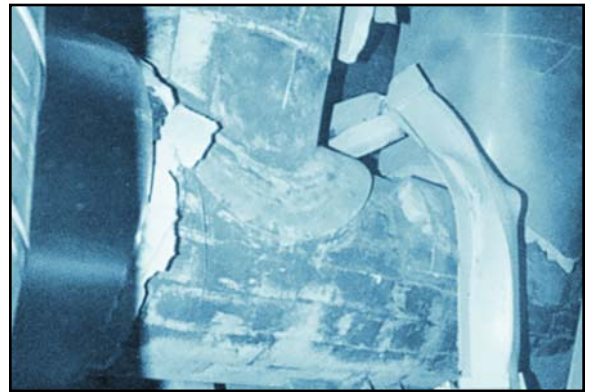


Structural failures, damaged restraints, bottomed out springs, crushed insulation and cracks in high pressure piping are often due to unanticipated loading conditions that were initiated by a particular short term system malfunction (such as water hammer) or long term issues (such as fatigue). Quite often, the root cause of a problem appears to be readily apparent, when in fact, the problem is due to complex issues that were not considered in the original plant design. In order to protect the reliability of the power plant piping systems and equipment, it is very important that existing problems are properly diagnosed and that critical systems be periodically inspected to ensure that any new problems are identified and addressed.



BURNS AND ROE CAN HELP

With over 70 years of experience, Burns and Roe has the complete capability to evaluate any type of system condition or transient event with the specific goal of protecting the piping and its associated mechanical equipment and support system.

SERVICES

What Burns and Roe Can Do To Protect the Reliability of Power Piping and Support Systems

- Plant Survey to Gather Field Data
- Mechanical System Study to Identify Load Source and Mechanism
- Develop Alternate System Solution to Preclude Water and Steam Hammer Events
- Cost Benefit Analysis
- Thermal-Hydraulic Analysis to Develop Forcing Functions
- Piping Structural Analysis to Determine Piping Responses
- Verify Acceptance Criteria for Pipe Stresses, Deflections and Nozzle Loads
- Evaluate Pipe Support Designs and Associated Structural Components
- Prepare Reports
- Provide Licensing Support



BURN AND ROE CAPABILITIES

- Mechanical system studies to identify the problem source and to develop alternate solutions to correct the problem from a system standpoint
- Detailed computer piping analysis to compute piping responses, deflections, stresses, and required supporting forces.
- Thermal-Hydraulic analysis to evaluate the physical phenomenon and to determine the dynamic forcing functions acting on the piping system
- Diagnostic evaluation of piping and equipment vibration problems including testing, data retrieval, analytical assessment, and documented resolution of the problem.
- ASME Section VIII vessel design and analysis
- Remaining life evaluation for piping and piping components
- Support/restraint design and analysis including stress evaluations at integral attachments, and structural designs
- Experienced personnel who have successfully resolved problems at fossil and nuclear power plants worldwide

A PROVEN PAST PERFORMANCE

PROJECT NAME	DESCRIPTION
San Diego Gas & Electric - South Bay 5 & 6 2x200 MW	Stress Analysis & Redesign of HRH, CRH, and Main STS Systems
Tampa Elect-Gannon Units 4, 5 & 6 190MW / 240MW / 415MW	Stress Analysis & Redesign of HRH, CRH, and Main STM Systems
Con Edison - Astoria Unit #40 240MW	Pipe Support Inspection Program for all Large Bore Piping Systems on Existing Plant
Big Rivers Electric D.B. Wilson Station 440MW	Status Piping Supports on HRH, CRH, MN STM, Aux STM, & Condensate Systems
Florida Power & Light - Port Everglades 200-400MW	Redesign and Replacement of Hot Reheat Piping on Existing Plant
Con Edison - Waterside Unit # 6 400MW Non-Cond	HP Turbine Replacement - Main STM leads (1000F) and Crossover Piping
Seminole Electric # 1 and 2 2 x 600MW	Replace HO and LP Turbine Bypass Piping (1000F, 24" pipe)
El Paso Bayonne Aux. Boiler Addition 175MW	Add 4 Aux Boilers to Existing Plant
Con Edison - Indian Point #2 1000MW	Replace Wet Steam Piping, FW Htr Tubes, Gland Steam Condenser
Orange and Rockland 1 X 450MW 2 x 600MW	Retrofit 4 Boilers with New Pressure Parts, Burners, Ductwork, Controls
Indian Point # 3 1000MW	Extraction Steam Pipe, Wet Steam, Feed Water, etc., Piping Replacement
Dayton Power and Light, Hutchings Station 200MW	Replace Sections of Main Steam Piping
Florida Power and Light, Cape Canaveral, Fort Myers 400MW / 400MW	Design Replacement Steam Drains to Eliminate Condenser Nozz Cracks
Cogen Technologies - Linden Bayway Plant 690MW	Redesign and Stress Analysis of Main Steam and Other Large Bore Systems
Cogen Technologies - Camden Plant 240MW	Redesign and Stress Analysis of Turbine Bypass System (1000F, Large Bore)
Danskammer Station 240MW	Steam Line Modifications and Fuel Retrofit
Merck West Point - Cogen Project 40MW	Added Cogen Unit and Package Boiler and All Related Piping to Existing Plant
Rutgers Cogen 14MW	Addition of Cogen Unit. HRSG and Related Piping to Existing Plant
University of Medicine and Dentistry of NJ Cogen 11MW	Upgraded Existing Boiler PLT/Piping
Princeton Cogen 16MW	Added Related Tie-In Piping to Existing Plant
Cogen Technologies - Bayonne Plant 400MW	Existing IP Steam Line Analysis