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DOOSAN

Building your tomorrow today

Doosan Heavy Industries Vietnam Co., Ltd.
(Doosan Vina)
Dung Quat Economic Zone, Binh Thuan, Binh Son,
Quang Ngai Province, Vietnam
Tel: 84 255 3618900
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Doosan Heavy Industries Vietnam Co., Ltd

Doosan Vina's Steel Structures being erected at the Vinh Tan IV Power Plant, Vietnam

STEEL STRUCTURES

ENGINEERING & MANUFACTURING

DOOSAN *Building your tomorrow today*

STEEL STRUCTURES FOR A WORLD MARKET

A Steel Structures Building is one of the safest and most cost effective structures available today. And a Steel Structures building by Doosan Vina will stand the test of time, be a solid investment and one that will grow with your company or organization for decades.

By selecting Doosan to be your provider, you are choosing a company with over a hundred years of history and a global reputation for quality and integrity.

The Doosan Vina Steel Structures Division has 92 personnel with 20 years of experience that stand ready to design and engineer a bespoken Steel Structure that will be customized to your exact specifications and needs.

Our turnkey service can take your project from conception to completion or handle specific phases of your project and our strength in the fabrication and construction of major projects worldwide is well known; Doosan is unquestionably recognized as one of the most experienced and quality conscious companies in the Steel Structures industry today.

We put our reputation on the line with every job we do and every project is subject to the strictest and most stringent quality control procedures in the industry!

With over 38,000 employees operating in 38 countries of Doosan Group, the expertise that Doosan can bring to your project is unparalleled; and when you combine our vast international network with over 100 years of history our customers and clients can rest assured that we will be there to support their needs today and in the future.

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Contents

- Introduction
- Engineering
- Main Products & Fields
- Supply Scopes
- Capacity
- Doosan's Advances
- Major Experience

A birdseye view of Doosan Vina's Quang Ngai complex

Erecting Steel Structures at the Mong Duong II Power Plant Site, Vietnam

Doosan Heavy Industries Vietnam (Doosan Vina) is built on the foundation of the Doosan Group's 121 years history. The company's $300M investment on 110 hectare was the first such heavy industrial complex in Vietnam.

Located in Dung Quat Economic Zone of Vietnam’s Central Quang Ngai Province, Doosan Vina is a subsidiary of Doosan Heavy Industries and Construction Co., Ltd. in Korea where the expertise and experience that taken decades to acquire has now been fully transferred to the Company’s Vietnamese operations.

Doosan is one of the most reputable companies in the world and we have successfully designed, engineered, fabricated and assembled Steel Structures projects all over the world.

Our specialties include Steel Structures for:

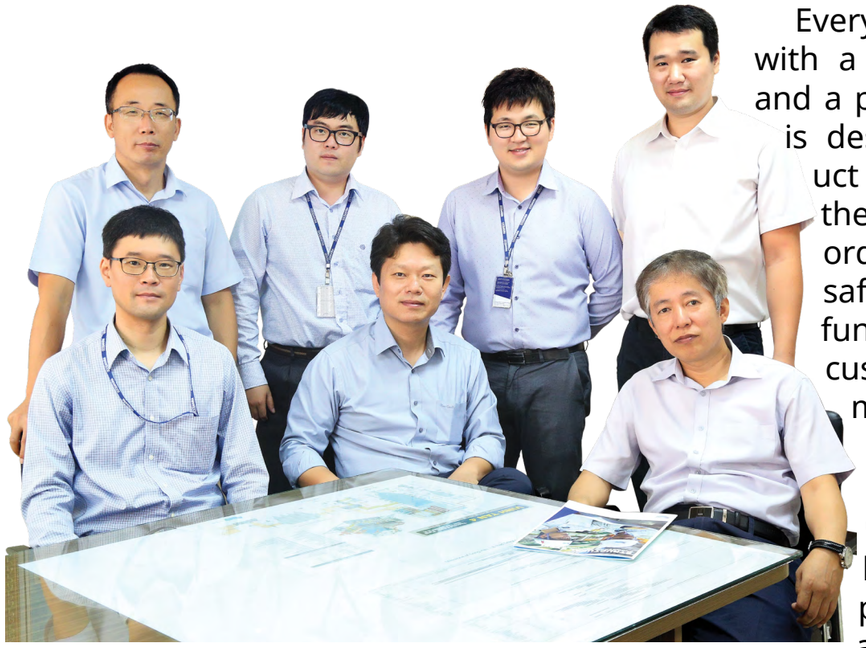
- Power Plants
- Oil & Gas Refineries
- Heavy industrial complexes ...

With advanced technology, modern production facilities as well as the most qualified technicians, Doosan Vina is a global supplier that offers Steel Structures buildings of the highest quality at competitive prices. And with our own dedicated deep-sea port we can provide cost effective delivery anywhere in the world.

Construction at Vinh Tan IV Power Plant, Vietnam

Construction at Song Hau I Power Plant, Vietnam

A Design Team that is Unmatched in the Industry



Korean experts from Doosan that have over 20 years of design experience

Every journey begins with a critical first step and a products first step is design. Every product must go through the design phase in order to assure that safety, form and function meet the customer's requirements, and quality standards. To achieve that the design needs to be as perfect as possible because as with any journey if the first step is correct the steps that follow will lead you to the correct destination.

Inaugurated in October 2012, the Doosan Vina Design Division now has 92 highly skilled designers, engineers and technicians who are responsible for designing the products made by the Boiler and the Material Handling Systems shops (MHS). To meet the needs of the two shops, the Design Division is currently divided into three departments, Steel Structures Design, Pressure Part Design and Non Pressure Part Design.

Korean Experts follow every step of the design

A design meeting to review and plan

Design Division

- **Steel Structures**
  - Steel layout
  - Stress Analysis
  - Detail Design
  - Tekla
- **Pressure Parts**
  - Panel
  - Coil/Header
  - Buckstay
  - Piping
- **Non Pressure Parts**
  - Stress Analysis
  - Duct
  - Coal Silo
  - Coal Pipe

The 92 strong Design Division at Doosan Vina

STEEL STRUCTURES – ENGINEERING

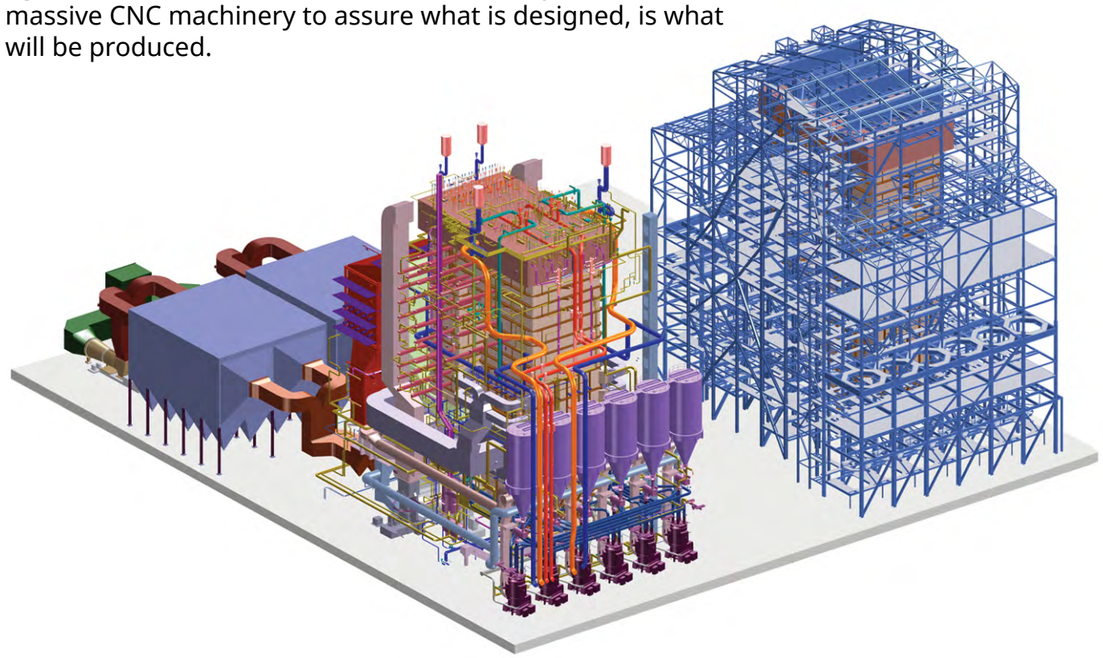
Doosan Vina applies the highest standards of design and engineering to optimize the life of the structures and assure customer satisfaction.

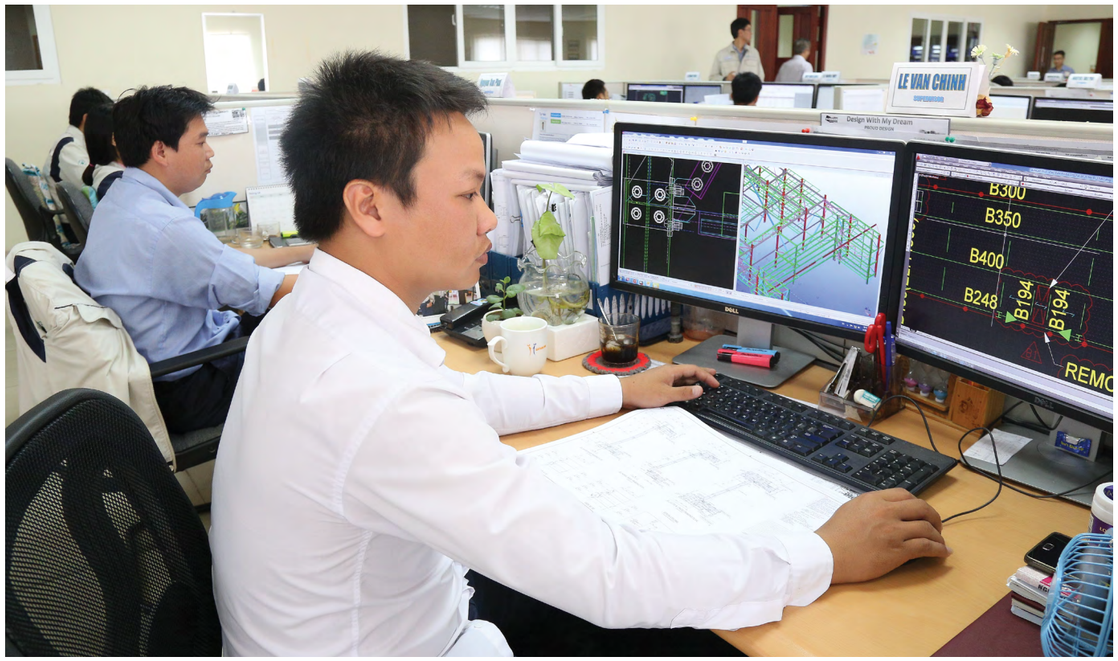
- Proposal Stage
  - Technical Specification and Design Code Review
  - Technical Review & Clarification
  - Weight estimate
  - Cost estimate

- Contract Stage
  - Basic Design: Analysis (Wind/Seismic), and our design team begins
  - Design detail & connections engineered
  - Procurement / Manufacturing / Painting and Packing

- Service
  - Access platform for maintenance
  - Technical advice for manufacturing & site erection
  - Trouble shooting

Tekla is the state-of-the-art software program that the design team uses to create blueprints, drawings and 3D images like the one below. Tekla is also directly connected to massive CNC machinery to assure what is designed, is what will be produced.

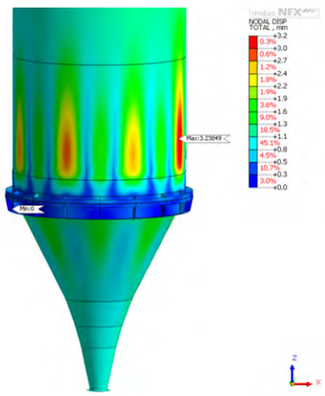




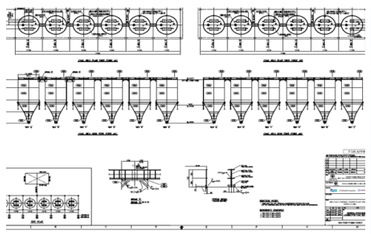
An engineer of the Design Division uses Tekla Software for Steel Structures design

Project management is on-going and involves Quality Control at all stages of the production process

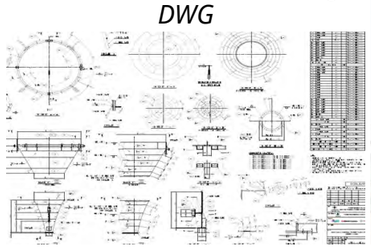
Coal Silo



Coal Silo-Stress Analysis Modeling by the Ansys Program



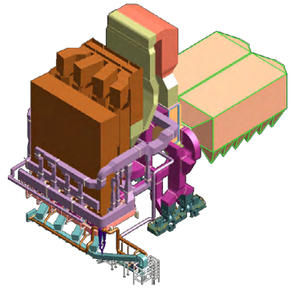
Coal Silo-Arrangement Design DWG



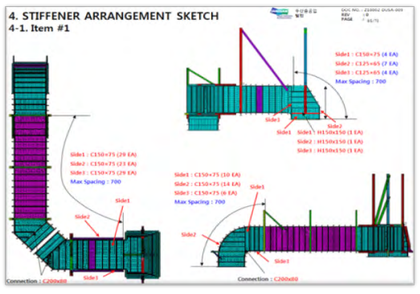
Coal Silo-Detail Design DWG

A Coal Silo

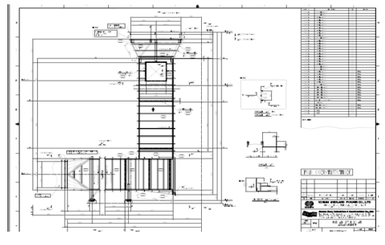
Duct



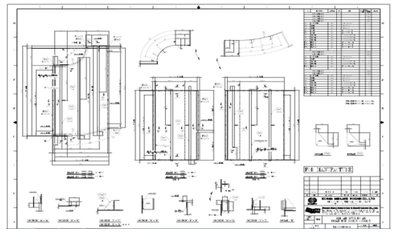
Duct-Detail Design Modeling by Auto CAD



Duct-Stiffener Arrangement Sketch



Duct-Arrangement Design DWG



Duct-Detail Design DWG

An engineer of the Design Division designs a Coal Silo

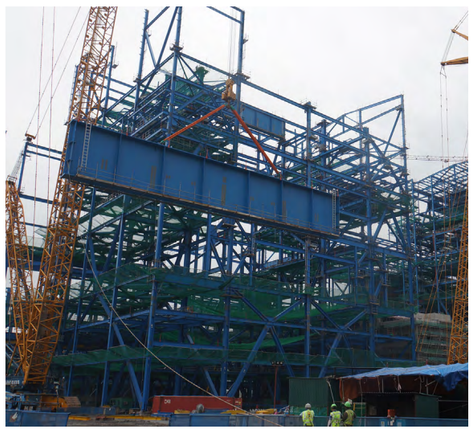
Engineers of the Duct Design Department review Duct design documents

Yeon In Jung, Doosan Vina's CEO Checks production and safety

A QA employee inspects products in a shop

Doosan Vina can custom design, engineer and manufacture Steel Structures buildings for any application using our extensive experience in large commercial and industrial projects.

Power Plant Developments



Boiler Housing
- Heavy girder
- Ceiling girder
- Built-up member
- Roll profiles
- High tension bolts
- Grating, Enclosure, Etc.

Turbine Housing
- Crane girder
- Built-up member
- Roll profiles
- Grating, Enclosure, Etc.

Refineries

Processing
- Coal Handling Systems
- ASH Handling Systems
- FGD
- Pipe Rack

Industrial Complexes

Piping Racks & Towers
- Manufacturing
- Processing
- Mining

Other Applications

Modularization
- Warehouses
- Airports
- Shopping centers
- Bridges
- High rise apartments
- Office complexes

Building your tomorrow today

Scope & Scale for a Global Market

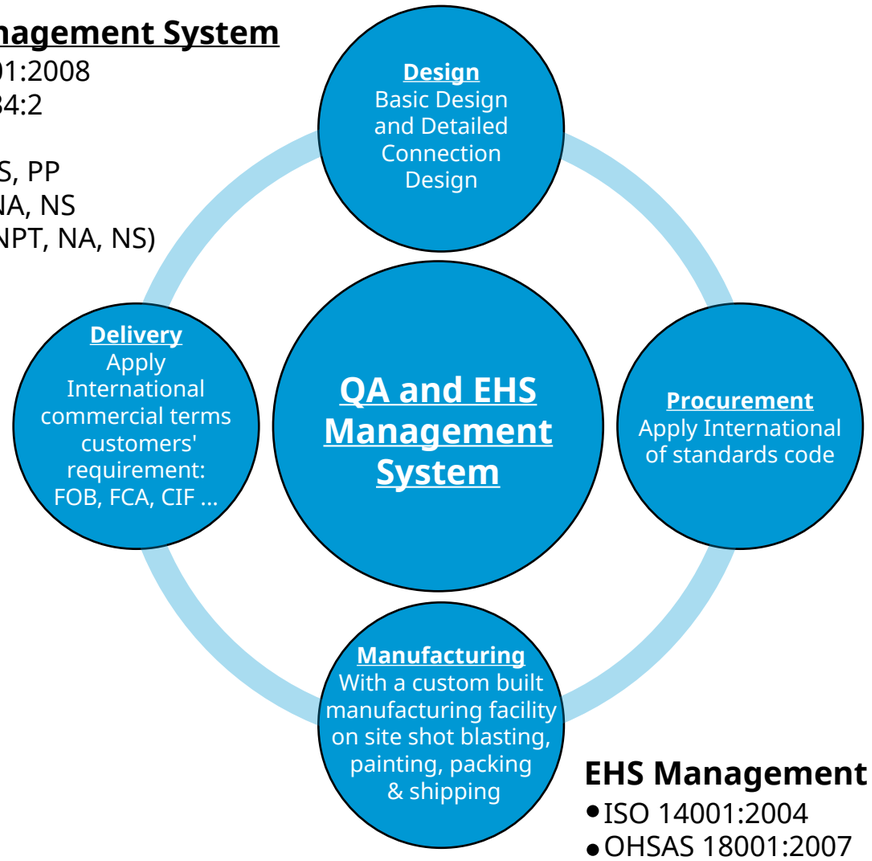
The 2,100 skilled employees of Doosan Vina along with the fifty Korean engineers from Doosan in which there are eight senior experts, which have more than 20 years of Steel Structures design experience, stand ready to meet your needs.

Our scope, scale and abilities represent the best in the industry and we'd be happy to prepare a proposal for the engineering, procurement, manufacture and delivery of your project. With a steel structures building made by Doosan Vina you can be sure that it will be a sound and growing investment for you and your company.

We invite you to review our qualifications listed below and contact us for more information.

QA Management System

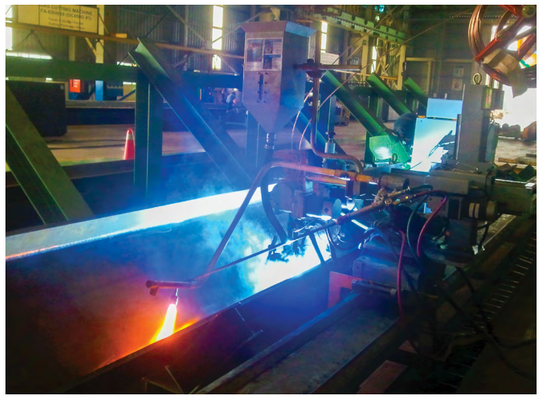
- ISO 9001:2008
- ISO 3834:2
- ASME
  - U, U2,S, PP
  - NPT, NA, NS
  - SITE (NPT, NA, NS)



EHS Management System

- ISO 14001:2004
- OHSAS 18001:2007

Specialized CNC machines



Specialized welding

Steel Structures made to your specs

Steel is checked on arrival and during production

Rigorous inspection is on-going

Steel Structures is checked and loaded at our port

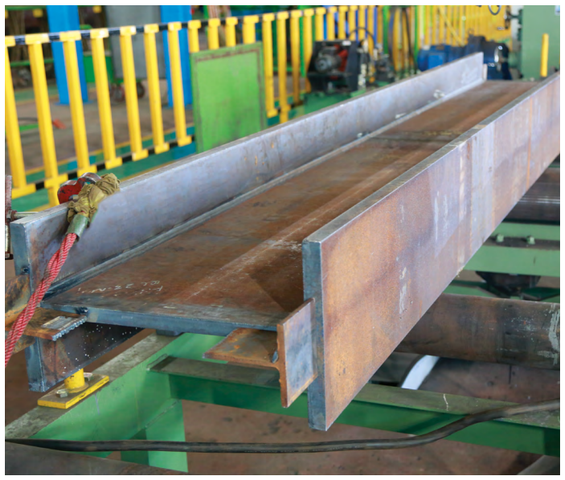
Providing integrated solutions that assure customer satisfaction!

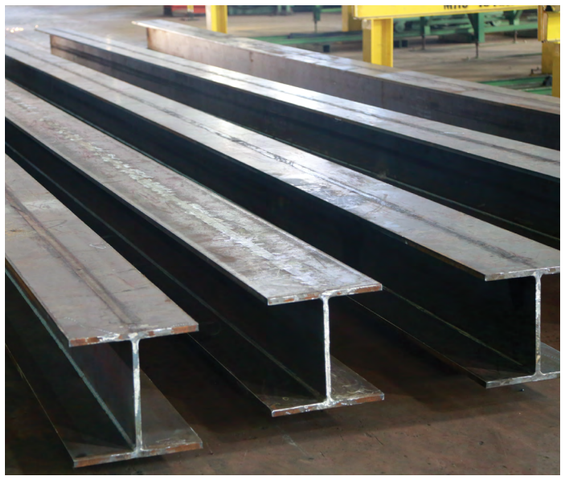
With the industries most skilled technicians, engineers and cutting edge technology our shops are in a class by themselves. Doosan Vina has the most modern and up-to-date production facilities in the region and we have the capacity to produce 40,000 tons of Steel Structures per year. Installed cranes have a maximum lift capacity of 100 tons in the shop and 500 tons outside, so no matter what size your project may be, we can handle it!

Submerged arc welding machine

Shop overview from crane level

Cutting and fabricating on the shop floor





Steel Structures beams during the manufacturing process

DOOSAN

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STEEL STRUCTURES – CAPACITY AND FACILITIES

DOOSAN HEAVY INDUSTRIES VIETNAM

One of our unique features is our large enclosed shops. These massive enclosed spaces allows us to fabricate and manufacture large scale items like Coal Silos or Duct Work for a power plant indoors. This improves the quality of the products because the enclosed space protects the high tech CNC machinery and your products from rain or other weather related issues during the critical initial stages of production. This in turn allows us to offer our customers uniform fabrication and welding that will result in longer lasting and higher quality products.

Indoor fabrication of large items

Outdoor assembly of coal silo

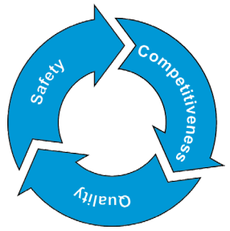
Duct pieces during the manufacturing process

Duct products ready for shipment

STEEL STRUCTURES – DOOSAN'S ADVANCES

Doosan Vina is strategically located on the coast of Central Vietnam in Quang Ngai Province. And with our own dedicated and purpose built sea port that is adjacent to major sea lanes, we have the ability to quickly and economically send projects anywhere in the world.

Other key competitive advantages we offer are:



- **Internal**
  - **A talented and deep human resource pool.**
  - **A reputation for high performance and reliability.**
  - **Modern facilities and technology.**
  - **A dedicated port for importing raw material and exporting products.**
  - **Strict Quality Management systems with a "Zero Defect" Policy.**
  - **Global EHS Policies to assure a safe & environmentally friendly work place.**

- **External**
  - **Government support on investment credit.**
  - **Import taxes incentives.**
  - **A global network of Doosan companies and employees.**

Doosan Vina Dung Quat Port (DDP)

DOOSAN HEAVY INDUSTRIES VIETNAM

Steel Structures products at Vinh Tan IV Power Plant Site, Vietnam

Mong Duong II, a 1,200 MW Power Plant in Quang Ninh Province, Vietnam completely built by Doosan Vina

Doosan Vina's Steel Structures Customers are global. To date, beside manufacturing and supplying Coal Silos and Duct work for the AlKhalij Duct Work Project and the Tripoli Duct Work Project (Libya), the Marafiq Duct Work Project (Saudi Arabia), the Cochrane FGD, Duct Work Project (Chile) and the recently signed contract with IHI Corporation for a Coal Bunker for the KP2 Project (Japan), we've successfully designed, engineered, fabricated and assembled Steel Structures Buildings for projects all over the world. We were also the Steel Structures contractor for the Mong Duong 2, Vinh Tan 4, Vinh Tan 4 Extension and Song Hau 1 Thermal Power Plants in Vietnam.

Engineering

Mundra 800 MW Boiler	India	2008 2010
Mong Duong II, 600 MW Boiler	Vietnam	2010 2012
Tripoli 350 MW Boiler	Libya	2013 2014
Shinboryeong 1000 MW FGD	Korea	2014
Yeosu CFB 350 MW Boiler	Korea	2014
Cochrane 532 MW FGD	Chile	2014
Vinh Tan IV, 600 MW Boiler & TBS	Vietnam	2014 2015
Song Hau I, 600 MW Boiler	Vietnam	2015 2016
Vinh Tan IV Ext, 600 MW Boiler	Vietnam	2016 2017

Manufacturing

Mong Duong II, 600 MW Boiler	Vietnam	2011 2012	12,000 Ton
Cochrane 532 MW FGD	Chile	2014	2,000 Ton
Vinh Tan IV, 600 MW Boiler & TBS	Vietnam	2014 2016	23,000 Ton
Song Hau I, 600 MW Boiler	Vietnam	2016 2017	11,900 Ton
Vinh Tan IV Ext, 600 MW Boiler	Vietnam	2016 2018	15,000 Ton
IHI KP2 Project Coal Bunker	Japan	2017	400 Ton