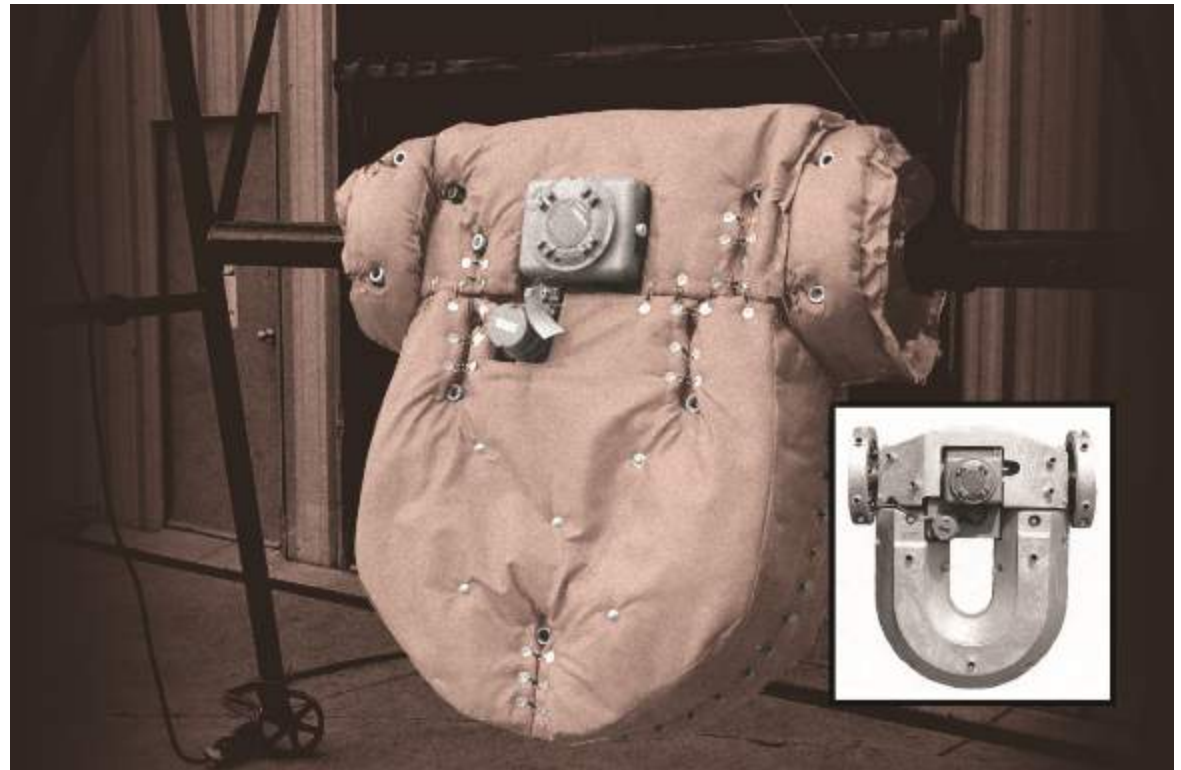
## ControCover: Fitted Insulation Jacket

- **Designed to satisfy particular process requirements.**
- **Core material:**
  - Needled blanket of e-type fiberglass/  
Fiberglass blended with other oxide fibers (Al, Ca, & Mg).



# ControCover Advantages

- **Efficient**
- **Flexible**
- **Economical**
- **Removable & reusable**
- **Easy to install**
- **Saves time & labor**



# Questions?

