Nuclear Plant
Noise insulation packages
Boët Stopson capabilities
Global supply for nuclear power plant

1 - Noise survey
- Mapping service
- Acoustical analysis
- Acoustical pulsations and vibrations
- Analysis in piping systems
- Acoustical filtering technics
- Pressure and thermal loads analysis
- Simulations of noise treatment solutions

2 - Acoustic treatment
- Steam vent silencers
- Air intake and discharge silencers
- Machine enclosures
- In line silencers
- Gas vent silencers
- Doors, Louvres...
- Diesel engine exhaust gas system
- Engine air intake system
- Filtering system
Acoustic and mechanical design of diesel & gas engines exhaust systems

By means of an acoustical plane-wave simulation model, the low frequency acoustical performance of the exhaust silencer is optimised using acoustical filtering technics.

This simulation also addresses the flow pressure drops which contribute to the system overall performance.

Using a FE analysis, the mechanical design of the supporting including the flexible mounts and the expansion joint is optimised against the following loading:
- Gravity
- Thermal expansion
- Engine vibration excitation
- Fatigue, operation and proof “G” loading for transportation application
- Seismic load for standing application

Boët Stopson’s full piping simulation
Boët Stopson’s thermic and aerodynamic simulation
Challenges to be overcome by Boët Stopson

Deliver environmental and functional design. A facility to warranty efficiency and reliability of back up cooling system for nuclear reactor.

Boët Stopson value proposition
Designing, manufacturing and supplying noise insulation package with functionality and performance meeting following criteria:

- Designed and built to deliver long life modular solutions without compromising quality
- Manufactured in France with the capability to locally source from design through to final acceptance
- Competitively priced solutions driven by lean manufacturing,
- Having the resources to measure and validate as installed performance ensuring fit for purpose.
- Ranking functional safety: IPS NC, seismic classification : 0,40 g
- Resistance to a shock wave, tornado
- ISO 9001 compliance
- Eurocode, B2 according CODAP 2005, electrical Standard : IEC

Boët Stopson Acoustics design optimization
Complete noise insulation packages

Routing for air intake and exhaust gas with:

- Air filter box
- Pipeworks with expansion joints and mounting
- High attenuation silencer

- Optimized design
- Fully integrated
Boët Stopson as a reliable vendor for complete noise insulation packages with a proven track record with many companies in the nuclear.

French project management and manufacturing presence, delivery and service capabilities:

Boët Stopson project team from order through handover

Boët Stopson Design to Cost Process

1. CUSTOMER TECHNICAL SPECIFICATION
2. SPECIFICATION ANALYSIS/FUNCTIONS LIST
3. QUALITATIVE & QUANTITATIVE CRITERIA FOR EACH FUNCTION
4. SOLUTION PROPOSAL
5. COST EVALUATION FOR EACH SOLUTION VALUE

GOAL

Schedule

Manufacturing

Quality
## Boët Stopson track record - nuclear and power generation

<table>
<thead>
<tr>
<th>Plant/final customer</th>
<th>Application</th>
<th>Description</th>
<th>Delivery Date</th>
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<tr>
<td>Flamanville, Tricastin, Dampierre, Gravelines, Le Blayais, Paluel, Cruas, Creys, Malville</td>
<td>Relief Valve</td>
<td>Design, engineering and manufacturing of vent silencers for Nuclear Power Plants</td>
<td>1976 to 2010</td>
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<td>Finland Olkiluoto</td>
<td>Diesel Engines</td>
<td>Design, engineering and manufacturing of 2 Air Intake Silencers</td>
<td>2008</td>
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<td>Flamanville 3</td>
<td>Diesel Engines</td>
<td>Design, engineering and manufacturing of 2 Air Intake Silencers and Exhaust Silencers</td>
<td>2009</td>
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<td>Flamanville</td>
<td>MSVR Valves</td>
<td>Design, engineering and manufacturing of 4 GCT Atmospheric Vent Silencers</td>
<td>2010</td>
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<td>Fuqing</td>
<td>Relief Valves</td>
<td>Design, engineering and manufacturing of 8 in line Silencers</td>
<td>2010</td>
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<td>Lungmen 6 Taiwan</td>
<td>Diesel Engines</td>
<td>Design, engineering and manufacturing of 5 Air Intake and Exhaust Silencer</td>
<td>2002</td>
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<td>Tarapur India</td>
<td>Diesel Engines</td>
<td>Design, engineering and manufacturing of 4 Exhaust Silencers and associated piping</td>
<td>2003</td>
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<td>Kudam Kulam India</td>
<td>Diesel Engines</td>
<td>Design, engineering and manufacturing of 20 Air Intake and 10 Exhaust Silencers</td>
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<td>Diesel Engines</td>
<td>Design, engineering and manufacturing of 6 Air Intake and Exhaust Silencers</td>
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<td>Lungmen 7 Taiwan</td>
<td>Diesel Engines</td>
<td>Design, engineering and manufacturing of 2 Air Intake and Exhaust Silencers</td>
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<tr>
<td>Flamanville 3</td>
<td>Diesel Engines</td>
<td>Design, engineering and manufacturing of 8 Air Intake and 4 exhaust Silencers</td>
<td>2009</td>
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