

We make you smile!



NES
INC.

METAL EXPANSION JOINTS
NONMETAL EXPANSION JOINTS
LEAKLESS DAMPERS
3-WAY DAMPERS

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We make your smile!



CEO Greetings



“

Welcome to visit our company

NES has manufactured expansion joints, dampers, ducts and vessel/tanks for industrial plants and power generation facilities in Japan and the Middle East. Our products have earned the reputation for high quality and technological excellence which originated from Korea Q&Tech, a company established in 2001.

Obtained patents for the integral expansion joints and damper system, we deliver the highest quality of products to our customers on time at a reasonable price. We guarantee to continuously serve you as your valuable business partner for mutual growth and success. Since we began operations, we have always been committed to providing the best Before Service and After Service to all our customers.

CEO
JOUNG,
HYUN-CHOUL

Vision

Nes is an industrial plant / power plant specializing in providing the best service with excellent technology and the best quality.

Our main items are DAMPER, EXPANSION JOINT, DUCT, VESSEL / TANK, and we are maximizing our production capacity with steady facility investment.

Sales and demand are also steadily rising. In addition to major production items, orders for facilities / products continue to rise.

Among the supply items, LEAKLESS DAMPER has been proved by the production technology different from other companies and the EXPANSION JOINT is also being recognized by the customers for the differentiation of the molding method and conducting sales activities.

Also, We are making technological innovation through active investment in R & D.

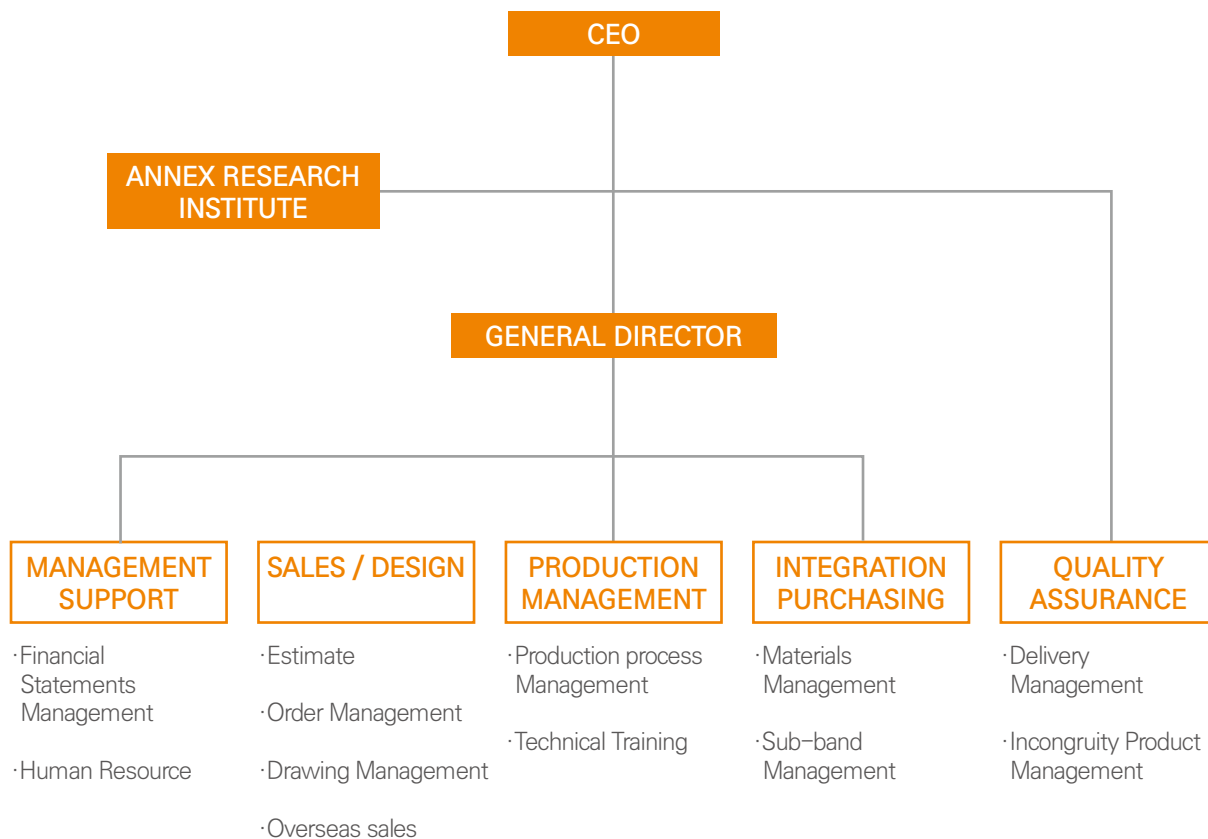
History

2001.07	ESTABLISHED KOREA Q&TECH
2001.08	REGISTERED AS EXPANSION JOINT SUPPLIER FOR BUSAN LOCAL PROECUEMENT
2002.01	RELOCATED FACTORY : CHEON-GOK-RI, JUCHON-GIMHAE-SI, GYEONGSANGNAM-DO, KOREA
2005.05	EXTENDED THE FACTORY BUILDING AND RELOCATION : GIMHAE CITY, JUCHON-MYEON NAESANGRI
2010.04	EXTENDED THE OFFICE AND PRODUCTION SITE COMPLEX
2011.11	MOVED TO NEW COMPANY AND ESTABLISHED NES CORPORATION
2012.01	ACQUIRED PATENT FROM THE KOREAN INTELLECTUAL PROPERTY OFFICE - CORRUGATED TUBE INTEGRAL TYPE DAMPER
2013.11	ACQUIRED CLEAN SITE CERTIFICATION
2014.03	ACQURED ISO9001 CERTIFICATION
2014.05	ESTABLISHMENT OF A CORPORATE SUBSIDIARY RESEARCH INSTITUTE
2017.06	REGISTER OF MECHANICAL EQUIPMENT WORKS
2017.10	AUTHORIZATION OF INNO BIZ
2018.03	AUTHORIZATION OF VENTURE BUSINESS
2018.05	PATENT REGISTRATION BY THE PATENT OFFICE - 4 CASES

Status of Company

COMPANY NAME	NES INC.
AREA OF COMPANY	LAND 4,300m ² , FACTORY SPACE 1,980m ²
PRESIDENT	JOUNG, HYUN-CHOUL
CAPITAL	₩ 500,000,000
SALES	₩ 5,000,000,000
FOUNDATION	NOV 24, 2011
EMPLOYEES	21 PERSONS

Organization



Factory Overview









Factory Overview





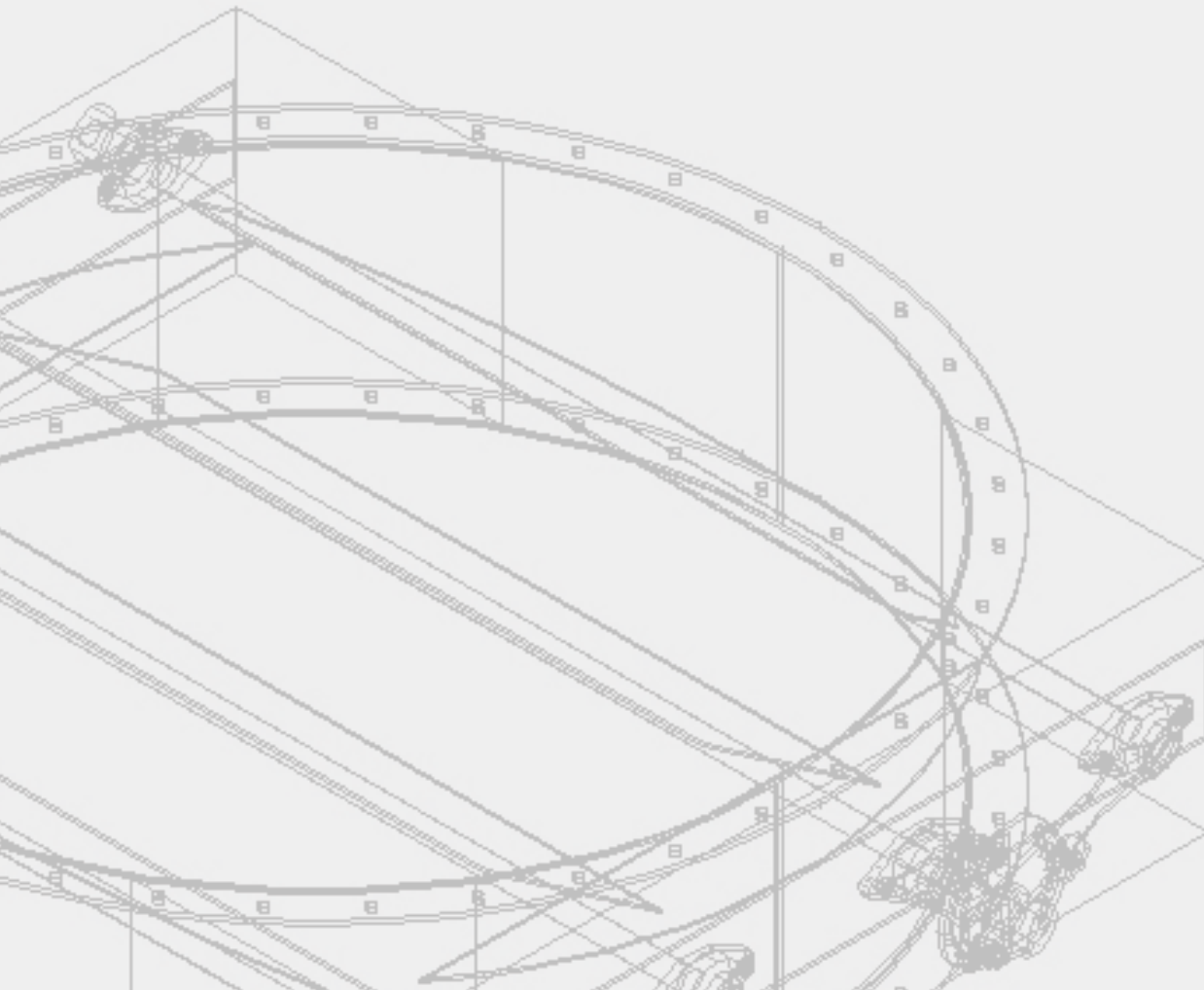
Products

· EXPANSION JOINT

- ① METALLIC
- ② NON-METALLIC
- ③ FLEXIBLE HOSE

· DAMPER

- ① MANUAL
- ② LEAKLESS DAMPER
- ③ HIGH TEMPERATURE DAMPER
- ④ 3-WAY AUTO DAMPER
- ⑤ AIR SEAL DAMPER
- ⑥ DAMPER FOR SCR
- ⑦ POPPET DAMPER



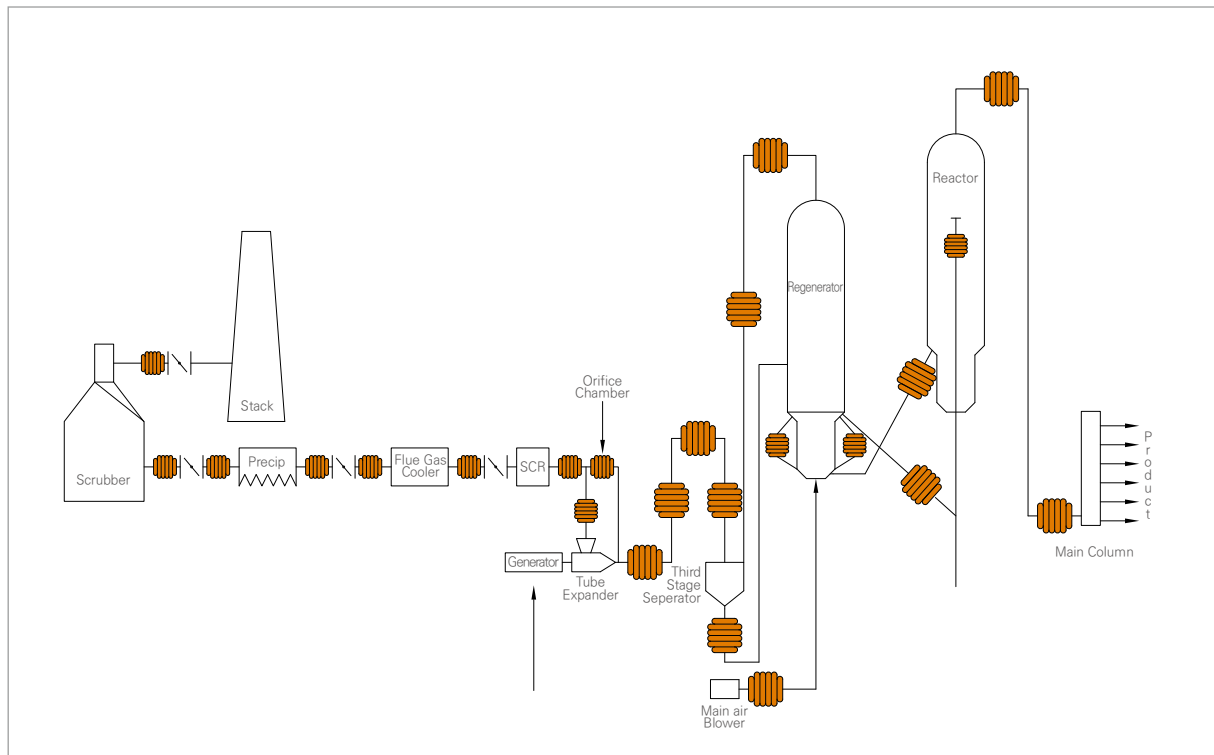
Expansion Joint Applications

Expansion joints are a vital part in many industries and plant types.

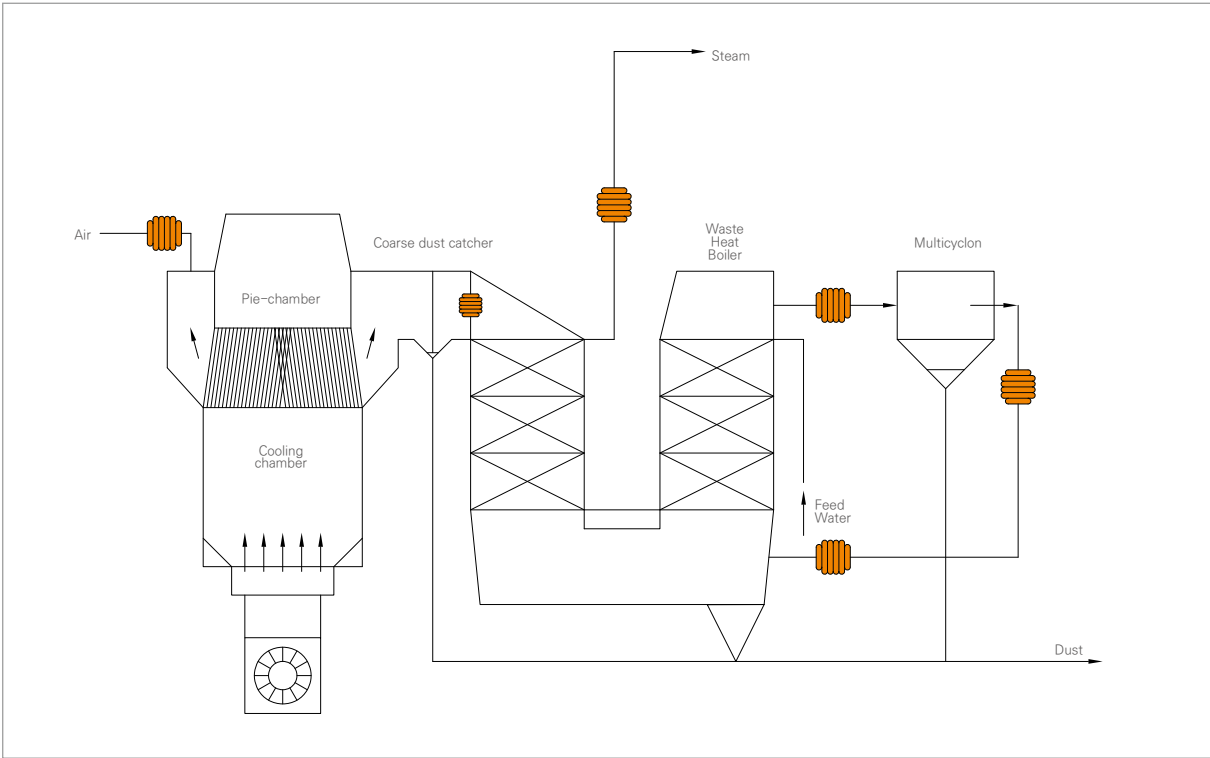
Below we have illustrated the use of expansion joints in some selected plant types.

For more information on the plant types and the optimal expansion joint types for them.

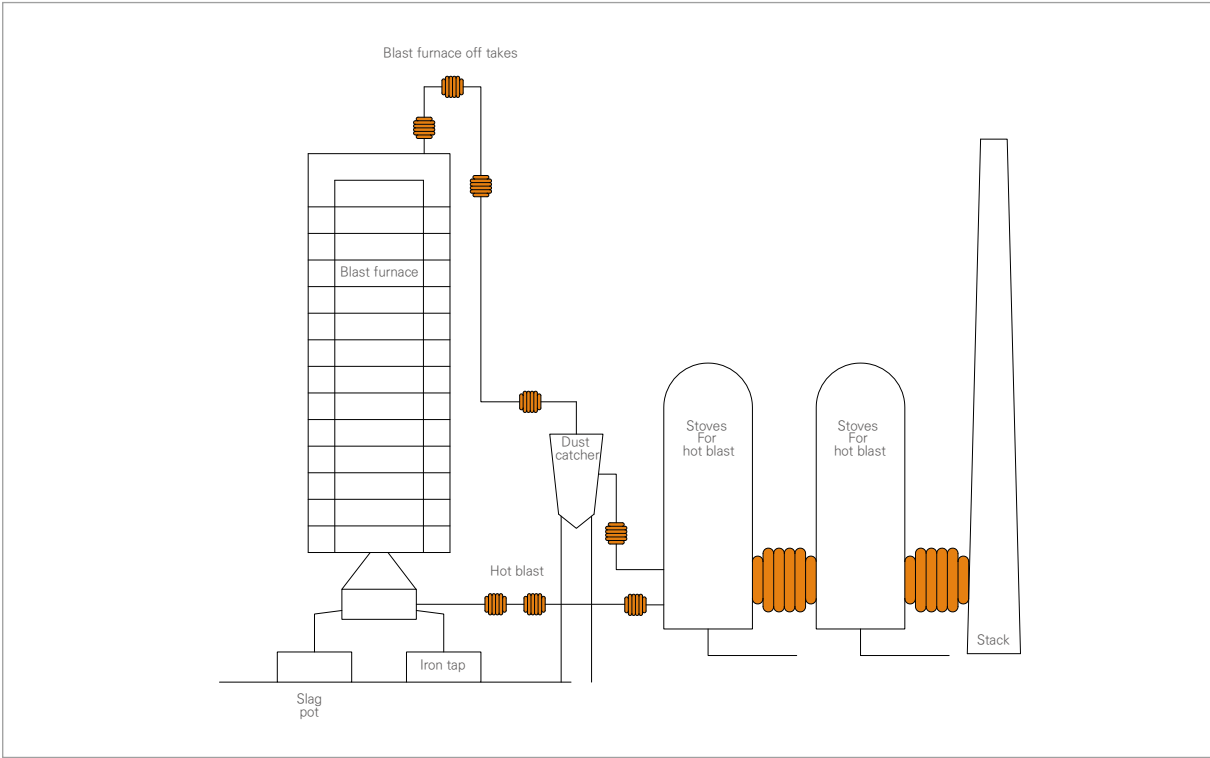
FCCU plant



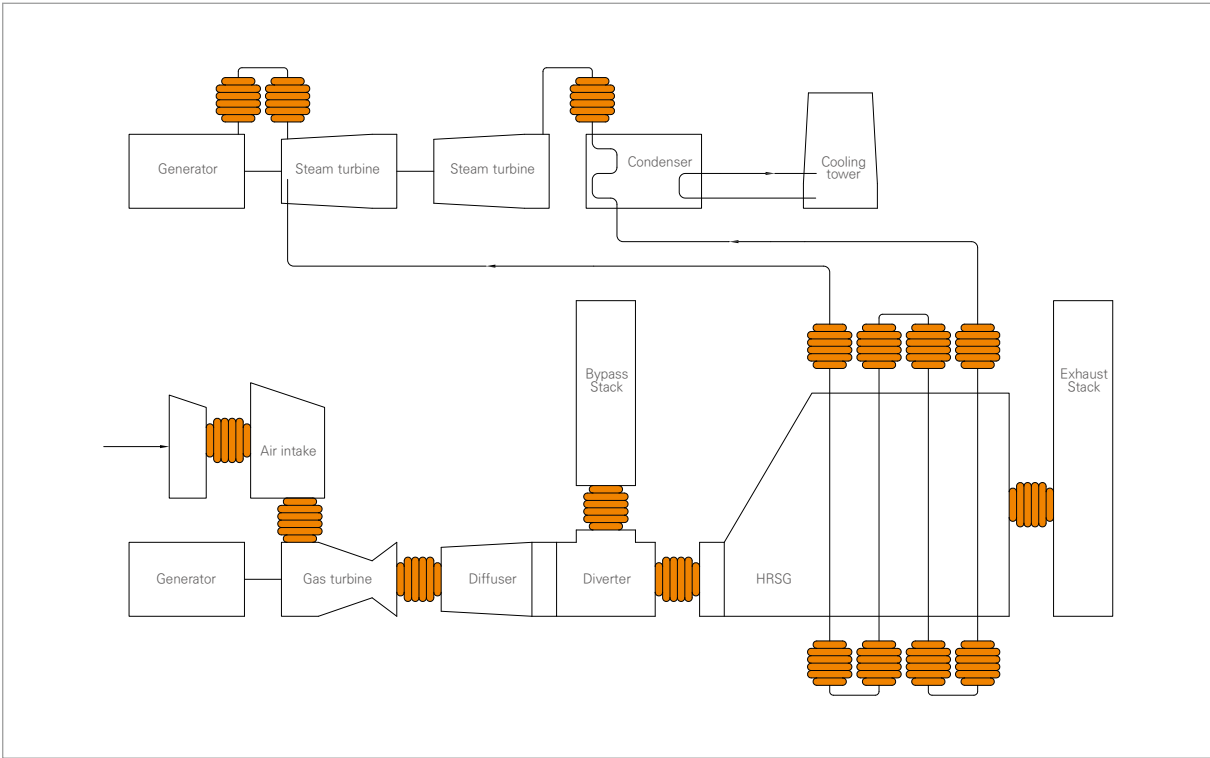
Steel plant



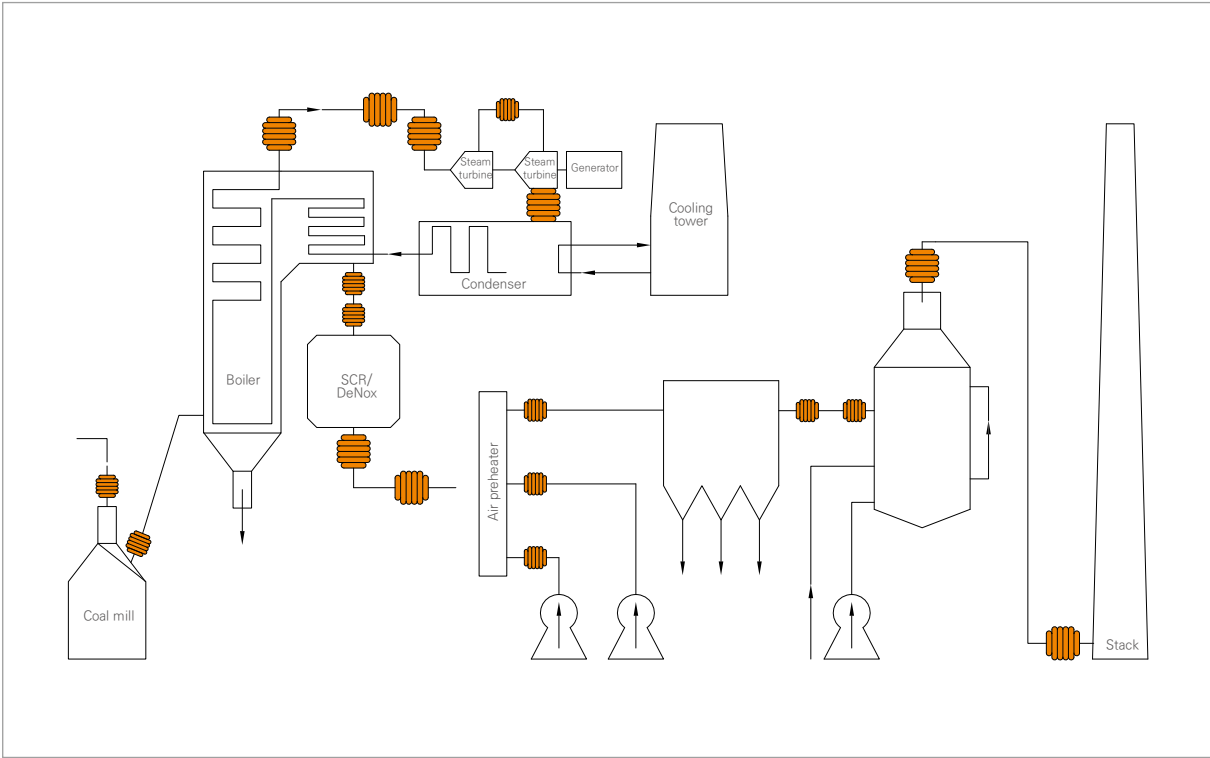
Blast furnace



Combined cycle power plant



Conventional power plant



Metal Expansion Joint

Major Functions / Features

Having the ability to compensate for axial movements and with its simple and compact overall dimensions, expansion joints are very widely used within a range of applications.

They are especially common in long pipe runs, examples of which would include exhaust systems, ventilation and flue gas systems, district heating, steam, oil and gas pipe systems.



Single Unreinforced

•Single Unreinforced Metal Expansion Joints



Single Unrestrained absorbs all movement caused by thermal and mechanical expansion. Bellows shapes are molded into welded thin plate U-shape. The design is

based on EJMA 10th edition to produce the optimal shape.

Weld End Type



Flange End Type



Universal Unreinforced

•Universal Unreinforced Metal Expansion Joint

The universal expansion points allow a Large amount of lateral offset in multiple plans, and the material deflation can be introduced or Decreased by changing the length of the the intermediate pipe Universal expansion points do not use Tie rods, and are therefore capable Only for low pressure applications. Fix points and guys must be effectively designed to stand the full pressure thrust forces and other loads. an. universal expansion point is not to be confused with a material expansion point.



Weld End Type



Flange End Type



Single Tied

•Single Tied Metal Expansion Joint



As Tied expansion joints absorb movements in lateral directions in one or more planes, and absorb adjusting forces, they are widely used in more complex pipe systems with many different directions and levels. Tied expansion joints make possible the absorption of movements which are perpendicular to the longitudi-

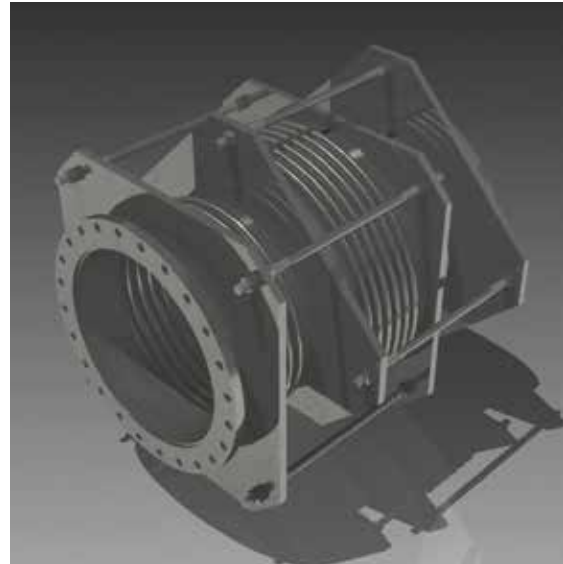
nal direction of the pipeline, and are therefore ideal for installation in pipe systems with bends, Z shaped pipe systems and in 3 hinged systems. Tied expansion joints can be used as tank settlement bellows, vibration absorbers and in all pipe systems with bends or a change in the pipe direction.



Universal Tied

•Universal Tied Metal Expansion Joint

Typically, this product is produced using multiple Bel-lows machined in the form of TIE-ROD ASS'Y is at-tached to an undetectable universal type product de-signed to absorb the thrust on the instrument by an expansion joint.The design is based on EJMA 10th edition to produce the optimal shape.



CYLINDER TYPE EXPANSION JOINT

Supported by a cylinder with internal pressure thrust mounted on the side of the bellows and designed to allow individual bellows to absorb single-way axial displacement of the piping into each displacement. Two bellows are usually used as a group.



GIMBAL TYPE EXPANSION JOINT

Gimbal expansion joints are designed to absorb angular movements in several planes without transferring pressure thrust on to the fixed points. A gimbal expansion joint is more flexible than a hinged expansion joint as the gimbal enables multiple angular rotations.



Reinforced Expansion Joint

Ring reinforced expansion joints with equalising rings and reinforcing ring bellows are usually chosen for high-pressure installations. Equalising rings are solid stainless steel rings fitted externally on the bellows of the ring reinforced expansion joints. The rings are precisely machined so they fit into the root between each of the bellows convolutions. The purpose of the rings is to reinforce the bellows against internal pressure. By adding moment of inertia to the bellows cross section, this counteracts the bellows ability to blow out or buckle (also called squirm) and enhances its stability and pressure integrity. Bellows with reinforcing rings can be made for any type of expansion joint (axial, lateral or angular etc.) The disadvantage of the ring reinforced expansion joints having reinforced bellows are the significantly increased stiffness of the bellows and their limited movement properties.

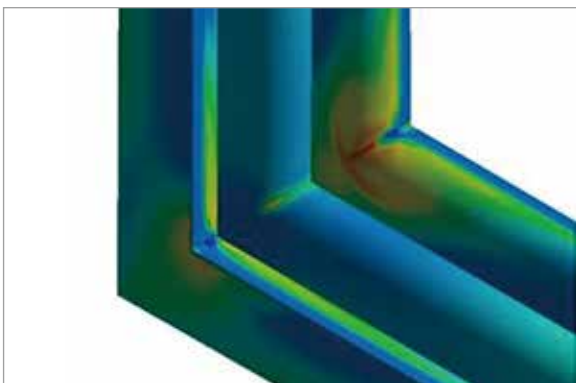
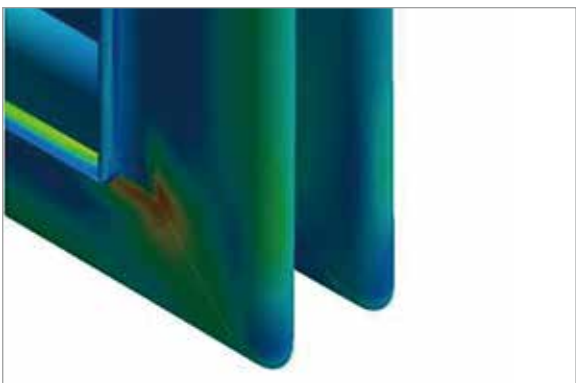
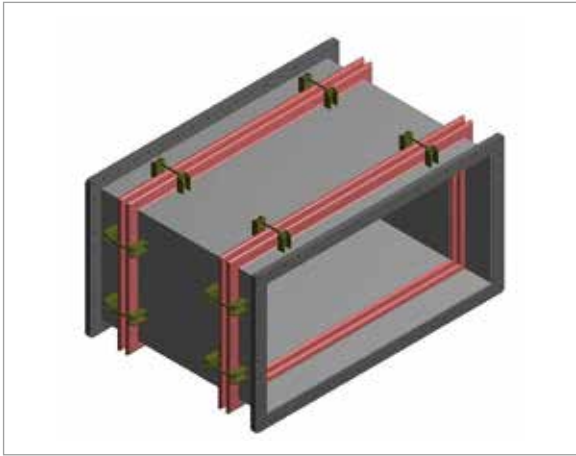


EXPANSION JOINT - RECTANGULAR

•Miter Corner Type Expansion Joint



Generally, this product is manufactured using Bel- lows, which are processed to match calculations in the "U" and the "V". This product is designed to absorb thermal expansion of large rectangular duct lines at high temperature and low pressure, and to absorb displacement or vibration during operation of bag- house, exhaust duct, blower, etc.The design is based on EJMA 10th edition to produce the optimal shape.

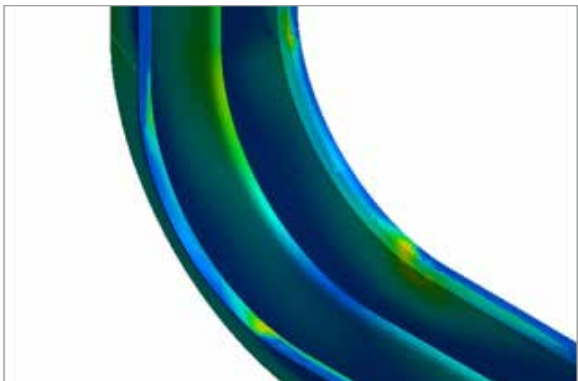
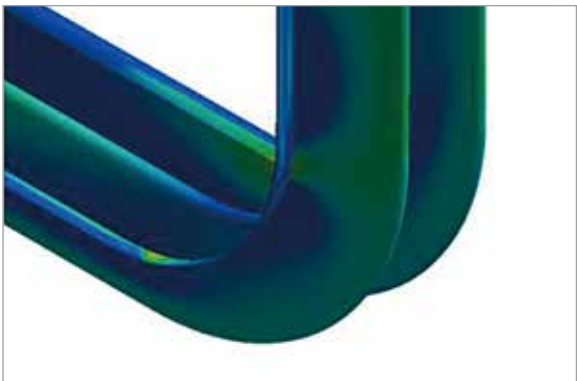


EXPANSION JOINT – RECTANGULAR

·Round corner Type Expansion Joint



Generally, this product is manufactured using Bel- lows, which are processed to match calculations in the “U” and the “V”. This product is designed to absorb thermal expansion of large rectangular duct lines at high temperature and low pressure, and to absorb displacement or vibration during operation of bag- house, exhaust duct, blower, etc. The design is based on EJMA 10th edition to produce the optimal shape.



EXPANSION JOINT

·Pressure Balance Type



If the diameter of the pipe is large and the high pressure is applied, fixed points shall be installed to absorb thrust caused by internal pressure, which is sometimes used when it is difficult to install the an-

chor point or when it is necessary to consider that the nozzle does not exceed thrust, and types L and S are used depending on the location of installation of the product.



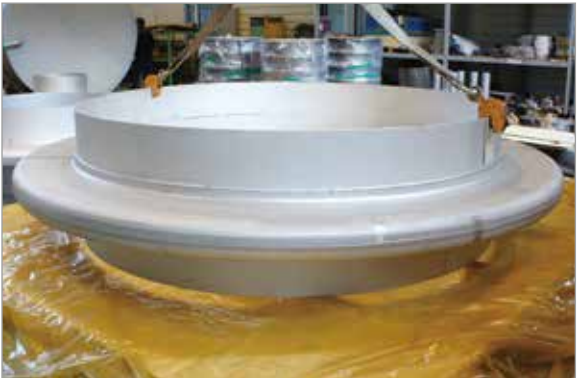
EXPANSION JOINT

•TEMA Bellows



TEMA Bellows is mainly used in heat exchanger and Daegu diameter pipe systems. Bellows are typically made of A516 grade 70 material or different materials depending on where they are used or the piping envi-

ronment, and the thickness depends on the design conditions. Unlike normal Bellows, it is characterized by thick build.

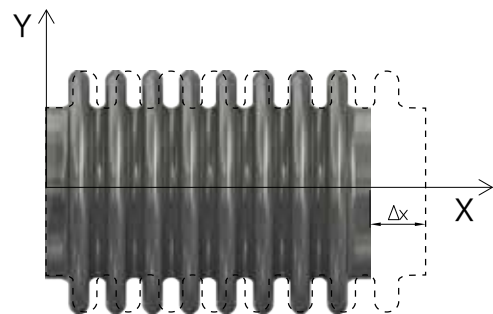




MOVEMENTS

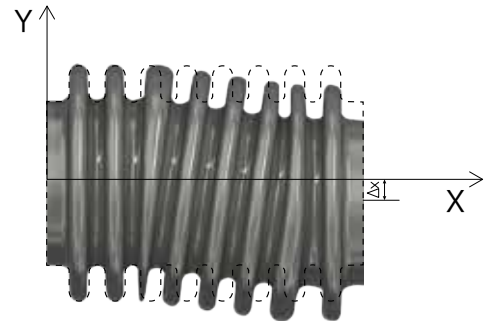
•Axial movement

Lateral movement is movement perpendicular to the bellows longitudinal axis; it is a shearing movement of the bellows with one end offset from the other, usually with the ends of the bellows remaining parallel to each other. A single bellows expansion joint, working with a shearing action, can accept a relatively limited amount of lateral movement, especially when the flow characteristics of the system demand that an inner sleeve is necessary. For larger lateral movement capability, it is usual to utilise a twin bellows arrangement with an intermediate pipe between the bellows, the expansion joint lateral movement is taken up by an angular rotation of the bellows in opposite directions. The amount of lateral movement available depends on the rotational movement capacity of each bellows and the distance between them, increasing the distance between the bellows increases the lateral movement capability of the expansion joint proportionally.



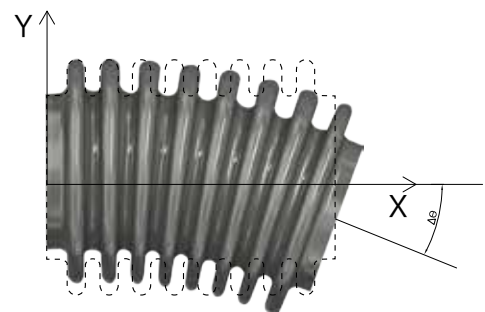
•Lateral movement

Angular movement is the rotation of the bellow's longitudinal axis at one end relative to the other, the axis of rotation is taken at exactly the midpoint of the bellow and perpendicular to the longitudinal axis. Expansion joints using angular movement to control pipe system expansion are almost always used in pairs, sometimes combined as part of a twin bellows unit and sometimes in sets of 2 or 3 in pinned restrained expansion joints. The intelligent use of the angular capability of the bellows can enable a large amount of movement to be absorbed. In particular, pinned units used in 2-pin or 3-pin arrangements can convert pipe growth into angular rotation and control the expansion from 2 directions and in 2 planes. It is important not to confuse angular rotation with torsion. Torsion is a twisting rotational movement around the longitudinal axis; it generates undesirable shear forces within the bellows and its influence on the bellows should always be avoided. Please refer to the section about torsion.



•Angular movement

Angular movement is the rotation of the bellow's longitudinal axis at one end relative to the other, the axis of rotation is taken at exactly the midpoint of the bellow and perpendicular to the longitudinal axis. Expansion joints using angular movement to control pipe system expansion are almost always used in pairs, sometimes combined as part of a twin bellows unit and sometimes in sets of 2 or 3 in pinned restrained expansion joints. The intelligent use of the angular capability of the bellows can enable a large amount of movement to be absorbed. In particular, pinned units used in 2-pin or 3-pin arrangements can convert pipe growth into angular rotation and control the expansion from 2 directions and in 2 planes. It is important not to confuse angular rotation with torsion. Torsion is a twisting rotational movement around the longitudinal axis; it generates undesirable shear forces within the bellows and its influence on the bellows should always be avoided. Please refer to the section about torsion.



Non-Metal Expansion Joint

Major Functions / Features

Various materials are designed and constructed in accordance with the installation location and conditions, and are highly flexible and have very little limitations in shape. A flexible connected medium that absorbs all movement caused by temperature changes and provides stability to the piping system. Non-metallic joints should be designed to be well adapted to a variety of expansion capacities and temperature changes from time to time, so that designers can reflect various ducts and pipe lines in the design to protect the equipment from shrinkage, expansion, vibration, internal and external pressures, and to protect the entire factory's industrial facilities. Manufactured from a wide range of non-metallic materials, including synthetic rubber, fiber, insulation, and fluoride, depending on the design conditions.



Application Field

1. Power Generation
 - a. Coal or Oil Fired Plants
 - b. Gas Turbine Plants
 - c. Cogeneration Plants
 - d. Nuclear Power Plants
2. Pulp. and Paper Plants
3. Refineries : a. Petro-Chemical / b. Chemical
4. Steel Mills
5. Foundries
6. Smelters
7. Cement Plants
8. Kilns
9. Refuse Incineration
10. Marine
11. Vapor / Heat / Dust Recovery
12. Food Processing
13. HVAC(Heating, Ventilating and Air Conditioning)

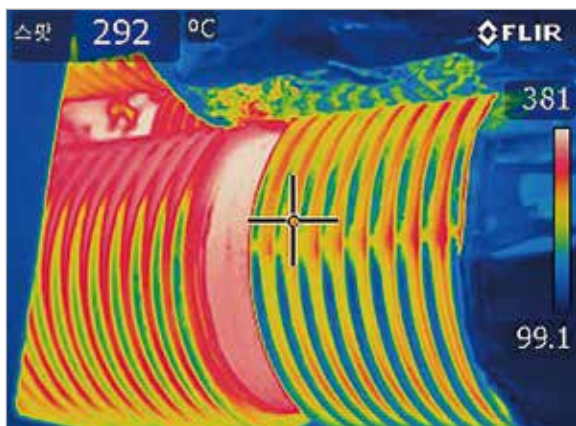


Non-Metal Expansion Joint

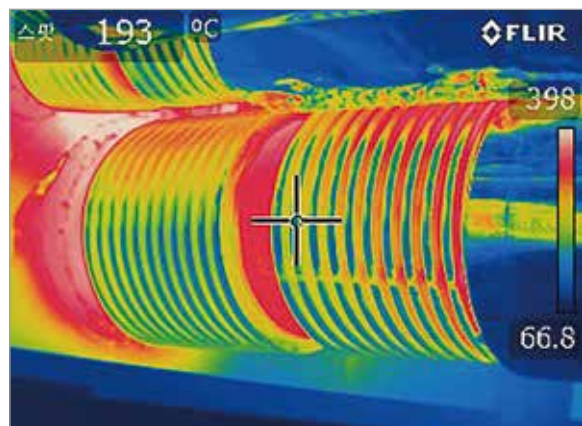
·Fabric



Dissipation column before installation



Dissipation column after installation





NonMetal Expansion Joint

•Rubber

In order to provide a complete range of flexible products to our customers we also supply rubber expansion joints. To complement our core competence in steel expansion joints we have formed a partnership with an experienced and skilled partner specialising in the design and manufacture of rubber expansion joints. This enables our customers to confidently place an order for all their flexible products from us as a convenient single source of supply.

Advantages:

- * Optimum solution with short installation lengths able to absorb large movements due to high flexibility
- * Capable of absorbing axial, lateral, angular and torsional movements in combination
- * Reduces the effects of water hammer

A rubber expansion joint is a flexible unit manufactured from natural or synthetic elastomers or fluoroplastics. The structure comprises a flexible reinforcement using nylon and aramid fabrics and sometimes even steel. Where pressure/temperature conditions permit, rubber expansion joints provide a good solution for the absorption of movements, damping vibrations and noise for the benefit of the pipework and its associated equipment.

- * Safe, reliable, durable and maintenance free
- * Chemical and corrosion resistant
- * High flexibility/low stiffness
- * Vacuum and pressure proof
- * Can accommodate pipe misalignment
- * Can be used to dampen vibrations and reduce noise levels in pipe systems





DAMPER

Major Functions / Features

The damper which installed in the pipe or duct line adjusts fluid volume.

Damper's blade angle is adjustable by using the blade's on/off function and position sensor.

NES manufactures high-quality dampers which are durable and can minimize the leak rate.





Leakless Damper

The Leakless Damper is the most widely used type of damper and is installed in piping or duct lines to regulate or block the amount of fluid. Features the on/off function of the braid and the damper's braid can be adjusted by angle through the positioner sensor.







3-Way Damper

The 3-WAY Damper is the most widely used type of damper and is installed in piping or duct lines to regulate or block the amount of fluid. Features the on/off function of the braid and the damper's braid can be adjusted by angle through the positioner sensor.



High Temperature Damper

•Castable Type Damper

The high Temperature Damper regulates the fluid at high temperatures above 600°C and 1000°C.It should be constructed in a seamless structure that serves as a barrier.

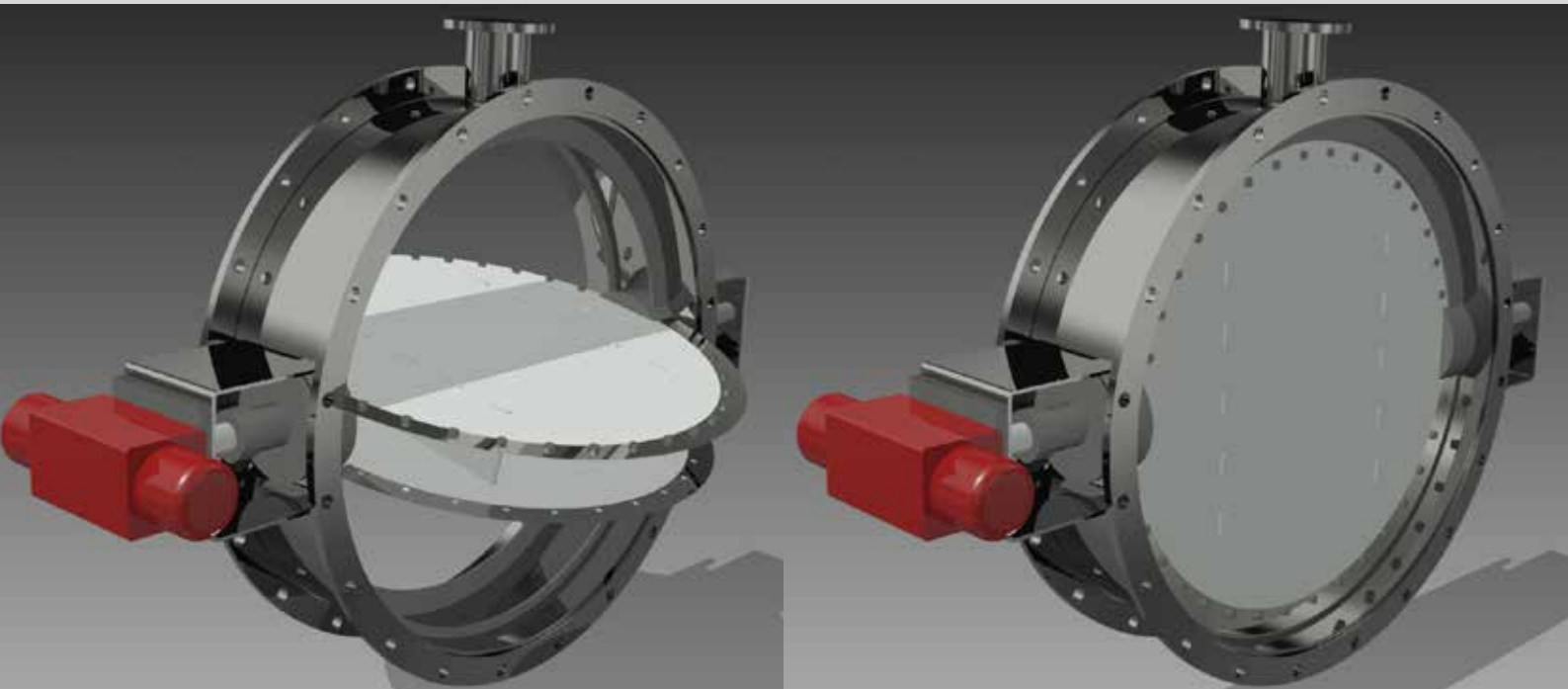


High Temperature Damper

•Ceramic Type Damper

The high Temperature Damper regulates the fluid at high temperatures above 600°C and 1000°C.It should be constructed in a seamless structure that serves as a barrier.





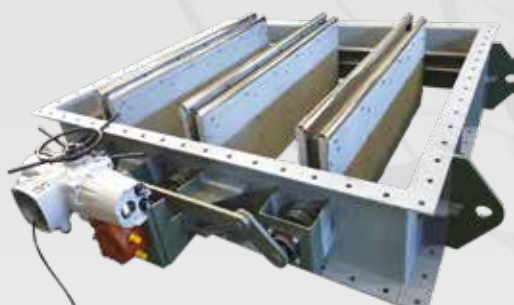
Seal Air Damper

Damper valves type tandem or double blade execution are of welded construction and are designed as 100% tight valves to shut-off media such as air, process gas, etc.

Such gas tight shut-off applications are required in flue gas desulphurisation, dust extraction of furnaces, utilisation of SO₂, SO₃, NO_x as well as for air tight sealing of production processes in smelters, chemical

and paper industry, glass smelters, non-ferrous metals smelters, etc.

Due to their material selection, precise execution and control technology these dampers have to be important and reliable components of a plant and are subject of technical tests, especially concerning their tightness.





Damper for SCR

Through aggressive technology development investment and design, NES contributes to customer needs and product production, which has led to a lot of results in Boiler, HRSG and FGD projects. Boiler & HRSG Damper Boiler Damper must be designed with high temperatures in mind. Installation of Insurance & Liner or Castable construction is also required. To prevent heat deformation, Thermal Expansion and Blade Deposition should be considered first. Boiler Damper in EnysWe have a lot of technical skills in design. FGD Damper The desulfurizing facility con-

sists of an inlet damper, an outlet damper and an emergency bypass damper. Due to gases containing sulphur, all exposed areas are filled with high alloy with high corrosion resistance. The Seal Air System is also required to prevent leaks in the Damper. This Seal Air System includes several instruments to maintain the temperature, such as the Steam Heater and the thermostatic valve, and the Steam Trap, Temperature Transmitter, Pressure Transmitter and Temperature Element to remove the condensate from the Steam Heater.

POPPET Damper

The Poppet Damper can be used as a valve and is sometimes used as a Vent Damper to prevent explosions by receiving signals of temperature or pressure.



DUCT



ETC.



Manufacturing Equipment

Major Functions / Features

Based on years of accumulated performance and technology, differentiated services are provided to CAE analytical fields in machine, piping and design manufacturing. Pipe stress analysis, Support Detail drawing, Pipe support design, and Support member structural analysis.

EJMA / ASME / JIS / KS / ETC



Products

Bellows Forming Machine

[Patent NO. 10-1901529]



With our own development technology, we independently develop and automatically produce Bellows molds in a way that is more productive and less damaged than existing products.



Quality Assurance System

Expansion Joint vibration test



Expansion Joint vibration test



Life Cycle Test



Damper leakage quantity test



Bellows Angular test



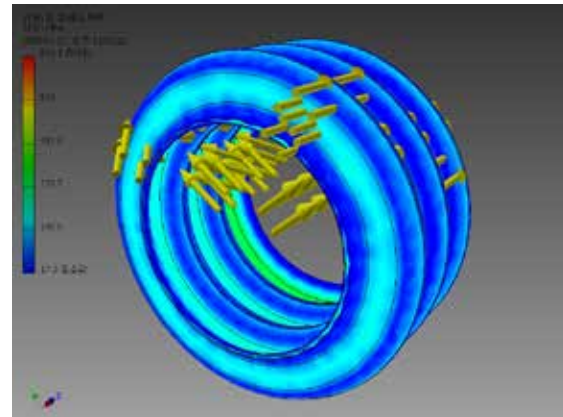
Quality Assurance System

Major Functions / Features

Based on years of accumulated performance and technology, differentiated services are provided to CAE analytical fields in machine, piping and design manufacturing.

Pipe stress analysis, Support Detail drawing, Pipe support design, and Support member structural analysis

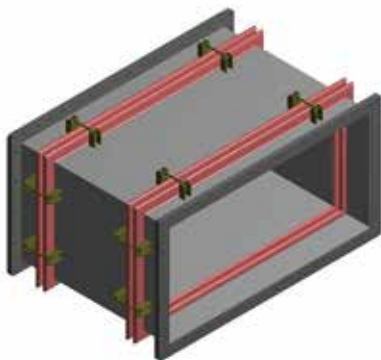
EJMA / ASME / JIS / KS / ETC



Thermal stress analysis, internal pressure structural analysis and plastic processing process analysis on Metallic Expansion Joint

1. Introduction

- ▶ Analysis of Temperature Distribution and Thermal Deformation Behavior of an Expenditure Joint by Bellows Shape
 - Heat transfer analysis for 250°C fluid temperature inside duct
 - Analysis of thermal deformation according to temperature distribution
- ▶ Variant behavior characteristics for the internal pressure of an expansion joint according to Bellows shape
 - Analysis of the structural strain behavior of 0.5 bar of internal pressure
 - Analysis of deformation characteristics according to internal pressure and thermal deformation
- ▶ Analysis of Bellows' plastic processing process



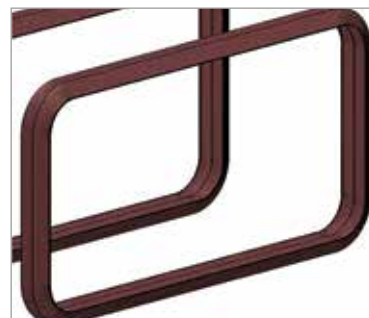
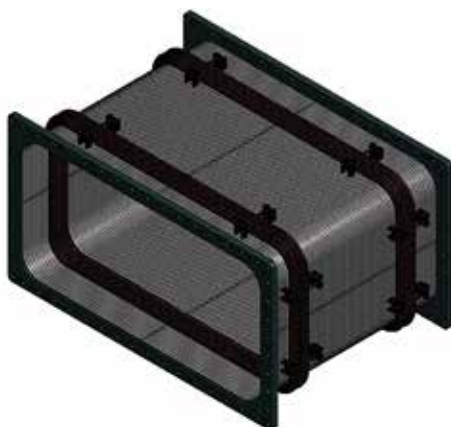
Rectangular-Bellows type



Round-Bellows type

2. FE-Modeling

· 3D Finite Element Model



Number of Nodes & Elements

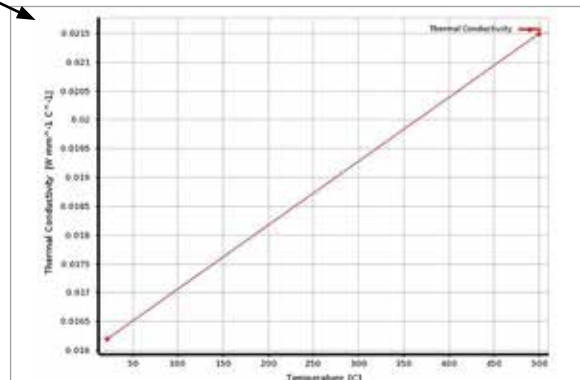
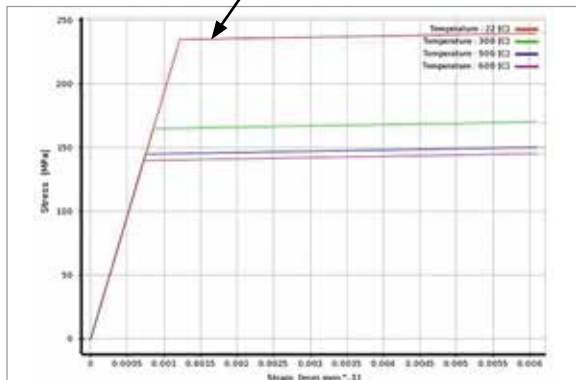
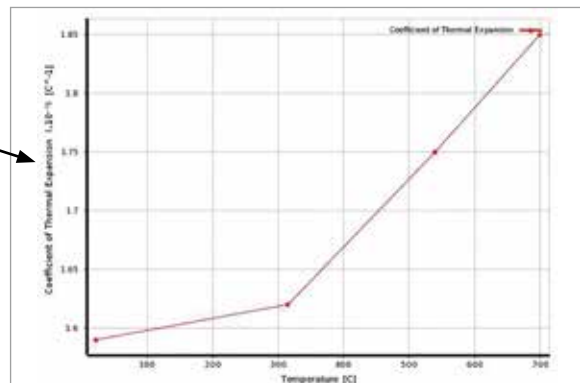
Nodes	881,016
Elements	162,500

· Material properties

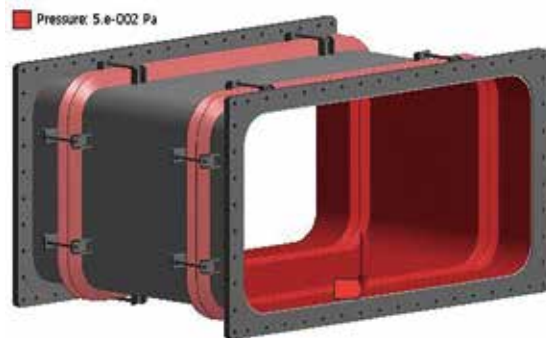
Material	Elastic modulus [GPa]	Poisson's ratio	Tensile strength [MPa]	Thermal Conductivity [W/mm°C]	Thermal Expansion [1/°C]
Bellows A240	193	0.25	235	0.0162	1.59E-05
Pipe&Flange A516	200	0.29	260	0.052	1.20E-05

· Detailed material properties (A240)

Property	Value	Unit
Density	8000	kg m ⁻³
Isotropic Instantaneous Coefficient of Thermal Expansion	Tabular	
Isotropic Elasticity		
Derive from	Young's Modulus	
Young's Modulus	1.93E+11	Pa
Poisson's Ratio	0.25	
Bulk Modulus	1.28E+11	Pa
Shear Modulus	7.72E+10	Pa
Linear Isotropic Hardening	Tabular	
Yield Strength Scale	1	
Yield Strength Offset	0	Pa
Tangent Modulus Scale	1	
Tangent Modulus Offset	0	Pa
Isotropic Thermal Conductivity	Tabular	
Scale	1	
Offset	0	W m ⁻¹ C ⁻¹



· Boundary conditions



Heat transfer analysis conditions : Temperature inside duct

→ 250 , coefficient of annual transfer to the outside air layer

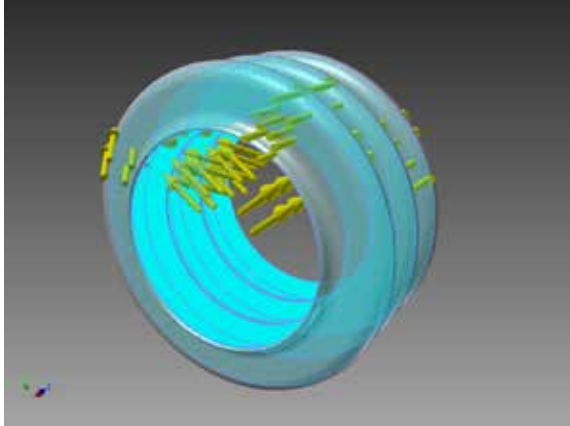
→ 10 W/mm2°C

Stress analysis conditions: Internal pressure inside duct

→ 0.5 bar, Thermal stress analysis using heat transfer analysis results

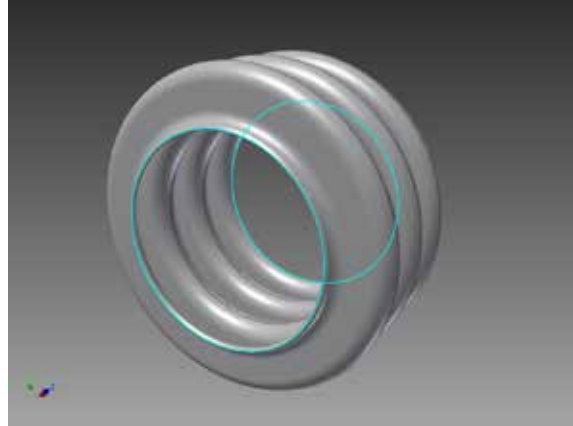
3. Condition of stress analysis

(1) Pressure(Internal Pressure)



load type	Size
Pressure	10.000

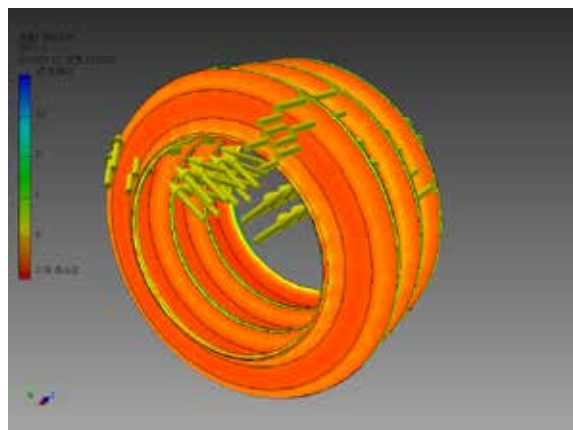
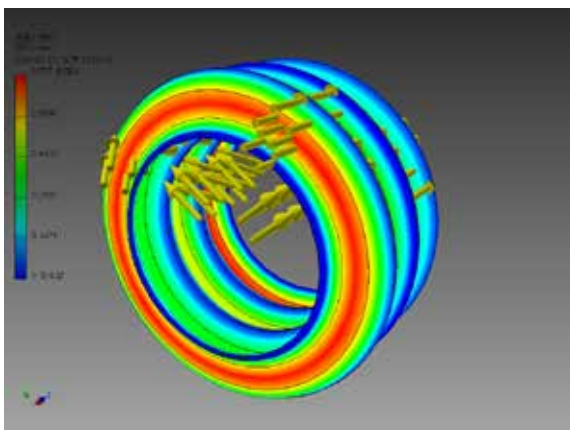
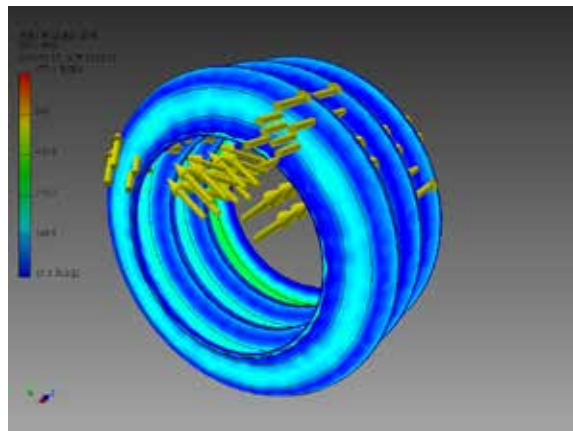
(2) Constraint Type



Constraint Type	fixed constraint
-----------------	------------------

(3) Results

	minimum value	Maximum value
Volume	71689300 mm ³	
Mass	554.354 kg	
Von mises stress	109.015 MPa	2649.07 MPa
Displacement	0 mm	45.6165 mm
safety factor	0.137436 ul	2.29327 ul



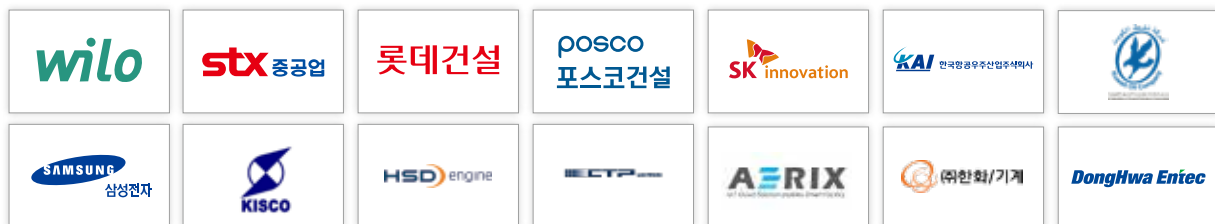
Certification



Patent



Major Customers



Delivery Performance

CUSTOMER	DESCRIPTION	PROJECT NAME	CLIENT / OWNER	COUNTRY
DONGHWA ENTEC	EXPANSION JOINT	TAEAN THERMAL POWER PLANT UNITS 9 & 10 (1050MW X 2)	MHPS-HITACHI	JAPAN
DONGHWA ENTEC	EXPANSION JOINT	BUKPYEONG THERMAL POWER PLANT UNITS 1 & 2 (595MW X 2)	MHPS-HITACHI	JAPAN
DONGHWA ENTEC	EXPANSION JOINT	ULSAN #4 C.C.P.P	MITSUBISHI HEAVY INDUSTRIES LTD.	JAPAN
DONGHWA ENTEC	EXPANSION JOINT	HSC NO.7 PROJECT	SHINKO AIR WATER CRYOPLANT LTD.	JAPAN
DONGHWA ENTEC	EXPANSION JOINT	MCM NISHIURA NO.3 POWER PLANT	MITSUBISHI YOKOHAMA	JAPAN
DONGHWA ENTEC	EXPANSION JOINT	JURONG AROMATICS COMPLEX PROJECT	EBARA CORP.	JAPAN
DONGHWA ENTEC	EXPANSION JOINT	JURONG AROMATICS COMPLEX PROJECT	EBARA CORP.	JAPAN
DONGHWA ENTEC	EXPANSION JOINT	BYPRODUCTS VALUE ADDED PROJECT	EBARA CORP.	JAPAN
DONGHWA ENTEC	EXPANSION JOINT	UREA EXPANSION PROJECT	FERTIL RUWAIS FERTILIZER INDUSTRIES	UAE
DONGHWA ENTEC	EXPANSION JOINT	SINTER COOLER WASTE HEAT RECOVERY	JFE ENGINEERING	JAPAN
DONGHWA ENTEC	EXPANSION JOINT	LINDE/RUWAIS 3 PROJECT	MITSUBISHI HEAVY INDUSTRIES LTD.	JAPAN
DONGHWA ENTEC	EXPANSION JOINT	LINDE/RUWAIS 3 PROJECT	MITSUBISHI HEAVY INDUSTRIES LTD.	JAPAN

Delivery Performance

CUSTOMER	DESCRIPTION	PROJECT NAME	CLIENT / OWNER	COUNTRY
DONGHWA ENTEC	EXPANSION JOINT	TAIWAN/DRAGON STEEL CORPORATION PHASE II	M.H.I	JAPAN
DONGHWA ENTEC	EXPANSION JOINT	TAIWAN/DRAGON STEEL CORPORATION PHASE II	M.H.I	JAPAN
DONGHWA ENTEC	EXPANSION JOINT	US(2P) PROJECT	SHINKO AIR WATER CRYOPLANT	JAPAN
STX HEAVY INDUSTRIES	EXPANSION JOINT DAMPER	SINHA RENTAL 100MW (H0413)	STX HEAVY INDUSTRIES	SUDAN
STX HEAVY INDUSTRIES	EXPANSION JOINT DAMPER	MOE 100M/W CPP	STX HEAVY INDUSTRIES	IRAQ
STX HEAVY INDUSTRIES	EXPANSION JOINT DAMPER	IRAQ MOE DIESEL POWER PLANT(18V 28/32S)	STX HEAVY INDUSTRIES	IRAQ
STX HEAVY INDUSTRIES	EXPANSION JOINT DAMPER	IRAQ MOE DIESEL POWER PLANT(16V34HLX)	STX HEAVY INDUSTRIES	IRAQ
STX HEAVY INDUSTRIES	EXPANSION JOINT DAMPER	IRAQ MOE DIESEL POWER PLANT(18V 28/32S)	STX HEAVY INDUSTRIES	IRAQ
STX HEAVY INDUSTRIES	EXPANSION JOINT DAMPER	IRAQ MOE DIESEL POWER PLANT	STX HEAVY INDUSTRIES	IRAQ
STX HEAVY INDUSTRIES	EXPANSION JOINT DAMPER	MOE 900MW PJT SPARE	STX HEAVY INDUSTRIES	IRAQ
KEY ENGINEERING	EXPANSION JOINT DAMPER	SK EPDM_NINGBO	SK E&C	CHINA
CTP KOREA	EXPANSION JOINT DAMPER	SAMSUNG CHINA XI'AN EAST	SAMSUNG	CHINA

Delivery Performance

CUSTOMER	DESCRIPTION	PROJECT NAME	CLIENT / OWNER	COUNTRY
CTP KOREA	EXPANSION JOINT DAMPER	SAMSUNG CHINA XI'AN WEST	SAMSUNG	CHINA
KEY ENGINEERING	EXPANSION JOINT DAMPER	SK EPDM_NINGBO RTO REVAMPING	SK E&C	CHINA
CTP KOREA	EXPANSION JOINT DAMPER	CHINA XI'AN M-PJT PHASE-2	SAMSUNG	CHINA
CTP KOREA	EXPANSION JOINT DAMPER	CHINA XI'AN M-PJT PHASE-2	SAMSUNG	CHINA
DOOSAN	EXPANSION JOINT DAMPER	YANGJU CHPP / BELLOWS, DAMPER	DOOSAN	KOREA
DOOSAN / DONGHWA ENTEC	EXPANSION JOINT DAMPER	UL-JIN NUCLEAR POWER PLANT UNITS 1	DOOSAN	KOREA
KYOUNGWON ENERTECH	EXPANSION JOINT DAMPER	DOOSAN HEAVY INDUSTRIES & CONSTRUCTION ENERGY SAVING INFRASTRUCTURE	DOOSAN HEAVY INDUSTRIES & CONSTRUCTION	KOREA
CTP KOREA	EXPANSION JOINT DAMPER	SAMSUNG HWASEONG 12~19 LINE	SAMSUNG	KOREA
CTP KOREA	EXPANSION JOINT DAMPER	MR2 L CTO SYSTEM PROJECT	SAMSUNG	KOREA
CTP KOREA	EXPANSION JOINT DAMPER	SAMSUNG GIHEOUNG K1 LED 5LINE	SAMSUNG	KOREA
KISCO	EXPANSION JOINT DAMPER	NO.1~28 DUCT[EXPANSION JOINT PRODUCTION]	KISCO	KOREA
DONGHWA ENTEC	EXPANSION JOINT DAMPER	ROG CRACKER PLANT PROJECT	ELLIOTT EBARA TURBOMACHINERY CORP.	JAPAN

Delivery Performance

CUSTOMER	DESCRIPTION	PROJECT NAME	CLIENT / OWNER	COUNTRY
DONGHWA ENTEC	EXPANSION JOINT DAMPER	ROG CRACKER PLANT PROJECT	ELLIOTT EBARA TURBOMACHINERY CORP.	JAPAN
DONGHWA ENTEC	EXPANSION JOINT DAMPER	ULTRA STEAM TURBINE(S.2299/S.2296)	mitsubishi heavy industries ltd.	JAPAN
DOOSAN HEAVY INDERSTRES	EXPANSION JOINT DAMPER	SAM CHEOK GREEN POWER PLANT UNITS 1/2	DOOSAN HEAVY INDERSTRES	KOREA
BHI	EXPANSION JOINT DAMPER	YEOSU THERMAL POWER PLANT UNITS	KOREA EAST-WEST POWER	KOREA
KEY ENGINEERING	EXPANSION JOINT DAMPER	SAMSUNG SDI HUNGARY PROJECT	SAMSUNG SDI	HUNGARY
KEY ENGINEERING	EXPANSION JOINT DAMPER	SK INNOVATION SOLVENT SCRUBBER PACKAGE	SK INNOVATION	CHINA
DAEWON INDUSTRIAL	EXPANSION JOINT DAMPER	SWS 1460 / 1461	HYUNDAI HEAVY INDUSTRIES	CHINA
DAEYANG E&I	EXPANSION JOINT	SK HYNIX PH1 CAPAUP	SK HYNIX	KOREA
YUJINMS	EXPANSION JOINT	CHINA VAMA PRECOOLER	VAMA	CHINA
CTP KOREA	EXPANSION JOINT DAMPER	SK INCHEONPETROCHEM	SK E&C	KOREA
DONGHWA ENTEC	EXPANSION JOINT	府エネルギーサービス株式会社 微粉炭焚ボイラ 発電設備	MHPS ENG	JAPAN
SECHANG CORP.	NON METALLIC EXPANSION JOINT	NIPPON STEEL CORPORATION	NIPPON STEEL CORPORATION	JAPAN

Delivery Performance

CUSTOMER	DESCRIPTION	PROJECT NAME	CLIENT / OWNER	COUNTRY
CNK	EXPANSION JOINT DAMPER	JFE STEEL CORPORATION	JFE STEEL CORPORATION	JAPAN
AERIX	EXPANSION JOINT DAMPER	KALSEL COAL FIRED POWER PLANT PROJECT	HYUNDAI ENGINEERING CO., LTD.	INDONESIA
AERIX	EXPANSION JOINT DAMPER	POSCO STEELMAKING POHANG PROJECT	POSCO	KOREA
TERA TECH	EXPANSION JOINT DAMPER	SWS H1460 / H1461	HYUNDAI HEAVY INDUSTRIES	KOREA
NRTEC	EXPANSION JOINT	HHI SCHEME A TEST FACILITY FOR SCR (40~60BORE)	HYUNDAI HEAVY INDUSTRIES	KOREA
E-CREATION	NON METALLIC EXPANSION JOINT DAMPER	[T-CEC] W.S.K, FLEXIBLE DUCT PROJECT	東邦化工建設株式會社	JAPAN
PANASIA	Expansion Joint	JEJU CCPP project	JEJU CCPP	Korea
SUNGDDONG Corp.	Expansion Joint Non Metallic Expansion Joint	EBARA HAMADA BLOWER CO.,LTD	EBARA HAMADA BLOWER CO.,LTD	Japan
SUNGDDONG Corp.	Expansion Joint	Nippon Steel Corporation	Nippon Steel Corporation	Japan
CTP KOREA	Expansion Joint Damper	P-PJT PH3	SAMSUNG	Korea
J-ETECH	Damper	Samcheok Green Power Project	Samcheok Green Power	Korea
KEY ENGINEERING	Auto Damper	SKBH HUNGARY NMP PROJECT	SK INNOVATION	HUNGARY

Delivery Performance

CUSTOMER	DESCRIPTION	PROJECT NAME	CLIENT / OWNER	COUNTRY
KEY ENGINEERING	Auto Damper	SK Innovation PROJECT	SK INNOVATION	KOREA
KEY ENGINEERING	Auto Damper	SAMSUNG SDI SR PROJECT	SAMSUNG SDI	KOREA
KEY ENGINEERING	Auto Damper	SK Innovation SR PROJECT	SK INNOVATION	KOREA
KEY ENGINEERING	Manual Damper	SAMSUNG SDI SR PROJECT	SAMSUNG SDI	KOREA
KEY ENGINEERING	Auto Damper	BEST CHANGEZHOU,ROC. 공사	SK INNOVATION	CHINA
KC-COTTRELL	3Way Damper	IZUMI PROJECT	IZUMI	JAPAN
KC-COTTRELL	Expansion Joint	CJ CO2 REDUCTION FACILITY PROJECT	CJ	KOREA
PANASIA	Expansion Joint	MSC HHI 12K	HYUNDAI HEAVY INDUSTRIES	KOREA
PANASIA	Expansion Joint	MSC DSME 14K	DSME	KOREA
PANASIA	Expansion Joint	MSC SHI 19K	SAMSUNG HEAVY INDUSTRIES	KOREA
PANASIA	Expansion Joint	MSC SHI 9.2K	SAMSUNG HEAVY INDUSTRIES	KOREA
PANASIA	Expansion Joint	MSC SHI 14K	SAMSUNG HEAVY INDUSTRIES	KOREA
PANASIA	Expansion Joint	MSC STX 13K	STX HEAVY INDUSTRIES	KOREA
PANASIA	Expansion Joint	MSC DSME 13K	DSME	KOREA
PANASIA	Expansion Joint	MSC HHI 9.2K	HYUNDAI HEAVY INDUSTRIES	KOREA



7-45, Inje-ro 611beon-gil , Saengrim-myeon,
Gimhae-Si, Gyeongsanmnam-do, KOREA

TEL_ +82.55.903.0880

FAX_ +82.55.903.0891

Website_ www.neskorea.co.kr

E-mail_ nes@neskorea.co.kr

