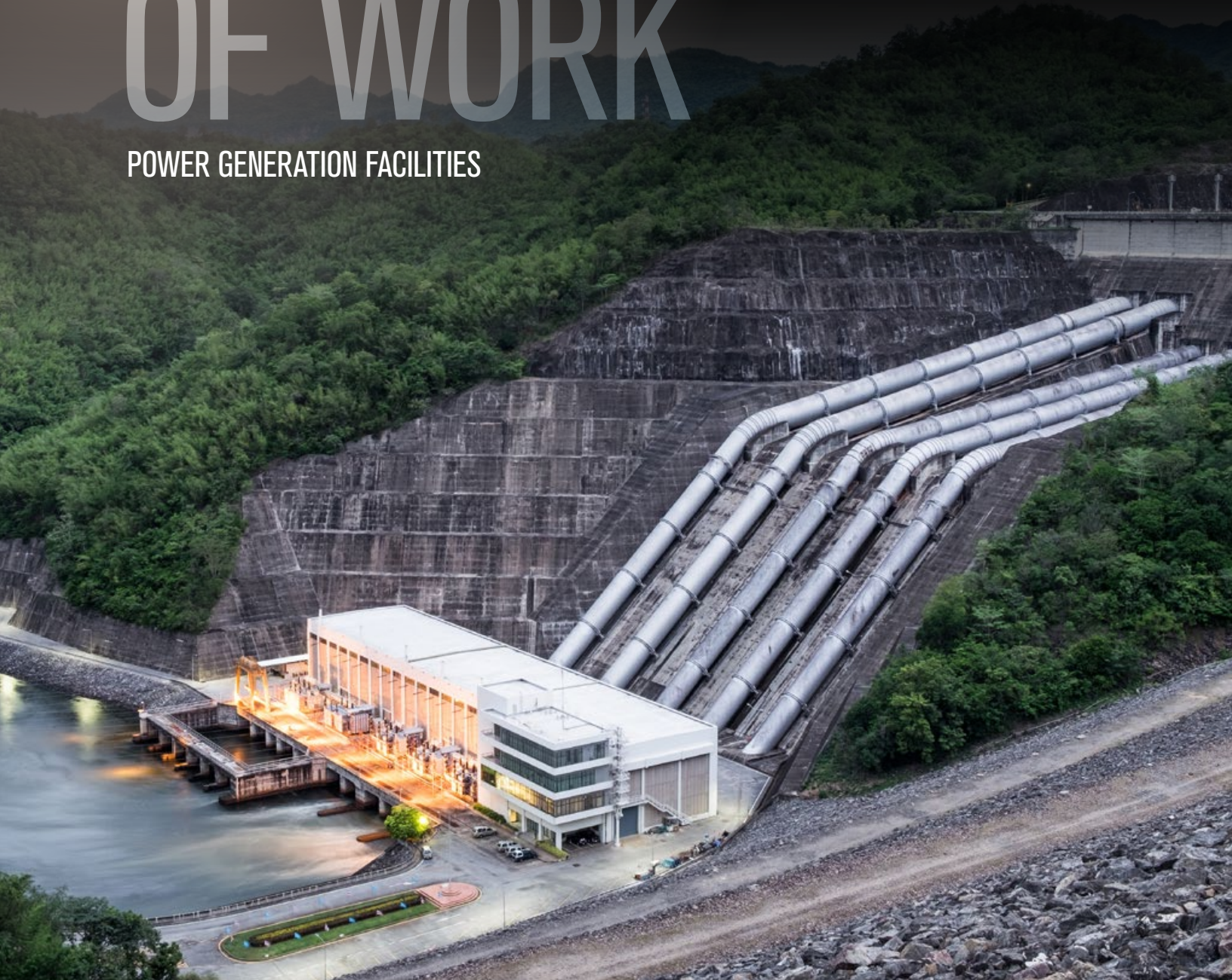


# SCOPE OF WORK

POWER GENERATION FACILITIES



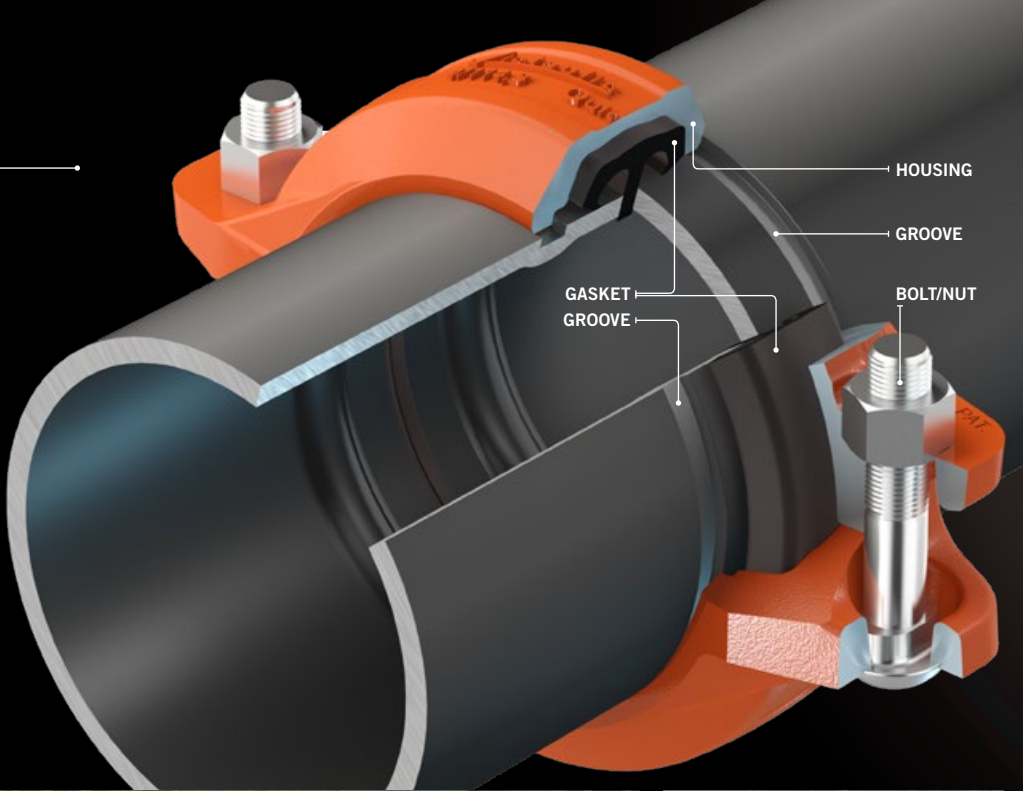
 **victaulic®**



# APPLIED BENEFITS

THE VICTAULIC®  
DIFFERENCE

- COMPRESSED SCHEDULE
- REDUCED TOTAL INSTALLED COST
- INCREASED PRODUCTIVITY
- EASE AND SPEED OF INSTALLATION
- LESS DOWNTIME FOR MAINTENANCE
- REDUCED SKILLED LABOR
- IMPROVED SAFETY
- RISK MANAGEMENT
- VIRTUAL DESIGN AND CONSTRUCTION
- PREFABRICATION COMPATIBLE
- REDUCED MATERIAL HANDLING
- TOLERANCE FOR PIPE OFFSET
- VISUAL VERIFICATION



## Special Engineering and Operation Requirements

- ASME B31.1 Power Piping Code
- ANSI/AWWA standards for grooved and shouldered joints
- UL Listed/FM Approved
- NSF61 requirements for gaskets, valves and fittings in potable water
- Victaulic® systems eliminate the need for on-site X-ray examinations



## Modularization

**Challenge:** On-site installation risks and tolerance stack-ups

**Solution:** Modularization results in a significant reduction in field connections. Skids can be installed in a controlled environment. This reduces on-site risks including lost components or misalignment. Grooved couplings can accommodate minor misalignments due to the nature of the joint.



### WHY IS THIS IMPORTANT?

Welded, flanged and threaded systems require in-field rework if the components aren't aligned perfectly. This could cost time and money to fix.

## System Expansion and Maintenance

**Challenge:** Complicated rework process and/or space constraints

**Solution:** Grooved couplings provide a union at every joint.



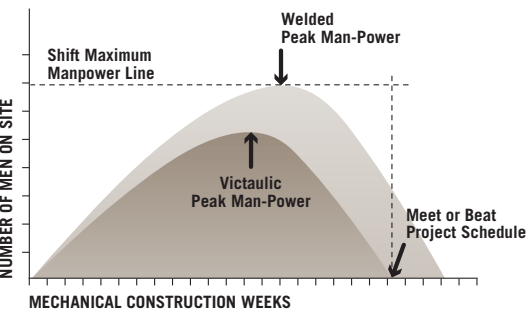
### WHY IS THIS IMPORTANT?

Having a grooved union at every joint allows for direction changes, system expansion and simplified maintenance. This also allows for quick dis-assembly and reassembly to get the system back online during critical plant outages.

## Compressed Schedules

**Challenge:** Schedule overruns

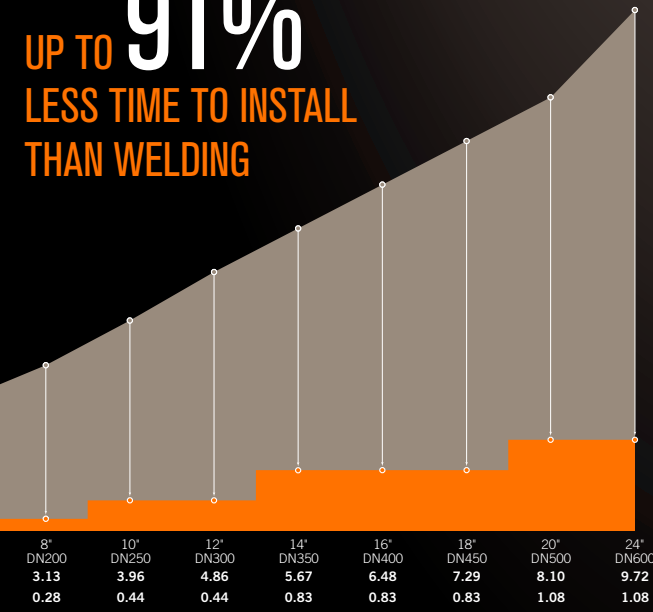
**Solution:** With far fewer bolts and nuts than a flanged joint, installation time can be dramatically reduced. Welded systems require longer completion times and are somewhat weather dependent. The larger the diameter of piping the longer the installation.



### WHY IS THIS IMPORTANT?

Victaulic systems install faster and reduce downtime during retrofits and repairs, saving you money on labor and resource costs. Victaulic couplings ship with the appropriate nuts, bolts and gaskets, simplifying ordering and part location on a jobsite.

UP TO 91%  
LESS TIME TO INSTALL  
THAN WELDING



Example:  
24" | DN600 Joint  
Weld Installation: 9.72 Man-hours  
Victaulic Installation: 1.08 Man-hours

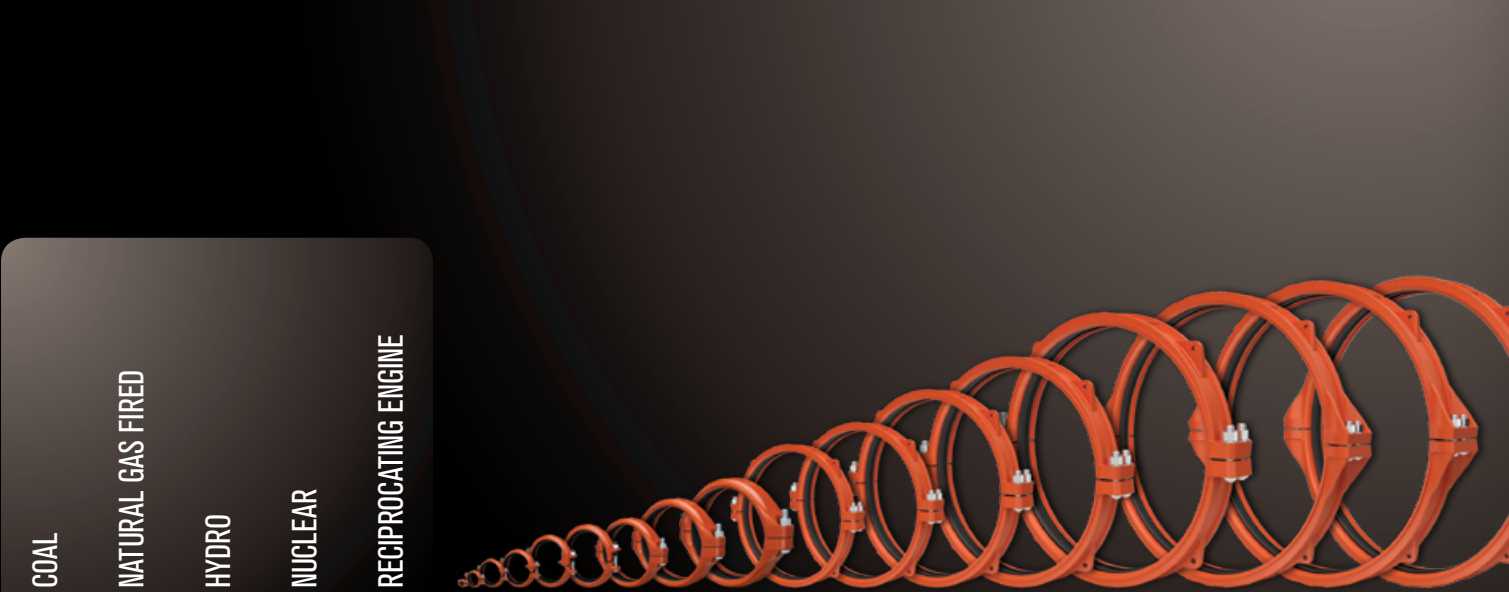


# FACILITY APPLICATIONS

## Utility Piping



	COAL	NATURAL GAS FIRED	HYDRO	NUCLEAR	RECIPROCATING ENGINE
Auxiliary Cooling	•	•	•	•	
Circulating Cooling	•	•	•	•	
Closed Cooling	•	•	•	•	
Condenser Water	•	•	•	•	
Condensate Water	•	•	•	•	
Cooling Tower	•	•	•	•	•
Cooling Water Chemical Treatment	•	•	•	•	•
Deionized Water	•	•	•	•	
Demineralized Water	•	•	•	•	
Drains	•	•	•	•	•
Hydronic Heating	•	•	•	•	
Plant Utility	•	•	•	•	•
Potable Water	•	•	•	•	•
Service Water	•	•	•	•	•
Waste Water	•	•	•	•	•



COAL	NATURAL GAS FIRED	HYDRO	NUCLEAR	RECIPROCATING ENGINE	
•					Acid Waste
		•			Bearing Oil Feed Lines
		•			Bearing Cooling Water
•	•	•	•		Chemical Cleaning
•	•	•	•		Chemical Treatment
•	•	•	•	•	Instrument Air
•	•	•	•	•	Station Air
•	•		•	•	Lube Oil Feed Lines
•	•		•		Nitrogen
•					Pneumatic Conveying
•					Sludge Handling
•	•			•	Urea
•			•		Vacuum Lines
	•				Water Wash Down



## Process Piping



# FACILITY APPLICATIONS

## Specialty



- Ash Handling
- Bottom Ash
- Coal Handling
- Coal Slurry
- Fly Ash and SCR Hopper Ash
- Flue Gas Desulfurization
- Wet Scrubber
- Dry Scrubber
- Lime Slurry
- Dry Sorbent Injection
- Limestone Handling
- Soot Blowing
- Penstock
- Tunnel Boring Dewatering
- Radiator Platform and Pipe Rack

	COAL	NATURAL GAS FIRED	HYDRO	NUCLEAR	RECIPROCATING ENGINE
Ash Handling	●				
Bottom Ash	●				
Coal Handling	●				
Coal Slurry	●				
Fly Ash and SCR Hopper Ash	●				
Flue Gas Desulfurization	●				
Wet Scrubber	●				
Dry Scrubber	●				
Lime Slurry	●				
Dry Sorbent Injection	●				
Limestone Handling	●				
Soot Blowing	●				
Penstock			●		
Tunnel Boring Dewatering	●		●		
Radiator Platform and Pipe Rack					●

# FACILITY APPLICATIONS

COAL	NATURAL GAS FIRED	HYDRO	NUCLEAR	RECIPROCATING ENGINE
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●

- Buried Fire Water Loop
- Deluge System
- Sprinkler System
- Fire Suppression for Special Hazards




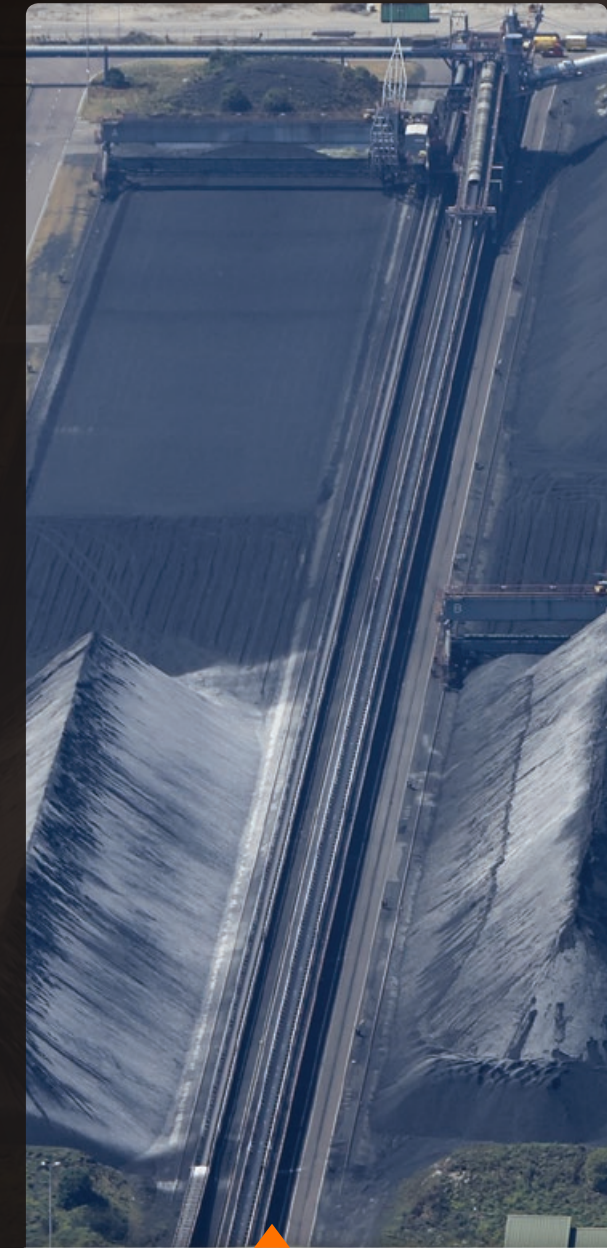
Victaulic provides system solutions for a wide range of applications, pipe materials and sizes.

## Fire Protection






# COAL



**WATER TREATMENT**  
System Solution for HDPE Pipe  
(Buried and Above Ground)



**COAL COMBUSTION  
RESIDUAL WATER TREATMENT**  
Grooved Stainless Steel System  
including QuickVic™ Couplings  
Vic-Press™ System for  
Schedule 10S Stainless Steel



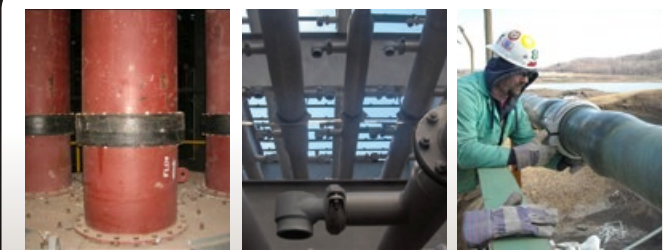
**COAL CONVEYOR WASH DOWN**  
Grooved Stainless Steel System  
including QuickVic Couplings  
Vic-Press System for  
Schedule 10S Stainless Steel  
Fire Protection Sprinklers




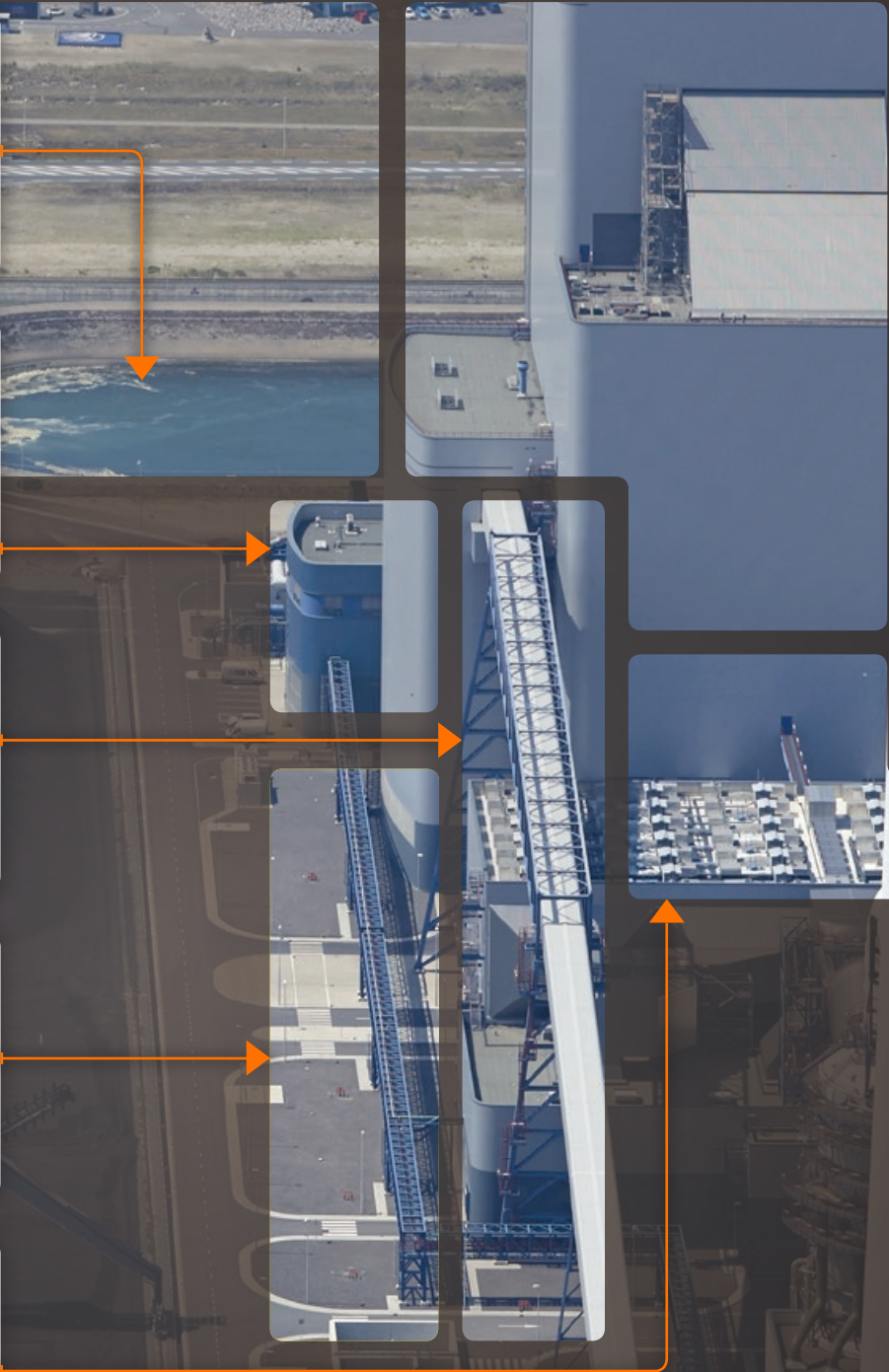
**INSTRUMENT AND STATION AIR**  
Grooved Stainless Steel System  
including QuickVic Couplings  
Vic-Press System for  
Schedule 10S Stainless Steel



**PULVERIZED COAL LINES**  
Flexible Couplings  
Style 152A Expansion Joint  
Victaulic Vortex™ Fire Suppression



**SPECIALTY APPLICATIONS**  
Style 152A Expansion Joint Coupling  
Style 221AA Flue Gas Nozzle Coupling  
Style 296A Rigid Coupling for FRP/GRP



**GENERATORS**  
Victaulic Vortex™ Fire Suppression

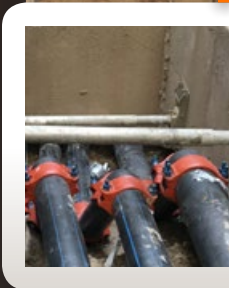


**BOTTOM AND FLY ASH**  
Advanced Groove System (AGS)  
Couplings and Fittings





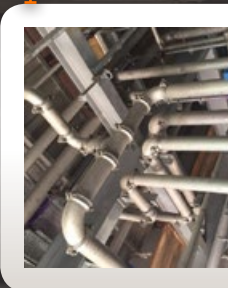
# NATURAL GAS FIRED




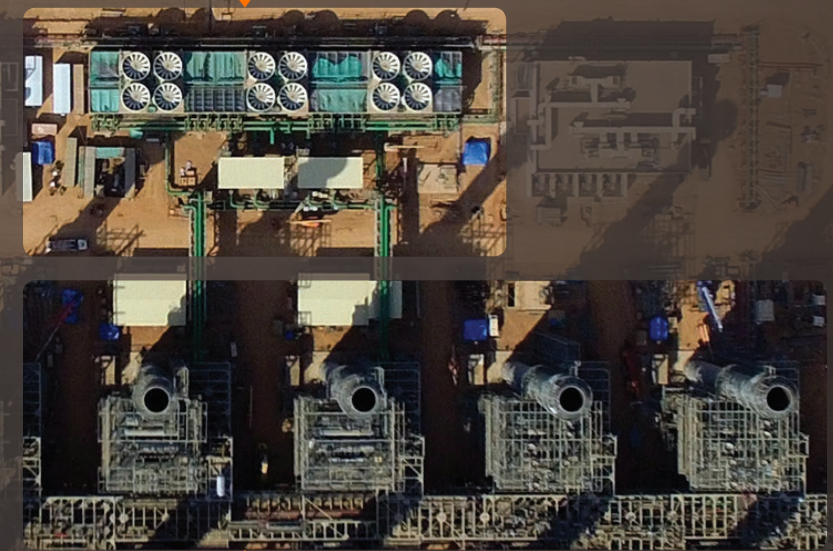
**BURIED FIRE WATER LOOP**  
System Solution for HDPE Pipe



**PLANT COOLING WATER**  
Original Groove System (OGS)  
Couplings, Fittings and Valves  
Advanced Groove System (AGS)  
Couplings, Fittings and Valves



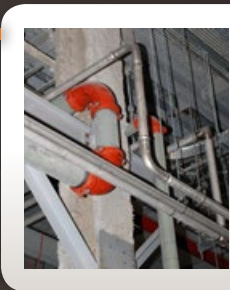
**DEMINERALIZED WATER**  
Grooved Stainless Steel System




**TURBINE LUBE OIL BEARINGS**  
Victaulic Vortex™  
Fire Suppression



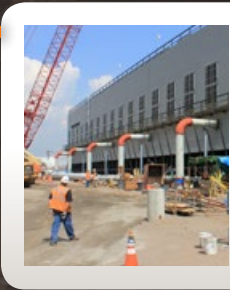
**ELECTRICAL GENERATORS**  
Victaulic Vortex  
Fire Suppression



**INSTRUMENT AIR**  
Grooved Stainless Steel System  
Vic-Press™ System for  
Schedule 10S Stainless Steel



**RAW WATER**  
Original Groove System (OGS)  
Couplings, Fittings and Valves



**COOLING TOWER**  
Advanced Groove System (AGS)  
Couplings, Fittings and Valves



New combined cycle gas plants typically have a water treatment building where Vic-Press™ Systems may be installed for air and water applications.



# HYDRO




**PLANT AND FISH BYPASS LINES**

Advanced Groove System (AGS)  
Couplings, Fittings and Valves

Style 296A Rigid Coupling  
for FRP/GRP






**PENSTOCK LINES**

Victaulic Bolted Split Sleeve  
Product (VBSP)

Advanced Groove System (AGS)



**PENSTOCK PIPING INLET AND OUTLET**

Style W257 Differential  
Settlement Joint

Advanced Groove System (AGS)

Victaulic Bolted Split Sleeve  
Product (VBSP)




**GENERATORS, OIL STORAGE  
AND MCC ROOM**

Victaulic Vortex™  
Fire Suppression



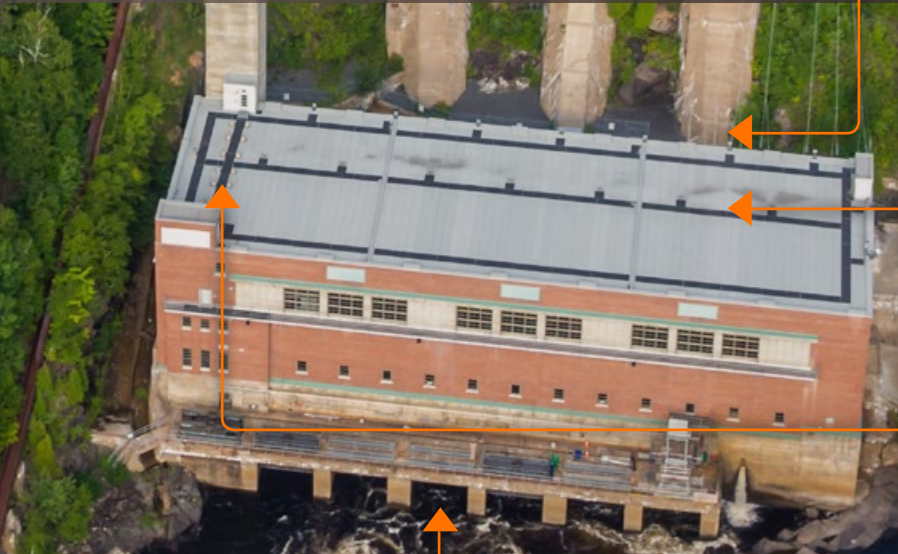
**COMPRESSED AIR, PLANT WATER,  
LUBE OIL**

Vic-Press™ System for  
Schedule 10S Stainless Steel



**OIL WATER SEPARATOR SYSTEMS  
AND SUMP**

Grooved Stainless Steel System  
including Couplings, Fittings  
and Valves





# NUCLEAR

## BOILING WATER REACTOR SHOWN



**COOLING WATER AND LUBE OIL SUPPLY**

Original Groove System (OGS)  
Couplings, Fittings and Valves

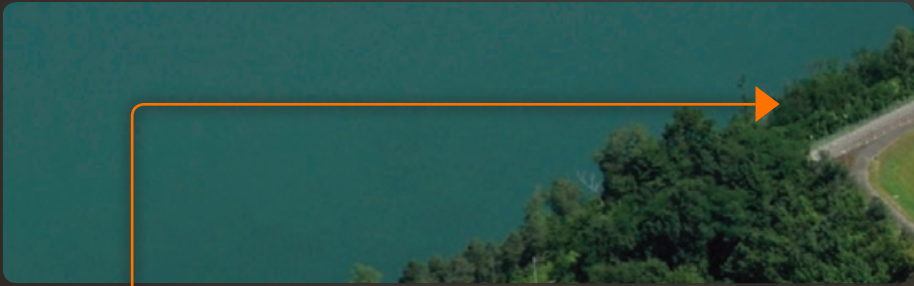
Advanced Groove System (AGS)  
Couplings, Fittings and Valves


QuickVic™ SD Installation-Ready™  
System for Plain End Carbon Steel



**STEAM TURBINE AND GENERATOR**

Victaulic Vortex™  
Fire Suppression





**RAW WATER INTAKE**

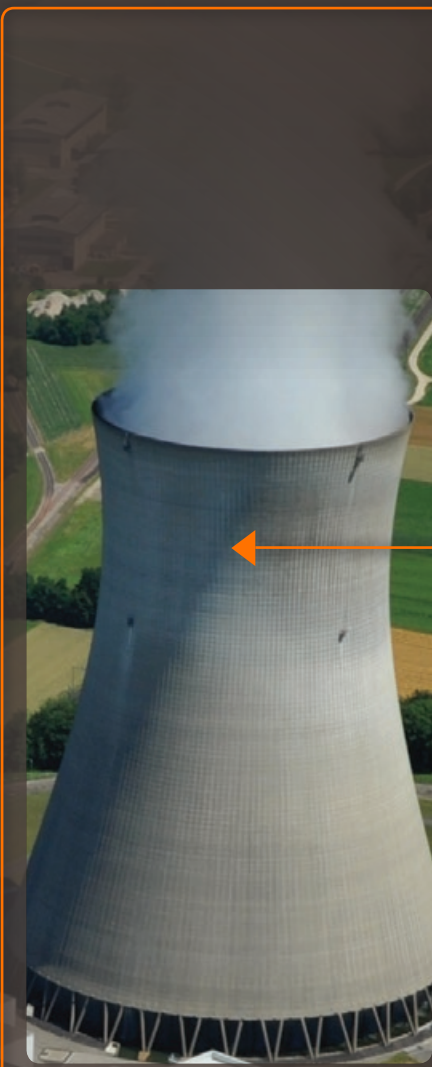
Advanced Groove System (AGS)  
Couplings, Fittings and Valves


Style W257 Differential  
Settlement Joint



**CONTROL ROOM, SWITCHGEAR ROOM  
AND BATTERY STORAGE ROOM**

Victaulic Vortex  
Fire Suppression





**EMERGENCY DIESEL  
GENERATOR ROOM**

Victaulic Vortex™  
Fire Suppression



**ABOVE GROUND COOLING WATER**


Advanced Groove System (AGS)  
Couplings, Fittings and Valves



**BURIED COOLING WATER**


Advanced Groove System (AGS)  
Couplings, Fittings and Valves

Style W257 Differential  
Settlement Joint



**BURIED FIRE WATER LOOP**

System Solution for HDPE Pipe



**INSTRUMENT AND STATION AIR**

Grooved Stainless Steel System  
including QuickVic Couplings

Vic-Press™ System for  
Schedule 10S Stainless Steel



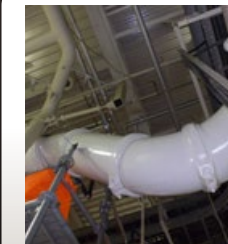
# RECIPROCATING ENGINE PLANT



**INSTRUMENT AIR, POTABLE  
AND SERVICE WATER**  
Vic-Press™ System for  
Schedule 10S Stainless Steel



**GLYCOL COOLING WATER PIPE**  
Vic-Press™ System for  
Schedule 10S Stainless Steel



**ENGINE COOLING WATER**  
Installation-Ready™ Couplings



**FIRE PROTECTION**  
FireLock NXT™ Automatic  
Valve Systems



**COOLING TOWER**  
Advanced Groove System (AGS)  
Couplings, Fittings and Valves



**BURIED FIRE WATER LOOP**  
System Solution for HDPE Pipe



# OWNER/ ENGINEER

CONCERNS FOR THE POWER GENERATING FACILITY:

Reliability

The Victaulic® system for mechanically joining pipe has been used for nearly 100 years to simplify design, construction and maintenance of water and wastewater treatment piping systems.

Space Savings

*Victaulic* couplings require little space along the pipe as bolts can be assembled from either side.

Thermal Expansion and Contraction

*Victaulic* flexible grooved couplings utilize their linear movement and deflection capabilities to accommodate for pipe movement due to temperature changes.

Self-restraining

*Victaulic* couplings require no special restraints or tie-bars as with compression coupling and mechanical joints.

System Accessibility

With 75% fewer bolts and nuts than flanges, *Victaulic* couplings are easy to assemble and disassemble. This ease of disassembly allows you to have immediate access to your valves or system.

COAL	NATURAL GAS FIRED	HYDRO	NUCLEAR	RECIPROCATING ENGINE
●	●	●	●	●
●	●	●	●	●
	●			●
		●		
●	●	●	●	●

# CONTRACTOR

CONCERNS FOR THE POWER GENERATING FACILITY:

Faster Assembly

*Victaulic*® couplings have up to 75% fewer bolts than flanges, compression couplings or mechanical joints, and is significantly faster than welding.

Lighter Weight

*Victaulic* couplings save up to 1/3 the weight of flanged joints – segmented design further eases handling, alignment and assembly.

Saves Space

*Victaulic* couplings require little space along the pipe as bolts can be assembled from either side of pipe.

Installation

*Victaulic* couplings can be rotated for ease of installation anywhere in the piping system. *Victaulic* couplings required.

Torque Rating

Most *Victaulic* couplings do not require torque. They can be installed and visually verified with pad-to-pad contact.

COAL	NATURAL GAS FIRED	HYDRO	NUCLEAR	RECIPROCATING ENGINE
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●
●	●	●	●	●



WHETHER IT'S FOR ROUTINE PERIODIC INSPECTION, PHYSICAL EXPANSION OR UNSCHEDULED REPAIRS, VICTAULIC SYSTEMS PROVIDE FASTER AND SAFER SOLUTIONS DUE TO INTRINSIC DESIGN QUALITIES.





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