# MODERN HEAVY INDUSTRIES

POWER

HRSG

MODULAR

MINING

PROCESS

HIGH RISE

## *GLOBAL PROJECTS*

"Your Reliable Structural Steel Partner"

"A Journey of a Thousand Miles Begins With One Step".
*The Master. 400 B.C.*

"千里之行，始于足下"
老子 400 B.C.

© Modern Heavy Industries

# FACILITIES

Modern Heavy Industries (MDHI) is a specialty structural steel fabricator based in Taicang City, China near Shanghai. MDHI supplies structural steel for Power Plants, Heat Recovery Steam Generators, Oil & Gas, Modular Projects, Process Plants, Mining & Metals, High-Rise, Industrial Plants, and other types of Infrastructure Projects.

MDHI main shop occupies a 110,000m2 yard and includes 55,000m2 of covered shops. The main shop produces main structural steel, secondary structural steel, and mechanical fabrication for MDHI's international projects. The products offered encompass fabricated steel across all major engineering and construction industries.

## Main Shop

MDHI shop is equipped with state-of-the-art CNC machines that ensure high accuracy in the finished products. Gas, plasma & laser cutters, H-Beam assembly machines, submerged-arc welding machines, hydraulic rolling & straightening machines, end-milling machines, CNC 3-spindle and 9-spindle Peddinghaus drills, a Peddinghaus Plate Processor, radial-arm drills, and machining lathes are installed in the main shop.

## HRSG Division

The HRSG shop produces casings for both vertical and horizontal HRSG. Modular (integrated) panels are also insulated and lined in the HRSG shop.

The HRSG shop performs various fabrication and coating works for inlet ducts, transition ducts, outlet ducts (breeching), and other types of ducting. The HRSG shop is equipped with oversized blasting rooms for cleaning of the steel, and application of advanced coatings.

## Location

MDHI is located northwest of Shanghai, China in Taicang City, Jiangsu province. Visitors may arrive at Shanghai's Pudong airport (PVG) or the closer Hongqiao Airport (SHA). Taicang boasts the highest-per-capita investment of major for companies in China and is home of the busiest shipping port in Jiangsu Province.

# MODULAR YARD

Modern Heavy Industries constructs modular commodities at our waterfront modular yard. The yard covers an area of 1.5 million square meters and has an outfitting wharf of 925m length and 25m width. The water depth at the pier is 20 meters deep and can accommodate vessels up to 400,000 DWT. The raw material wharf is 140m x 20m, and there are two assembly platforms with a capacity of 30,000 tons each.

MDHI's modular yard includes fabrication workshops, module workshops, pipe & tube fabrication shops, blasting & painting shops and other supporting activities. The facilities can support 2000 employees in full production.

The waterfront painting facilites include three (3) ship-service level shot blasting bays and six (6) ship-service level painting bays, with annual output capacity 2,800,000 square meters of surface area. Each painting workshop is equipped with dehumidifiers and heating systems. The finished products can fulfill PSPC (Performance Standard for Protective Coatings) and AISC's Sophisticated Painting Endorsement.

COMMERCIAL

## Pre-Qualification

MDHI is pre-qualified to supply all of our international clients. Qualifying typically includes completion of lengthy supplier data forms that cover detailed company information, equipment lists, list of inspection tools, project history, and financial balance sheets.

After this, MDHI will host visiting inspectors to perform physical audits, shop inspections, a review of the quality manual, operational procedures, organization chart, certificates, standards of compliance and project manufacturing data records.

## Estimation & Sales

Estimation is the first major service that MDHI offers. MDHI evaluates each project to make sure it is compatible. We will review all specifications, technical & commercial terms and make sure both sides can have minimal exceptions.

MDHI estimators will prepare cost calculations using client-supplied pricing forms, BOQs, or perform material take-offs (MTO) from drawings. Once the estimating is complete the commercial department will prepare bid packages summarizing the project scope and the commercial offer, with the quotation expressed as a re-measurable unit-cost.

After all technical & commercial clarifications are agreed and MDHI has received the contract or purchase order, our commercial team can proceed with financial instruments and transactions as agreed.

## Project Management

At the core of any MDHI project is the assigned project manager who will take responsibility for scheduling, coordination, execution, production issues, reporting of the project status and all respective departments.

Project managers will send RFIs, communicate clarifications, process change orders, deviation requests, drive the production schedule and milestone targets. The ultimate goal of the PM is to ensure a win-win and avoid any type of delays or damages which would injure our client or MDHI.

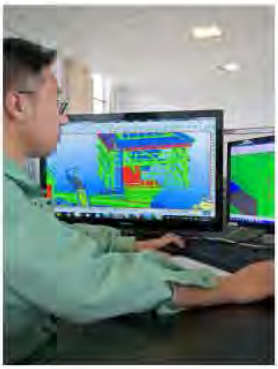
## Kickoff & Execution

A project kickoff meeting will be held at MDHI with our client's representatives and MDHI's production team and project managers. This meeting marks the official project start and transfers authority from the commercial department to the production department.

During this meeting, major milestone targets are reviewed, as well as any open technical queries, procurement or execution concerns, delivery or logistics considerations. In addition to this a review will be done of all raw material requirements, fabrication standards, welding codes, coatings, and packing requirements.

# PLANNING

## Engineering



Though MDHI offers selected engineering services, as a heavy steel fabricator, MHI is typically exempt from client-structural design & engineering. Instead our focus is dedicated to the detailing of structures. MDHI 3D models provide accurate, reliable and detailed information needed for successful Building Information Modeling and construction execution.

Accurate and constructible modelling of all types of materials and standards is possible for even the largest, most complex structures. This allows information to flow through from the engineering process through fabrication to the jobsite. Additionally, material lists generated through detailing are used to make Advanced Bills of Material (ABM), Bills of Material (BOM), and bolt lists used to procure raw materials.

## Fabrication Management

MDHI uses FabTrol steel fabrication management software to integrate estimating, drawings, material, production, and shipping. This software includes automated data management, real-time discrepancy notification and activity history, supporting timely project-critical decision-making.

Automated material management includes Nesting modules, Plate modules, and Material Modules. Multiple job tracking maximizes usage and minimizes waste, while the user can create multiple relationships between tasks and work areas. FabTrol can track and manage production, view assemblies' status, weight summaries, load status, and help schedule logistics with smart shipping management.

## Procurement

MDHI material procurement specialists purchase all materials required for each project. Raw steel profiles must comply with ASTM-A6, EN, JIS, and/or GB (Chinese) standards as required. Hot-rolled plates, shapes, or pipe (hollow sections) used for main steel and secondary steel will be received with the corresponding mill test certificate (MTC).

The MTC will include all test results, such as batch number, heat number, chemical composition, yield strength, tensile strength, elongation, cold bending properties, and Charpy Impact (V-notch) test results. Supplemental material testing is frequently performed at international laboratories to confirm the results of the MTC.
All other consumables, such as approved welding materials, cleaning & blasting products, primer & paint, hardware & accessories, high-strength bolts and packing materials are located by MDHI buyers.

## Storage & Traceability

In the steel fabrication industry, raw material handling & storage is the most significant operation after fabrication-itself. A steel member may be moved or turned over 30 times during the fabrication process and it all begins with initial material storage. MDHI uses vertical racks for easier storage, marking and picking of steel plates, saving thousands of hours of labor and crane use to prepare materials. All raw materials are color-coded for grade/standard, marked with project number, dimension, steel grade, and heat number.
The heat number identifies the ladle of smelted steel in the continuous-casting process to make hot-rolled steel shapes.
These steel shapes can be traced through the entire fabrication process to the jobsite. In the event that there is any problem with the steel, all steel members in the structure manufactured with the same heat number can be traced back to the original ladle (heat), or batch of steel.

# PRODUCTION

## CNC Pre-Fabrication

MDHI employs the latest high-tech computerized numerical control (CNC) machines for steel pre-fabrication, such as laser cutters, plasma cutters, oxy-gas (flame) cutters, multi-tool plate processors, plate drills, plate shears, plate rollers, benders, and 5-axis pipe processors.

With the initial dimensional accuracy of components as a key element in the successful fit-up prior to welding, the pre-fab process is a major contributor to the fabrication standard compliance.

## "H"-Beam Assembly

The making of a built-up "H"-section or "Built-up Beam" is common at MDHI. These members fill the gap created by steel mills that do not produce hot-rolled beams of required designation.
MDHI produces structural columns that reach and exceed 30-meters (100-feet) long and weigh 15 tons or more each.
Precision computerized machinery is dedicated to the preparation, assembly, welding, straightening and face milling (end milling) of these critical members.

## CNC Beam Processing

State-of-the-art CNC drilling machines use numerical control (NC) files exported from Tekla (X-Steel, Trimble) to locate the correct hole location and select drill sizes to make the drilling process fast and accurate.
MDHI uses 9-spindle and 3-spindle Peddinghaus CNC drills to perform drilling. After the drilling has been completed, CNC saws and CNC coping machines will cut the beams to length and then add inside or outside beveling, and coping (weld access holes) to the beam ends.

## Fitting & Welding

Fitting-up a very gratifying part of any project. It is when thousands of loose end-plates, connectors, stiffeners, and gusset plates are tack-welded to waiting beams and columns. At this stage, the shop is bustling with activity and the steel members begin to take their final form.

MDHI fitters and QC department dimension inspectors work hard together to ensure the best possible joint preparation, fit and finish. Certified welders will finish up with high-quality welding.

# BUILDINGS

New York, USA
Kimmel Pavilion
Langone Medical Ctr.

Memphis, USA
Mitsubishi Electric
Transformer Plant

Macau S.E.Z.
Parisan Hotel
Eiffel Tower

Kunming, China
Changshui Intl.
Airport

Shanghai, China
Plaza 66
Corporate Center

Tianjin, China
Goldin Finance 177
Commercial Tower

Nanjing, China
Olympic Sports
Stadium

Brazil S.A.
Volkswagen Auto
Production Plant

Shanghai, China
Disneyland Resort
Hotel

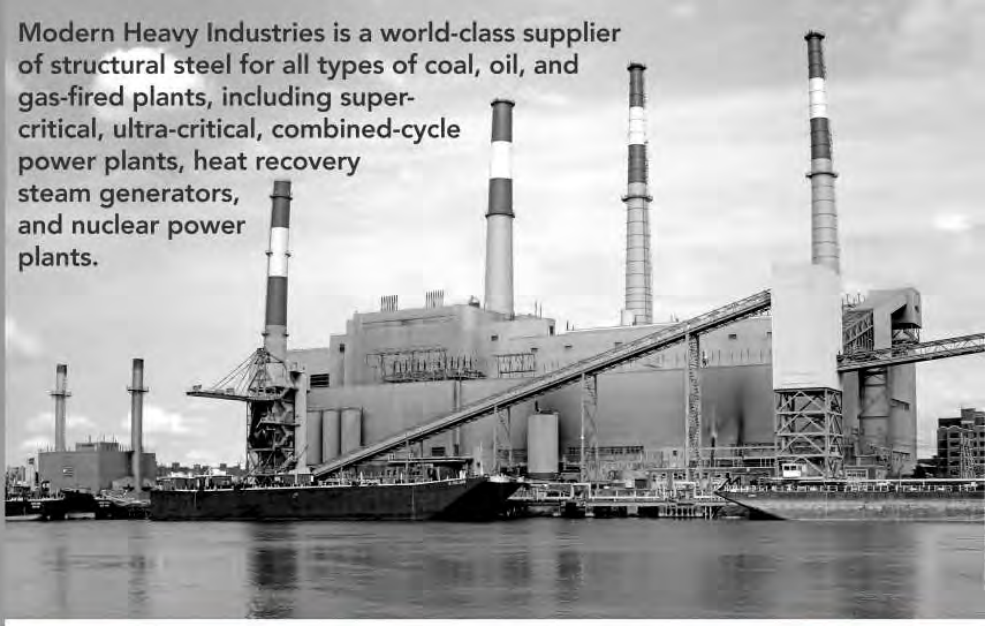
# ERECTION

Modern Heavy Industries has fabricated numerous building projects and capital infrastructure projects both in the domestic Chinese market and abroad. MDHI also provides erection engineering servi es and EPCM services for:

- High Rise Buildings
- Sports Stadiums
- Railway Stations
- Airport Structures
- Convention Centers

# POWER PLANT

Modern Heavy Industries is a world-class supplier of structural steel for all types of coal, oil, and gas-fired plants, including super-critical, ultra-critical, combined-cycle power plants, heat recovery steam generators, and nuclear power plants.



**Modern Heavy Industries has supplier over 75 units of Power Plant & HRSG.**

# HEAT RECOVERY

SAUDI ARABIA
10 UNITS HRSG

CONNECTICUT, USA
2 UNITS HRSG

EGYPT POWER
24 UNITS HRSG

HUANGGANG, CHINA
RECOVERY BOILER

PENNSYLVANIA, USA
3 UNITS HRSG

KARABIGA, TURKEY
1.3 GW CCPP

VIRGINIA, USA
2 UNITS HRSG

QUANG NINH, VIETNAM
THERMAL POWER PLANT

ZHEJIANG, CHINA
3 X CFB MAIN STEEL

# MODULAR WORKS FOR OIL & GAS

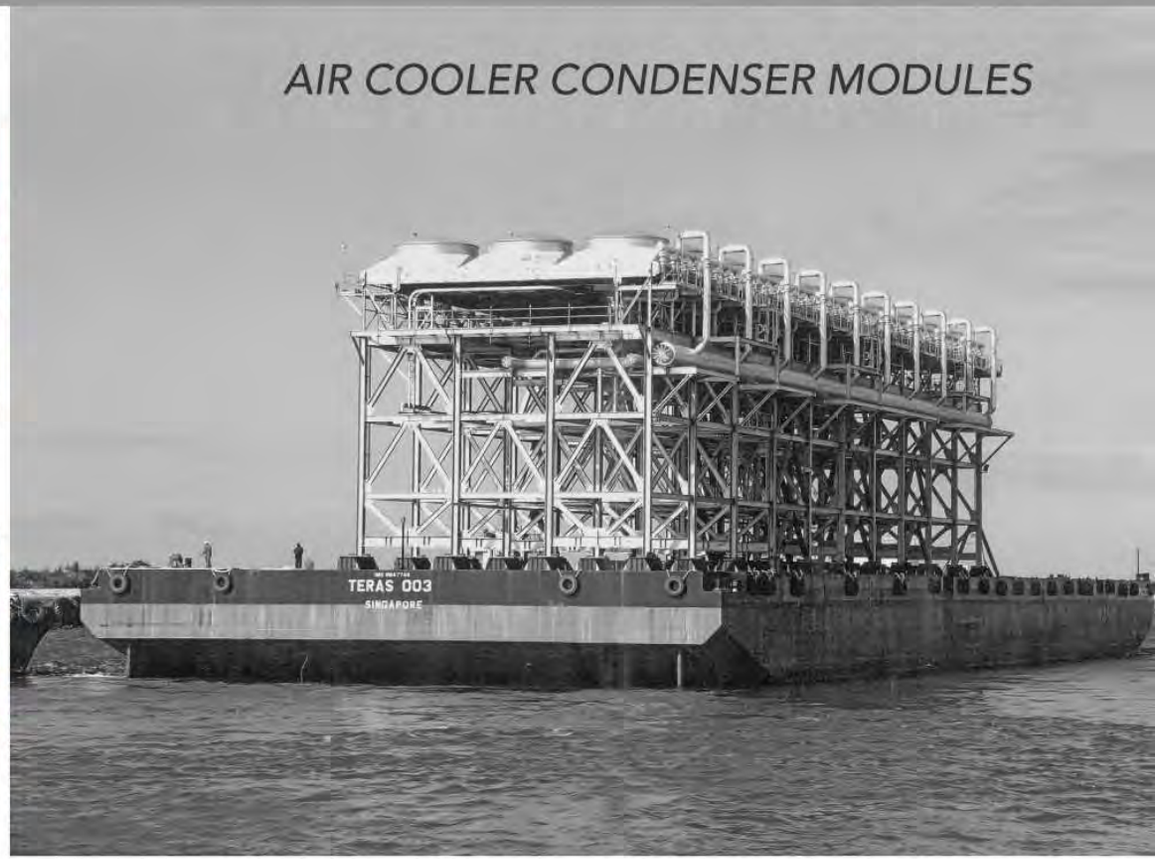
Modern Heavy Industries supplies modular fabrication for all types of projects. MDHI's modular yard has the ability to produce single modules weighing up to 5,000 tons each. MHDI facilities lie on the Yangtze River waterfront near Shanghai and can accomodate heavy lift transport vessels.

PIPE RACK MODULES * OIL & GAS MODULES * CHEMICAL PROCESS MODULES

MANIFOLD GROUP TRUNKLINE * FPSO TOPSIDE MODULES * LNG PROCESS

OFFSHORE JETTY MODULES * CONSTRUCTION MODULES * CONVEYOR MODULES

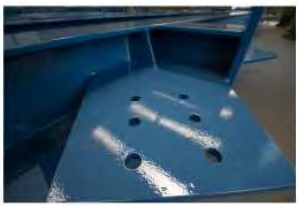
## AIR COOLER CONDENSER MODULES




## PIPE RACK MODULES

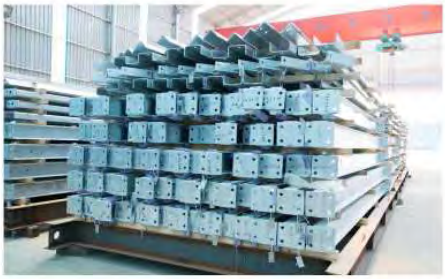
# CLEAN & PAINT

## AISC SOPHISTICATED PAINTING ENDORESEMENT



# EXPORT PACKING

## INTERNATIONAL PACKING STANDARDS

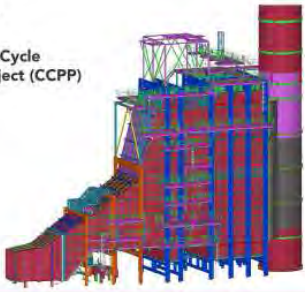


# MDHI PROJECTS

## Energy

### Egypt

**Combined Cycle Power Project (CCPP) 11,000T**



JAZAN, Saudi Arabia (IGCC) - 10 HRSG, 8300T
HUANGGANG, China Recovery Boiler Project, 4300T
KARABIGA, Turkey Cenal 1.3GW CFPP, 3900T
PENNSYLVANIA, USA Lackawanna Energy 1.5GW 3x HRSG, 3600T
PENNSYLVANIA, USA Hummel Station 1.1GW CCPP 2100T
RAS TANURA, Saudi Arabia RTIP Boiler Steel, 2000T
CONNECTICUT, USA CPV Towantic .80GW CCPP (2x HRSG), 1600T
LIAONING, China Xudapu Nuclear Power Station, 1,500T
QUẢNG NINH, Vietnam Mông Dương 1, 1GW TPP, 1300T
PENNSYLVANIA, USA Moxie Freedom .85GW CCPP (2xHRSG) 1100T
VIRGINIA, USA Stonewall Energy Project .80GW CCPP HRSG
BANGLADESH Fenchuganj HRSG Main Steel
2x290 STAG stacks

## Oil & Gas

### QUEENSLAND Australia

**Australia Pacific LNG ACC**

**7,000T**
**FBM Hudson (Bechtel)**

TEXAS, USA Jumbo Pipe Racks, 5,000T
QUEENSLAND, Australia Gladstone LNG ACC, 4200T
TEXAS, USA Freeport LNG ACC 3100T
NANTONG, China Petrofac Manifold Group Trunkline, 1,300T
SHANGHAI, China Wharf Piperacks, 1,000T
MEXICO/ST.LOUIS, USA Air Cooler Condensors 700T
JOHOR, Malaysia Petronas (RAPID) 600+T
VENEZUELA S.A. Chemical Modules, 550T
BRAZIL, South America ACC Project, 200T

## Mining & Metals

### Western Australia

**Roy Hill Iron Ore Mine**

**6,500T**
**McConnell Dowell Samsung**

PILBARA, W. AUSTRALIA Wharf Structures, 3,500T
KALIMANTAN TIMUR, Malaysia Melwan Coal Project 4,000T
MALAYSIA, Berman Phase III Mining Project 2000T
CANADA, Fort Hills Mining Project 1200T
CANADA, CNRL Conveyor Project, 1900T
CANADA, Baffinland Shiploader Project, 600T

## Commercial

### MACAU S.A.R. CHINA

**Eiffel Tower**

**2,500T**

**Alfasi Group / Las Vegas Sands**

NEW YORK N.YC. USA Kimmel Pavilion / NYU Hospital 5,000T
CHINA, Nanjing Sports Staduim 6000T
China, Tianjin Goldin Finance Tower
BRAZIL S.A. Invista Plant Project 2,800T
BRAZIL S.A. Volkswagen Plant 2,000T
SHANDONG, China Roller Coaster Structure, 1,000T
KANSAS, USA Hexia Chemical Plant, 450T
SHANGHAI, China Disneyland Hotel Project, 400T

# QUALITY

AISC STANDARD | EN 1090-1 / 2 +A1 | CE-MARK EXC3 FPC | CANADIAN STANDARD CWB 47.1 | CHINA GRADE 1 | ISO 9001 | ISO 14001

At MDHI, we know quality managment is a way of life in order to compete in our industry. There has never been and there will never be a double-standard at MDHI. Our team of 24 QC/QC professionals make sure that quality remains at the forefront of everything we do.

MDHI has an inspector to fabricator ratio of 1:25, and MDHI inspectors include IWE, CWI, CSWIP, UT-II, MT-II, PT-II, NACE II, and various other inspectors who look after materials, testing, cutting, fitting, welding, clean & paint, galvanizing, and packing quality.

MHI's veteran team of inpectors combine years or international project experience and are hand-selected for their competence.

MHI QC check fitting & dimensional tolerance

Magnetic Testing (MT)

Ultra-Sonic (UT) Testing

MHI QC check fitting & dimensional tolerance

Client QC Inspection

SSPC SP10 / SA2.5 Blasting

GMAW Multi-pass weld

Intermediary Coat Inspection

Paint DFT inspection

Akzo Nobel compliance visit

3rd Party Paint Inspection

MHI final DFT checks

560-ton lifting frame load test

COMPLIANCE

GALLERY

# MODERN HRSG

## A CLOSER LOOK AT MODERN'S HRSG WORKS

INTEGRATED COLUMN-PANEL SECTIONS

STAINLESS STEEL STUD WELDING

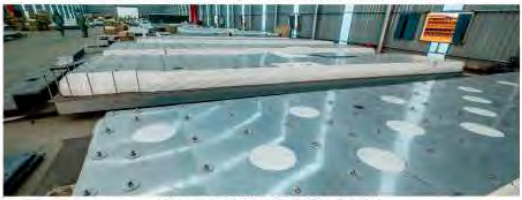
INNER CASING SURFACE WITH STUDS & PIPE

INNER CASING SURFACE WITH STUDS & PIPE

EXTERNAL CASING WITH ACCESS DOOR

CASING WALL WITH HIGH-PERFORMANCE COATING

INSULATION AND INSTALLING CORNER LINER



PANELS NEAR COMPLETION

NUT TACK-WELDING OF STAINLESS LINER

30-METER INTEGRATED COLUMNS + INSULATION

FULL-LENGTH CASING WALL + INLET DUCT WALL

FULL-LENGTH INTEGRATED COLUMN/PANEL SECTIONS

GALLERY

# SHOP FABRICATION

CNC Plate Stripping

CNC Plasma Pattern Cutting

Peddinghaus Plate Processor

HSE Walkthrough

CNC Sawing of Structural Angle

CNC Pipe Processing

Finished Component Inspection

CNC Beam Cope & Bevel

Crane-Assisted Fitting

Peddinghaus BDL-1250/9 at work

Inspection-Mainframe Columns

Boiler Suspension Beams

HRSG Modular Panel Section

HRSG Stack Wall Fabrication

Inlet Hopper for Mining Project

Grating Panel Fabrication

Zero-Tolerance End (Face) Milling

Handrail Fabrication

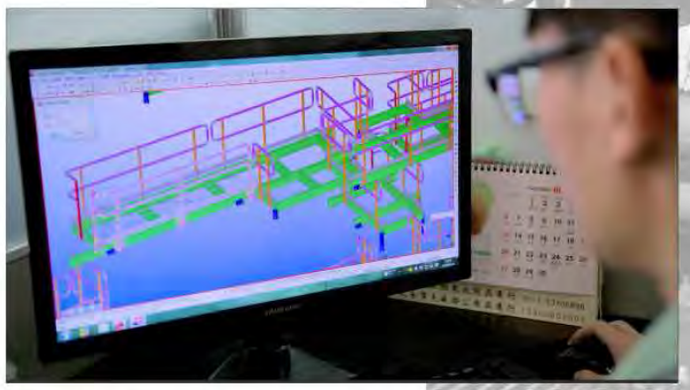
"Everything we do at MDHI is a reflection of our need to be number one in this business"

MDHI CEO George Jo

# GRATINGS

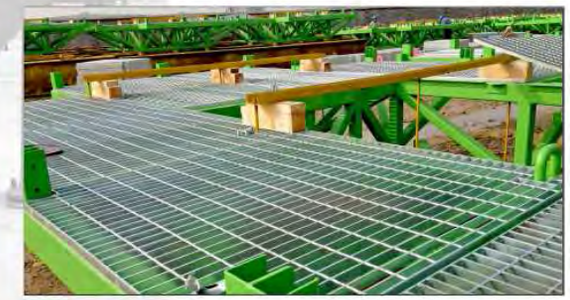
Modern Heavy Industries produces a variety of steel grating types for the industrial marketplace. Steel bar grating is an open grid assembly of steel bars in which the bearing bars, running in one direction, are spaced by rigid attachment to cross rods running perpendicular to the bearing bars.

MDHI gratings offer:
High Strength to Weight Ratio.
Long Lasting Welded Construction.
Non-Oxidizing Galvanized Finish.
Customized Design & Fabrication.
International Standards.



MDHI gratings utilize 6 versions of grating styles in 3 series. The load bar size, depth, and spacing varies between the models and is based upon the client's requirements. After fabrication, our gratings are test fitted to prove accuracy, and then galvanized. For many clients, gratings are pre-installed prior to shipping.

MDHI gratings are assembled and welded using automated machinery to ensure fabrication is to exacting tolerances. Our welders are certified to AWS D1.1 and EN 1090-1/2 and have specialized training for production of floor gratings, stair treads, nosing, and installation components.



MDHI detailers prepare working 3D models of Platforms, Walkways, Handrails, Ladders, Stairways and any other systems which may include or connect with grating. This enables our engineering team to visualize the finished product and check for errors or clashes in the design of the structures.

MDHI employees are more than workers.

We are all part of a large family.

We work together and we communicate.

We learn from each other and become stronger.

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