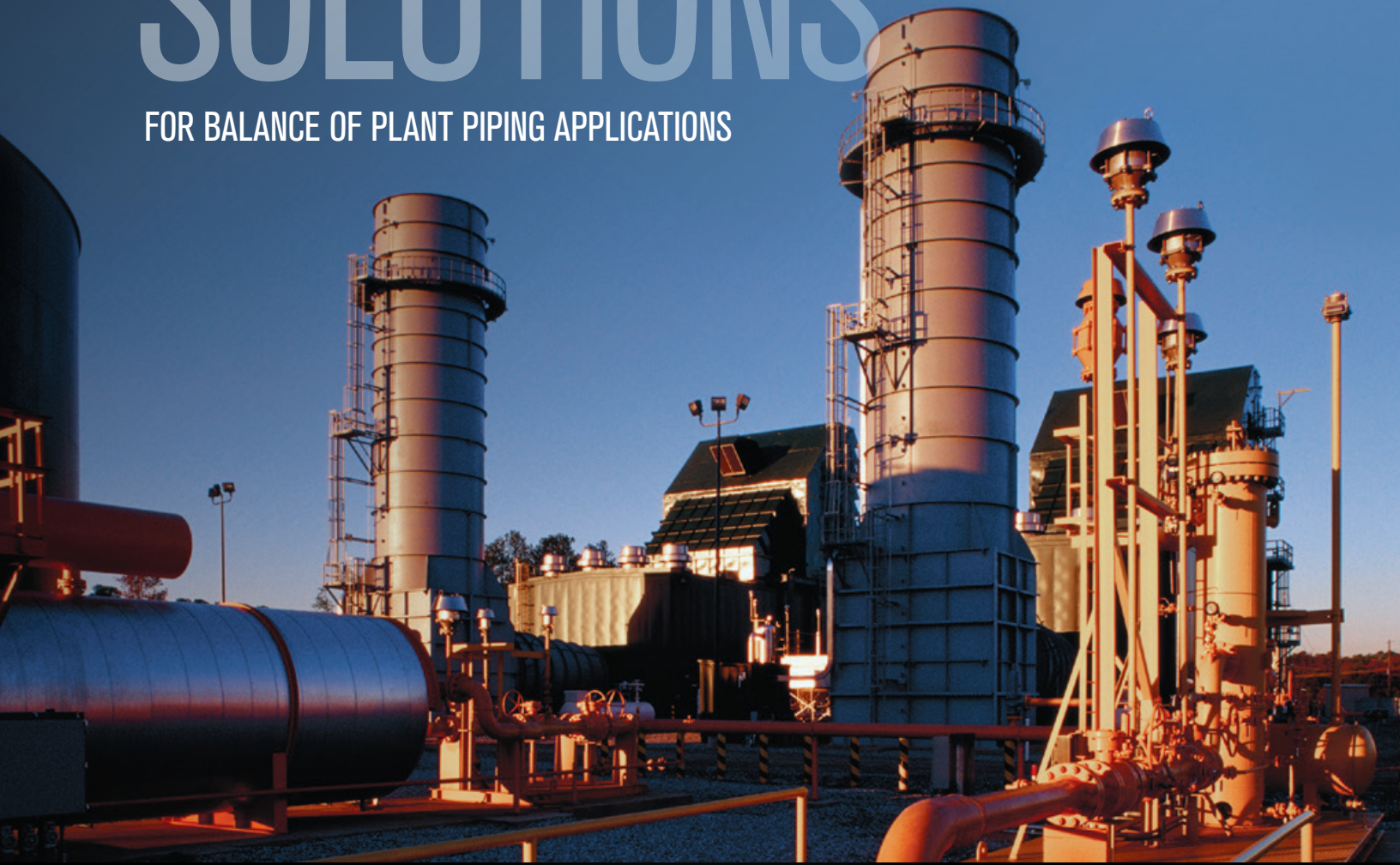


# GROOVED PIPE JOINING SOLUTIONS

FOR BALANCE OF PLANT PIPING APPLICATIONS



 **victaulic**<sup>®</sup>



# VICTAULIC® SOLUTIONS FOR THE POWER GENERATION INDUSTRY



Newark Energy Center

When construction began on the 600MW combined cycle power plant, Newark Energy Center, the project had tight construction schedules. By employing Victaulic grooved solutions SNC Lavalin was able to keep scheduled completion dates despite weather related delays.



Alstom Birr Power Plant

Alstom Birr, a global company specializing in power generation facilities, grid infrastructure and transportation employed Victaulic products for easy system access for maintenance and repair. Victaulic was able to reduce man hours by 50 percent compared to traditional joining methods, thus resulting in considerable cost savings, increased job site safety and faster project completion.



Since the first patent in 1919, Victaulic has delivered innovative pipe joining solutions that help customers succeed worldwide. Look inside many of the world's most recognizable landmarks and industrial facilities, and you'll find Victaulic solutions at work making bold design innovations possible, speeding time to completion, allowing for unpredictable seismic movements and setting the stage for scalability in Balance of Plant (BOP) piping applications.

Today, Victaulic supports its customers with manufacturing facilities and branches located around the globe including our world headquarters location in Easton, Pennsylvania, USA. Our international presence ensures that our worldwide customers are served with speed, efficiency and reliability.

**“VICTAULIC TAKES A VERY “HANDS-ON” APPROACH TO ENSURE THEIR PRODUCTS ARE SUCCESSFULLY USED, BY BEING ACTIVE IN ALL PHASES OF A PROJECT – DESIGN, TRAINING OF INSTALLERS, INSTALLATION, TESTING AND COMMISSIONING.”**

Sanford Fleming, Plant Engineer  
SNC Lavalin

## BALANCE OF PLANT PIPING APPLICATIONS



**Az Zour Power Plant**

The Az Zour North gas-fired combined cycle power plant was in need of a quick, reliable joining method for multiple systems within the plant. Victaulic grooved couplings were able to create a permanent leak-tight seal, with no need for additional reinforcement.



**South Hedland Power Plant**

With an extremely tight construction schedule, Victaulic was the chosen pipe joining method with the use of Vic-Press™ and grooved products. Victaulic couplings provided a union at every joint, allowing easy access to the systems and minimized downtime during routine maintenance.

# THE VICTAULIC® DIFFERENCE

## GROOVED PIPE JOINING TECHNOLOGY

### How does it work?

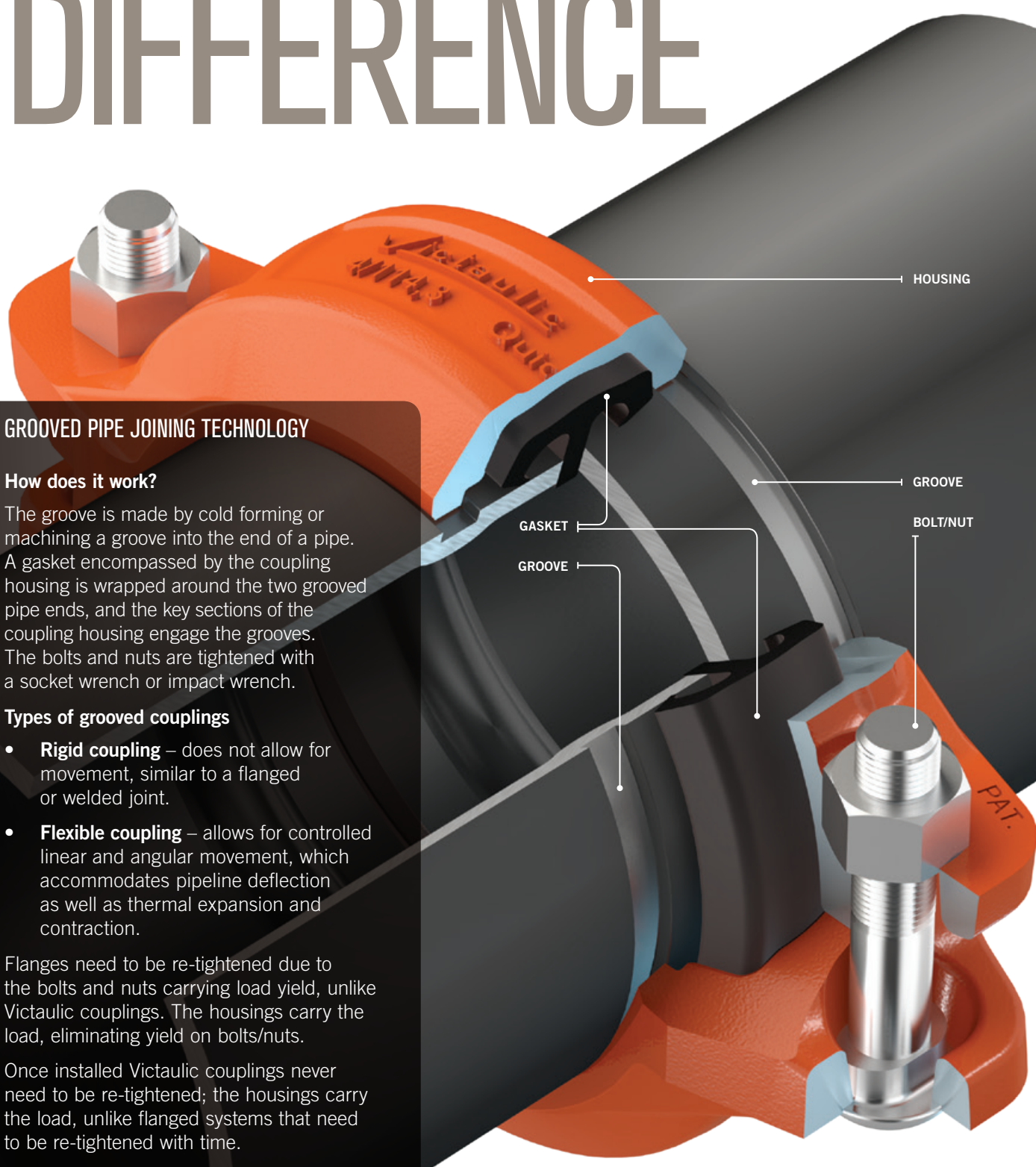
The groove is made by cold forming or machining a groove into the end of a pipe. A gasket encompassed by the coupling housing is wrapped around the two grooved pipe ends, and the key sections of the coupling housing engage the grooves. The bolts and nuts are tightened with a socket wrench or impact wrench.

### Types of grooved couplings

- **Rigid coupling** – does not allow for movement, similar to a flanged or welded joint.
- **Flexible coupling** – allows for controlled linear and angular movement, which accommodates pipeline deflection as well as thermal expansion and contraction.

Flanges need to be re-tightened due to the bolts and nuts carrying load yield, unlike Victaulic couplings. The housings carry the load, eliminating yield on bolts/nuts.

Once installed Victaulic couplings never need to be re-tightened; the housings carry the load, unlike flanged systems that need to be re-tightened with time.





VICTAULIC UTILIZES **VERTICALLY INTEGRATED MANUFACTURING** TECHNIQUES TO CREATE AND MAINTAIN QUALITY, RELIABILITY AND REPUTATION. EACH STEP OF THE MANUFACTURING PROCESS IS CONTROLLED AND MONITORED BY VICTAULIC. ACHIEVE ON-TIME, ON-BUDGET COMPLETION AND THE HIGHEST SAFETY STANDARDS ON INSTALLATION.



## Gasket Reliability

Victaulic's gasket process includes controlling raw materials selection, developing and compounding exclusive gasket materials, and ensuring the highest possible quality through state of the art material testing and validation processes. Victaulic incorporates the combined efforts of their Material Technologists, Design Engineers, Process Control Engineers, Quality Assurance Engineers and Manufacturing Professionals to be the only grooved coupling manufacturer that is fully vertically integrated in gasket development and production.



# TESTING

- Durometer/Hardness: **ASTM D2240 Testing**
- Tensile Strength and Elongation: **ASTM D412**
- Compression Set: **ASTM D395**
- Stress Relaxation: **Victaulic Proprietary Tests and ISO 3384**
- Volume Swell: **ASTM D471**
- Accelerated Aging: **ASTM D573**



# EVERY STEP OF THE WAY

## FROM PRE-CONSTRUCTION TO COMMISSIONING

Victaulic ensures speed to market, drastically reducing fabrication time and increased global availability and deliveries through lean manufacturing techniques and the support of Victaulic employees on a world wide scale.



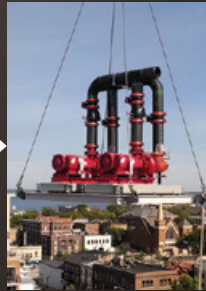
PREFABRICATION



SHIPPING AND TRANSPORTATION



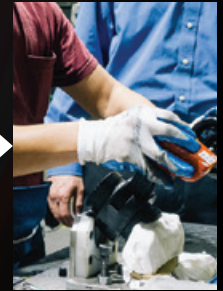
SAFETY AND TRAINING



JOBSITE INSTALLATION



QA/QC VISUAL INSPECTION



VICTAULIC AUDITS/  
QUESTIONNAIRE

“THE EASE AND SPEED OF INSTALLATION AND THE LONG-TERM RELIABILITY OF YOUR PRODUCT MAKES IT THE METHOD OF CHOICE FOR OUR PLANT.”

Aden Everett, Maintenance Supervisor, Grand Falls Generating Station





## Testing

Victaulic puts each product through substantial testing requirements before going to market. These procedures test reliability and durability of the joints. General list of test performed:

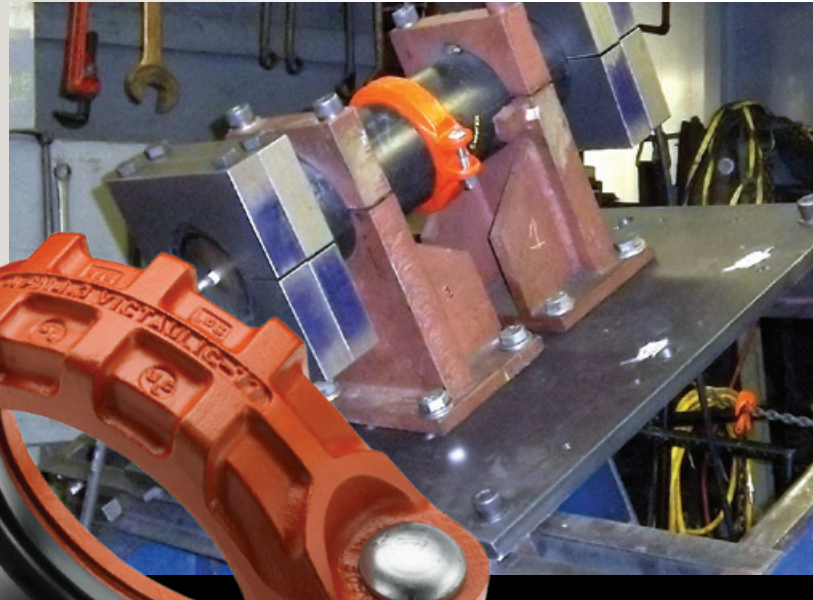
- Pressure Tests
- Pressure Cycling Tests
- Flexure
- Vibration
- Water Hammer
- Vibration/Pulsation
- Low and High Temperature Exposure
- Fire
- Air Pressure
- Vacuum



## MIL-S-901D Shock Test

Representative samples of the Victaulic Style 07 Zero-Flex™ rigid coupling and Style 77 flexible couplings were subjected to high impact loading conditions per MIL-S-901D (Navy) shock tests. These impacts were meant to test the strength of the couplings in high impact shock loads typical of naval combat applications. Each coupling was tested at 348 psi | 24 Bar (3) times per (3) orientations by applying 120g–200g force with a 3,000lb. hammer. The couplings maintained joint integrity and pressure-holding performance.

X-ray testing confirmed no damage to the housings.



## Trusted around the world

### Owners:

- AEP
- Detroit Edison
- Duke Energy
- Exelon
- FPL
- GenPower LLC
- Georgia Power
- Minnesota Power
- New York Power Authority (NYPA)
- Pennsylvania Power & Light
- Polaska Grupa Energetyczna (PGE)
- Southern Company
- Tampa Electric Co. (TECO)

### EPC Firms:

- Bechtel
- Black & Veatch
- Burns & McDonnell
- CH2M Hill
- Daelim
- E&C Engineering & Construction
- Fluor
- Heavy Industries (HI)
- Hyundai
- Kiewit
- Kvaerner
- MWH
- PCL
- Samsung Engineering
- Sargent & Lundy (S&L)
- SNC Lavalin
- WorleyParsons
- Zachry





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