



# Meet the Game Changer.

**CORNERSTONE VALVE:** redefining industry standards for custom severe-service valves – utilizing a digitally-based process from quote to delivery.

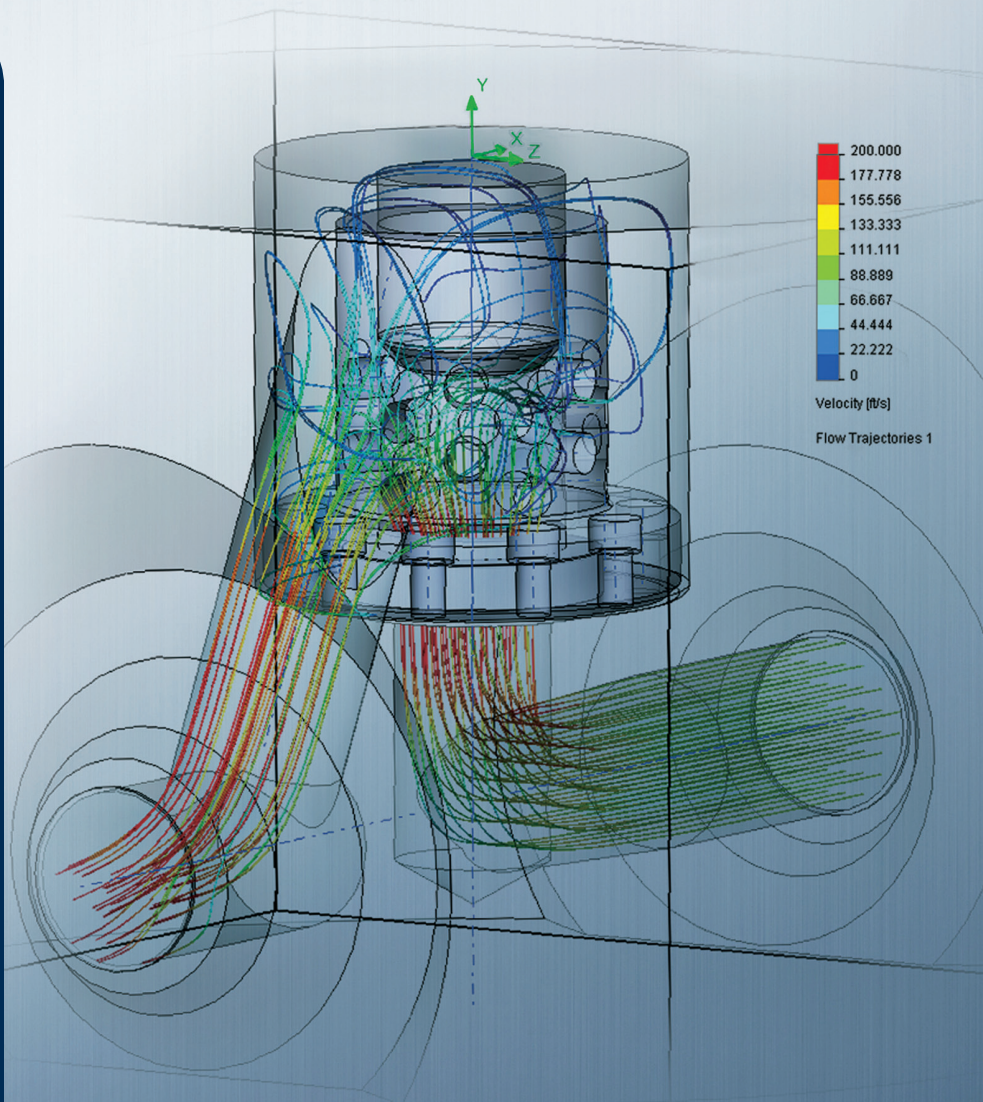
## UNRIVALED

**INNOVATION:** creating new, streamlined technology by combining data management software, Cornerstone Valve's proprietary S.A.M.S. process, and partnering Gibbs CAM with SolidWorks.

**SPEED:** producing a custom, severe service valve from white-sheet design to complete engineered product in 21 days.

**PRODUCT:** 4 product lines including our new super-critical power valve – for up to 1,400° F +, and pressures to API 10,000 and B16.34 4500.

**QUALITY:** a truly in-line serviceable power valve with a new patented ball seat-seal design. One-hour repairable, using hand tools.





# A RECENT CLIENT CASE STUDY...

During a maintenance turn around, a power plant in Philadelphia discovers that its blow-down valve is destroyed again. The customer notifies Cornerstone Valve and asks for a replacement ball valve.

## 1. APPLICATION / SERVICE CONDITIONS IDENTIFIED

**2. S.A.M.S.** Cornerstone's proprietary process is implemented to evaluate a wide set of mathematical parameters.

**S** Specify & configure  
Valve experience/material science

**A** Apply materials & components

**M** Math cad calculations to  
applicable codes/B16.34/ASME  
boiler pressure vessel code  
section VIII, div. 1

**S** Simulation

## 3. SOLIDWORKS MODELS DEVELOPED

Changes to Solidworks models update FEA, CFD and dimensional drawings. Models are then leveraged thru Gibbs Cam, CNC software.

## 4. COMPUTATIONAL FLUID DYNAMICS SIMULATION

Refines valve flow-path.

## 5. FINITE ELEMENT ANALYSIS SIMULATION

Revealing stress concentrations.

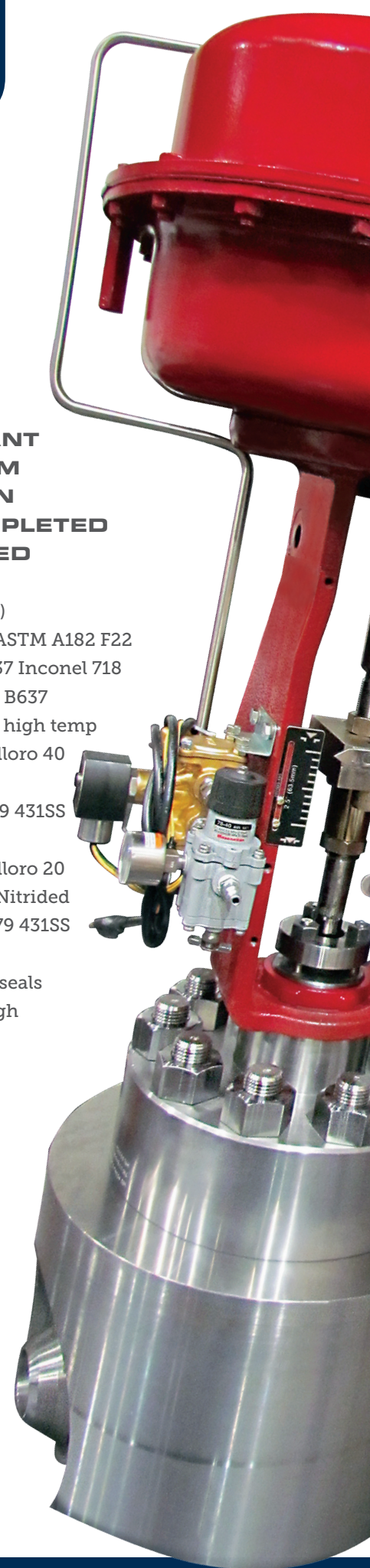
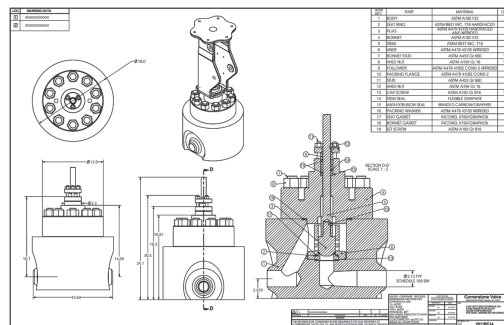
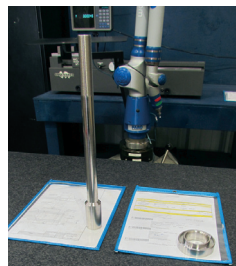
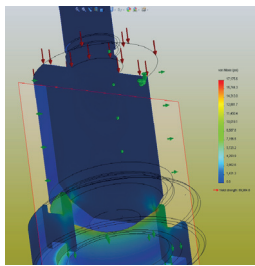
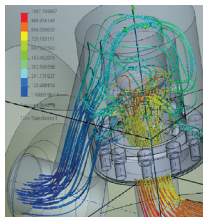
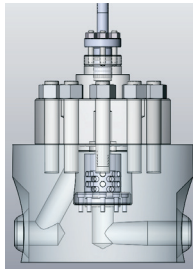
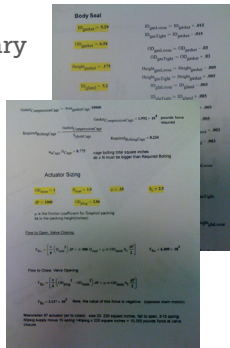
## 6. ASSEMBLY DRAWING / BOM

Final assembly drawing and BOM's completed.  
Hand-off to production team.

## 7. 21 DAYS LATER:

### N.E. USA POWER PLANT RISING STEM BLOW DOWN VALVE COMPLETED AND SHIPPED

- 1,023° F (550 C)
- 1026 PSIG (70Bar)
- Body / bonnet - ASTM A182 F22
- Stem - ASTM B637 Inconel 718
- Seat ring - ASTM B637 Inconel 718 with high temp Nickel-based Delloro 40 overlay
- Plug - ASTM A479 431SS with high temp Nickel-based Delloro 20 overlay and Ion Nitrided
- Cage - ASTM A479 431SS Ion Nitrided
- Ultra high-temp seals
- A194 grade 16 high temp bolting





# CORNERSTONE MANUFACTURING

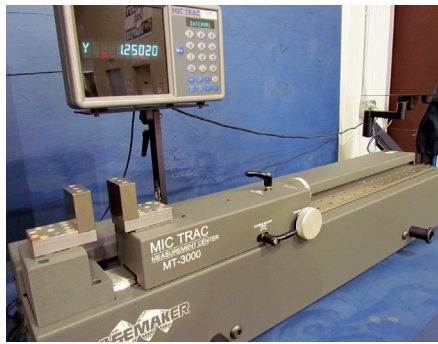
## CORNERSTONE'S PRODUCTION TEAM IN ACTION



## MANUFACTURING: 3 SHIFTS 24/7



## INSPECTION PROCESS



## ASSEMBLY AND TESTING



[www.cornerstonevalve.com](http://www.cornerstonevalve.com)

## WHAT ARE YOU REALLY PAYING FOR YOUR THROW-AWAY POWER VALVES?

Your power valve costs aren't just the initial charge for the valve, and the replacement valve and all the other valves afterwards. Changing out an in-line power valve includes down time for:

- shut down unit, cool and relieve pressure
- remove actuator on automated valves
- cut valve out of line
- pre heat, inter-pass, cool, PWHT and then cool down again
- re-install actuator

And consider the additional costs for you: permits, rigging, scaffolding and lost man hours.

**Can you afford to keep using throw-away power valves?**

## Our power valve line

Our power valves are truly in-line serviceable utilizing our new patented ball seat-seal design. One-hour repairable, on site, in-line and using hand tools.

*Valves are categorized by temperature and then pressure. These parameters are the true indicators of materials necessary for construction.*

- 1. CVPB-1** < 750° F, 2520 psi ANSI 1500
  - A105 body and bonnet
  - 660 / 17-4 ph stem
  - 410SS ball and seat
  - B8 class 2 bolting
  - Chrome Carbide HVOF coating
- 2. CVPB-2** 750 - 1,000° F, 4010 psi ANSI 4500
  - F22 body and bonnet
  - 660 stem
  - Inconel 718 ball and seat
  - 660 bolting
  - Cobalt-based spray and fuse coating
- 3. CVPB-3** 1,000 - 1,200° F, 2160 psi ANSI 4500
  - F91 body and bonnet
  - Inconel 718 stem, ball and seat
  - 718 bolting
  - Nickel-based spray and fuse coating
- 4. CVP-custom** 1,200° F + / custom severe service, application -based



Call your Cornerstone Valve representative for more information or a tour of our manufacturing facility.

In USA 281.880.8188  
13124 Trinity Drive • Stafford, TX 77477  
**[www.cornerstonevalve.com](http://www.cornerstonevalve.com)**

Quality Certifications: API Q1, ISO 9001, API6A, API6D