



CENTEC

ENGINEERING TECHNOLOGIES

METAL FABRICATION

MACHINING

INSTALLATION



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POWER GENERATION INSTALLATION SERVICES

Power Generation installation services have consisted of the following activities: starting air unit, combustion air unit, diesel fuel unit, exhaust gas unit, fresh water unit, and lubrication oil unit.



AUGMENTOR TUBE & BLAST BASKET FABRICATION & INSTALLATION SERVICES

CENTEC fabricates, manufactures, and installs augmentor tubes and blast baskets in order to control total air flow through the test facility, facilitate exhaust gas-bypass air mixing, and prepare mixed exhaust gasses for test cell exit to act as a diffuser.



WORKSTATION ASSEMBLY SERVICES

The workstations are vertically adjustable, providing a means of positioning the vertical location of the workstation for different sized engines. Each workstation accommodates many different engine types, with adapter and test nacelle. Vertical adjustment is achieved by providing several bolt holes at varying elevations on the steel support structure.



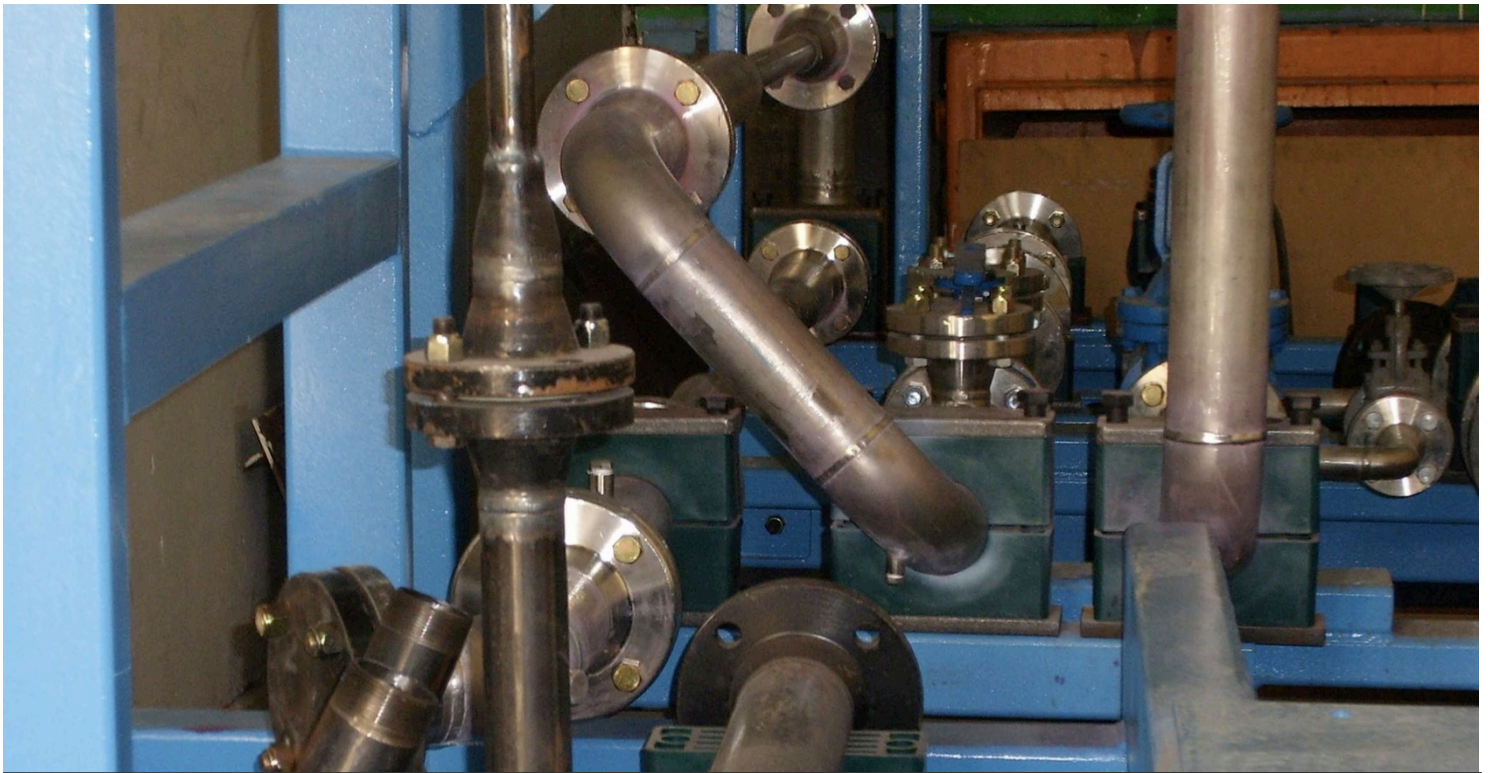
LIFTING BEAM SUPPLY

Lifting Beams are typically used in low headroom applications. The beams are used to spread the load using multiple point pick-ups for balancing or support, while lifting and moving heavy objects using a load-moving mechanism, such as a monorail or bridge-crane.



MECHANICAL & ELECTRICAL ENGINEERING SERVICES

CENTEC provides fabrication and installation of steel and supporting structures for tanks, reactors, and pipes. This involves installation of overhead bridges and chimneys, and installation of Diluting tanks Agitators Hoppers.



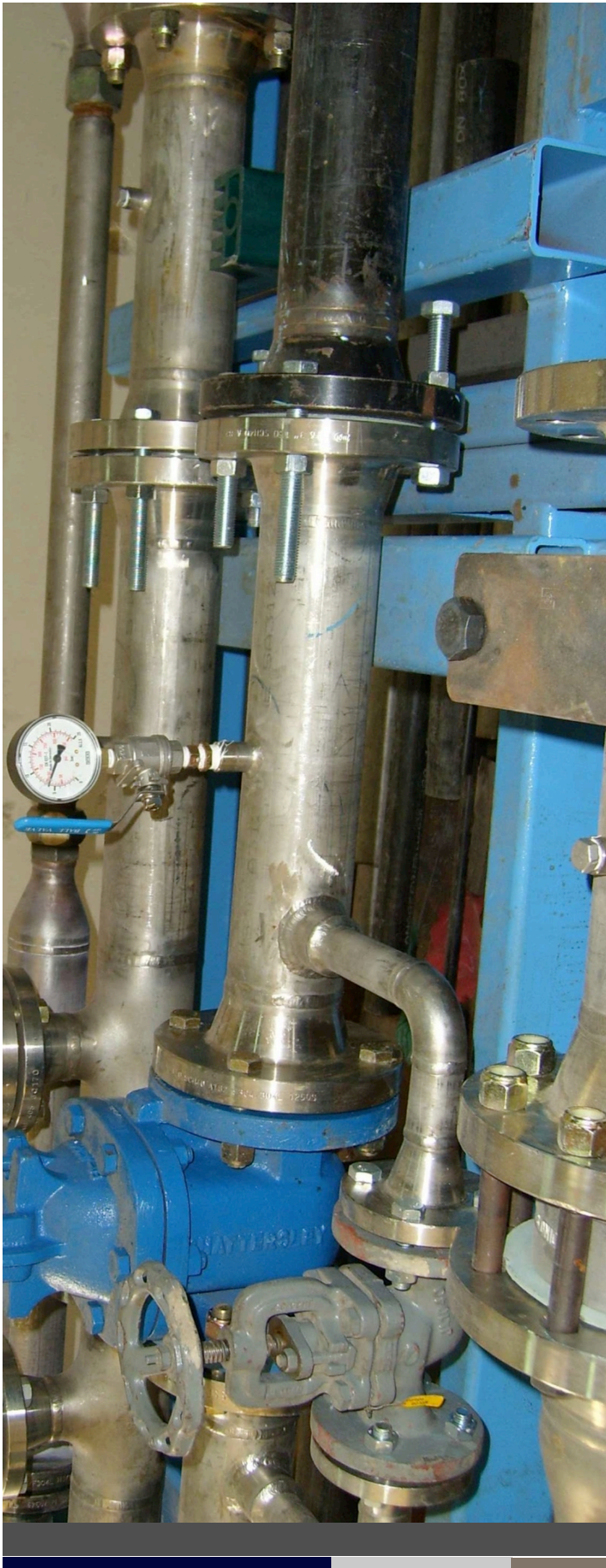
Welcome to CENTEC

CENTEC thrives to provide you with the highest quality product, for even the most complex design, at an affordable cost.

CENTEC Engineering Technologies has provided engineering fabrication services, solutions, and facilities for over 30 years.

CENTEC specializes in custom metal fabrications; machine shop services; product supply, assembly, installation, and maintenance; repairs; sandblasting; and painting. We provide our customers with everything they expect from a premier custom metal fabricator.

Headquartered in Jeddah, Saudi Arabia, the company also has strategic partnerships and operations throughout Saudi Arabia and THE Middle East, as well as in countries in North America and Europe, including the United States, Canada, Germany, and Belgium.



CENTEC's capabilities include everything you would expect from a premier large-scale custom metal fabricator to a highly organized and professional building and industrial construction company.

CENTEC provides specialized services including Aviation Engine Test Facilities, Heavy Custom Fabrications, Heavy Gauge Ductwork, Industrial Fan and Pump Housings, High Temperature SS Applications, Complex Assemblies and Sub-Assemblies, Vacuum Chambers, Utility Boiler Equipment, ASME Tanks and Filtration Housings.

CUSTOMER & INDUSTRY EXPERTISE

The company provides services directly and through strategic business alliances domestically and internationally, with experience in many industries including Aircraft, Building Construction, Power Generation and Utilities, Desalination, and Infrastructure Development.

We have catered to customers like Saudi Arabia Airlines (K.S.A), Saudi TKT, Cenco (US and Belgium), Mock Doors (Finland), Siemens, Commercial Real Estate Company (Saudi Arabia), BAE, Binladin Group of Industries and many more.

COMPANY PROFILE

1. Company Name:

CENTEC Projects Ltd.

2. Co-operate Structure:

CENTEC is a **Canadian/ Saudi Arabian** joint venture company.

3. Main Offices:

Canada

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Kitchener, ON N2R 1Z4

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Telephone: (519) 489 – 0615

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Jeddah, 21523

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Telephone: (9665) 056 – 59606

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E-mail: centec@centecprojects.com

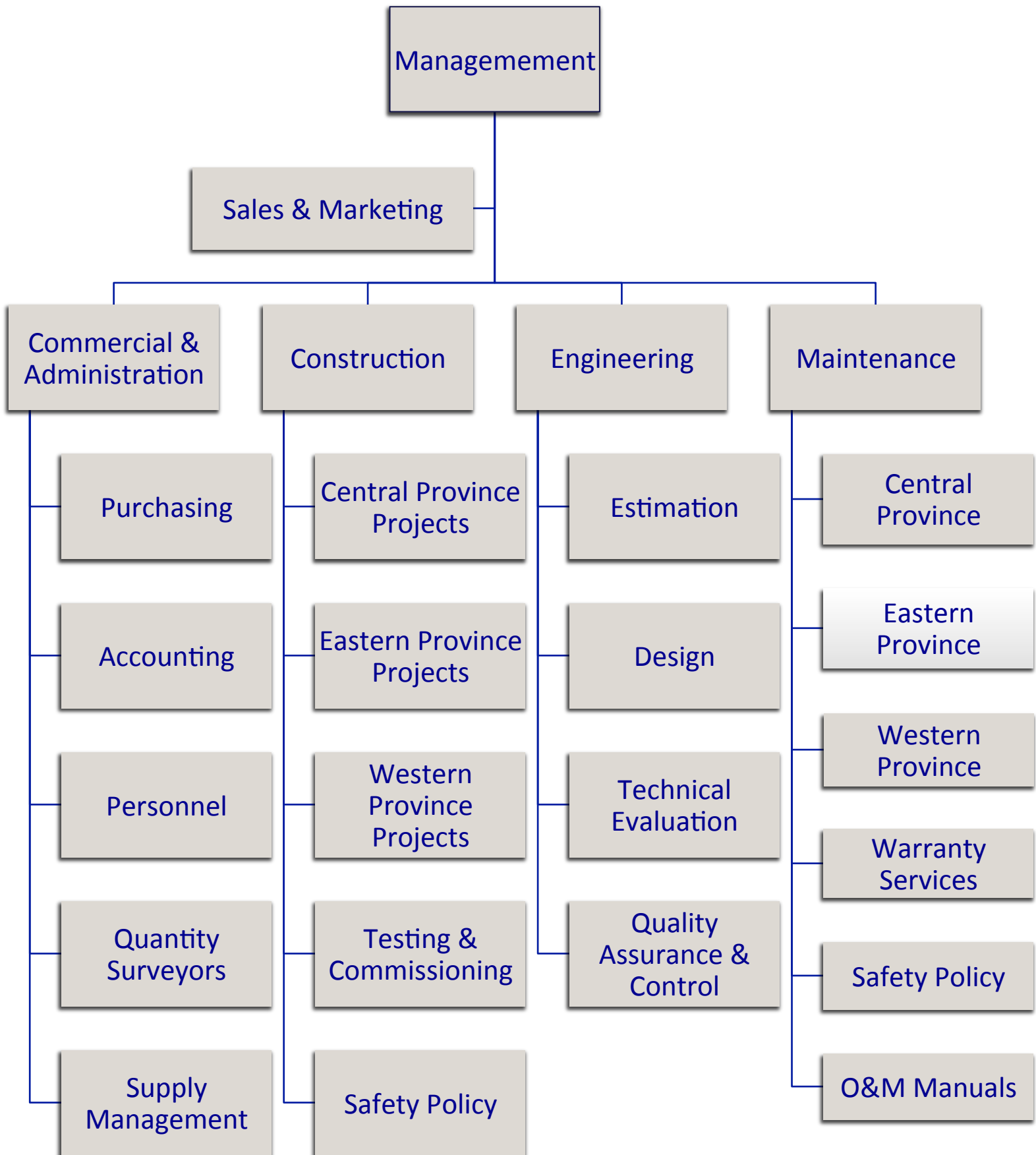
Website: www.centecprojects.com

4. Range of Service

CENTEC specializes in custom metal fabrications; machine shop services; product supply, assembly, installation, and maintenance; repairs; sandblasting; and painting. We provide our customers with everything they expect from a premier custom metal fabricator.

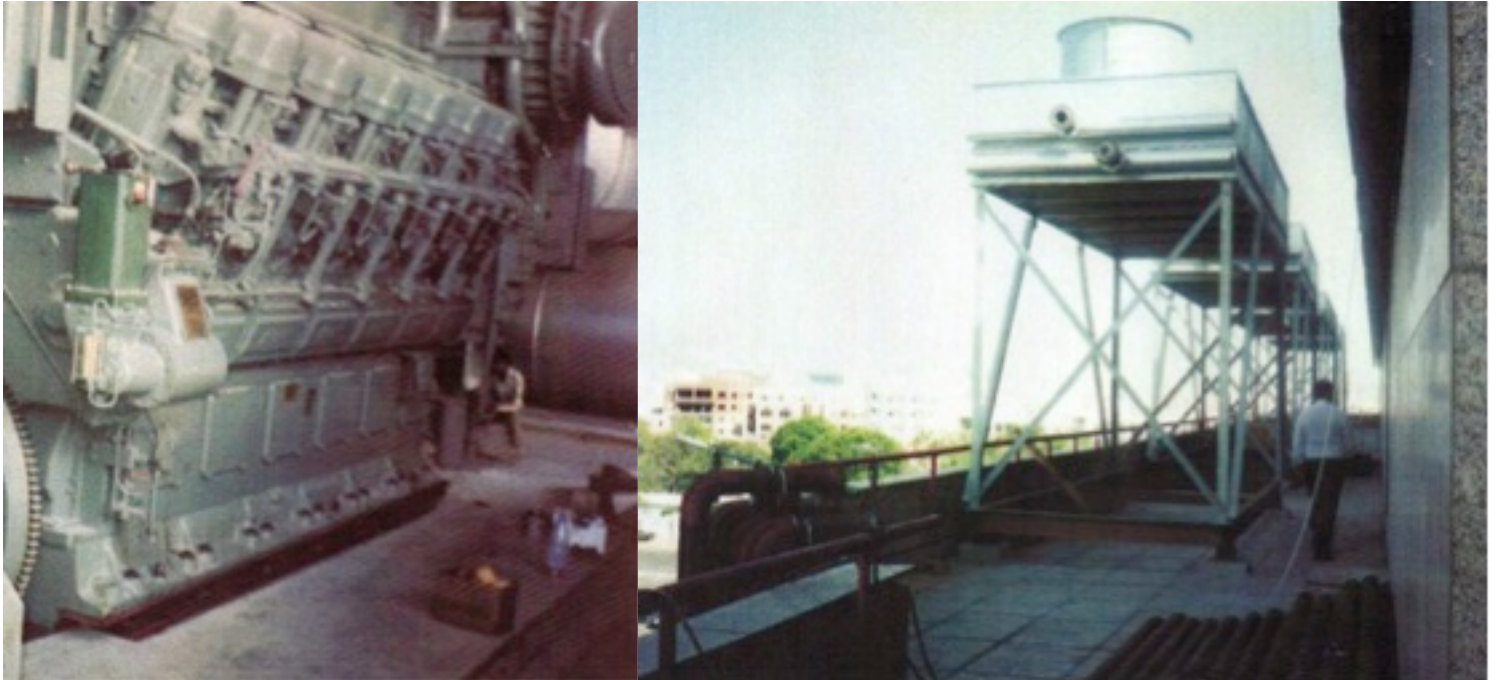
Specialized services include Aviation Engine Test Facilities, Heavy Custom Fabrications, Heavy Gauge Ductwork, Industrial Fan and Pump Housings, High Temperature SS Applications, Complex Assemblies and Sub-Assemblies, Vacuum Chambers, Utility Boiler Equipment, ASME Tanks and Filtration Housings.

5. Financial Information: The legal status of the company is “Company with Limited Liability (Ltd.)”



POWER GENERATION INSTALLATION SERVICES

Manufactured by Mak and Siemens, and installed at the Jamjoom Commercial Center in Jeddah, Saudi Arabia, the Power Plant contained a capacity 2x4.2mw, and consisted of six key components.



Starting Air unit, consisting of the Air Compressor and Air Strainer.

Combustion Air unit, including Oil Bath Filter, Charge Air Cooler, and Charge Air Silencer.

Diesel Fuel Oil unit, consisting of:

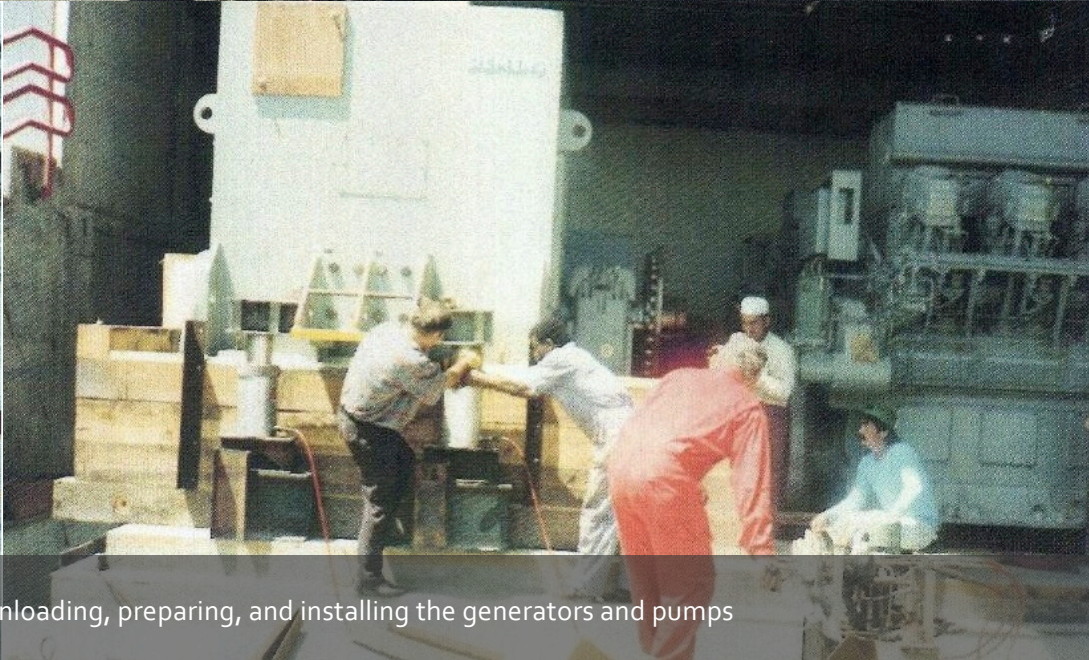
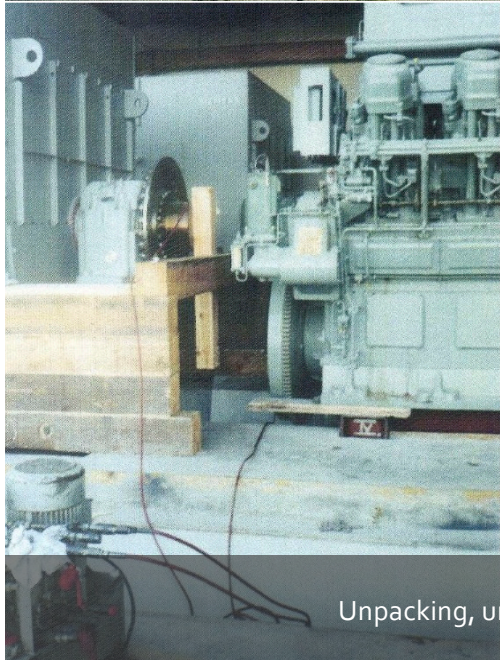
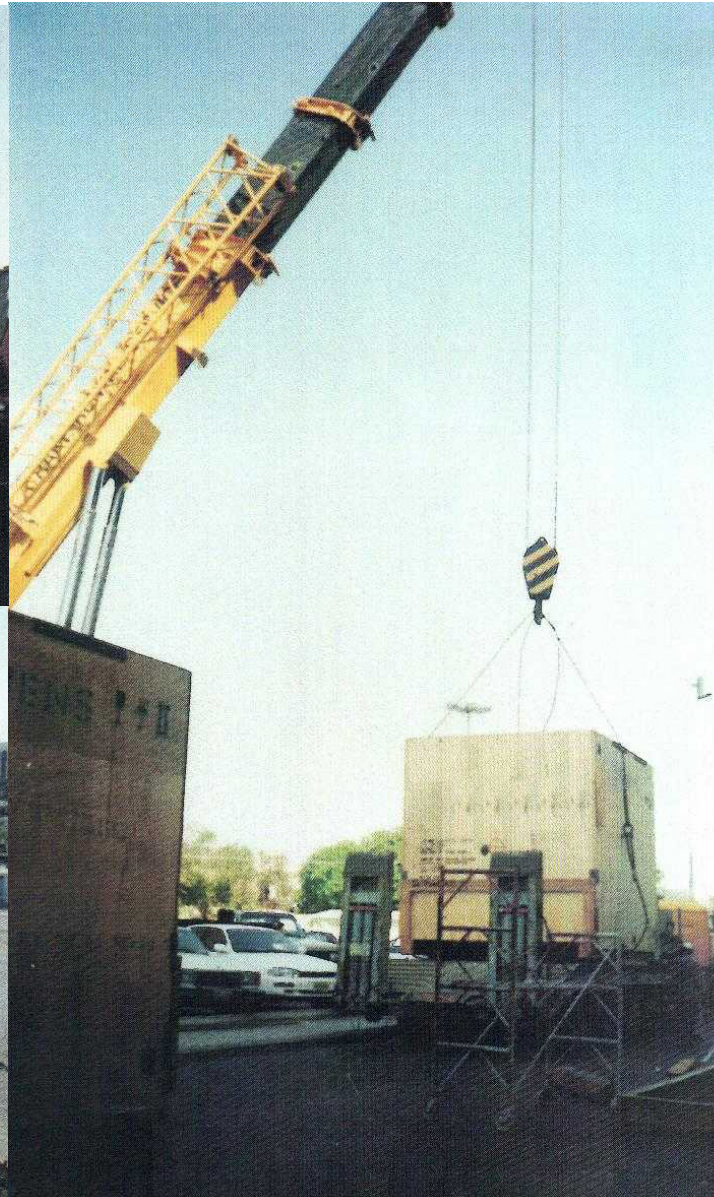
- Diesel Engine
- Diesel Oil Strainer
- Diesel Oil Filter
- Duplex Fine Filter
- Diesel Oil Filling Pump
- Diesel Oil Circulating Pump
- Leak Oil Pump
- Diesel Oil Quantity Counter

Exhaust Gas unit, consisting of the Turbo Charger and Exhaust Silencer.

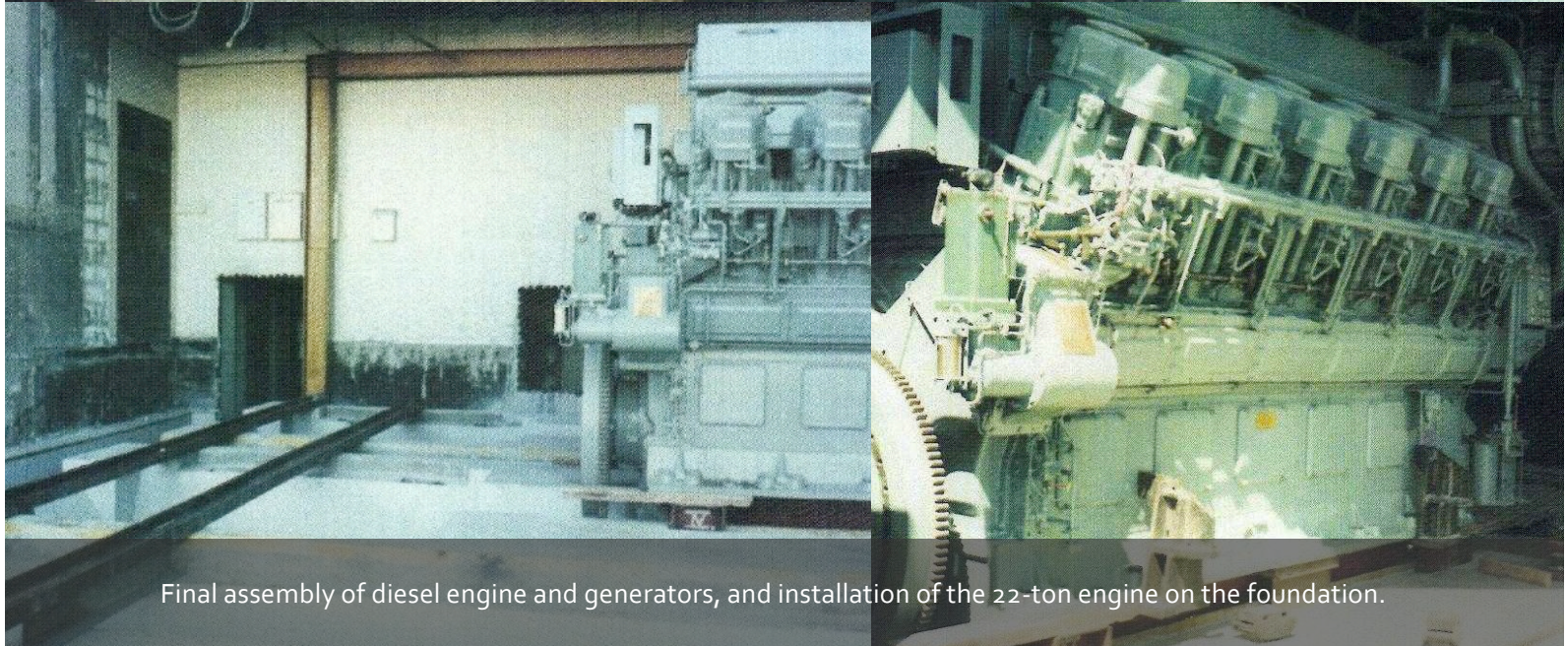
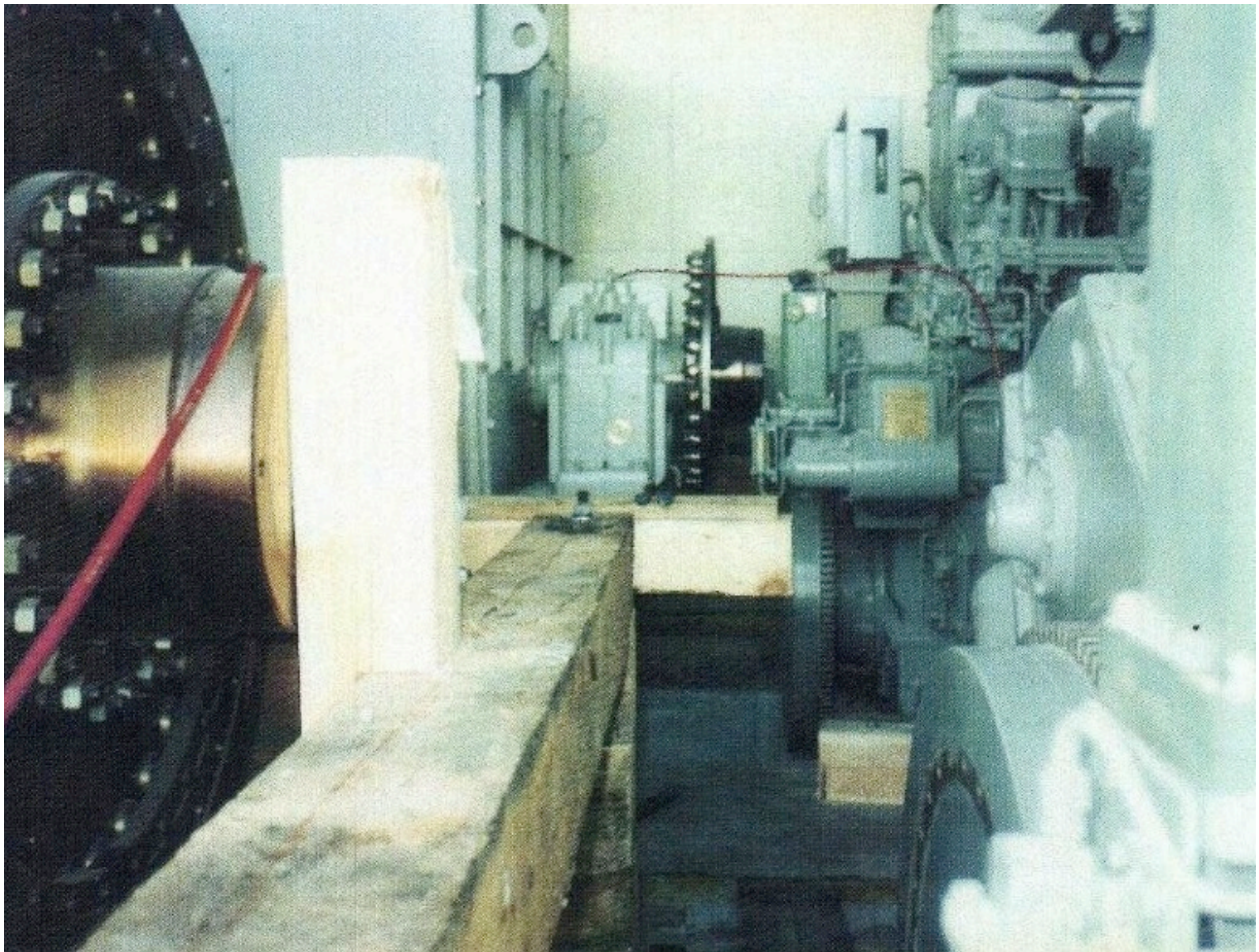
Fresh Water unit, consisting of:

- Fresher Water Preheated
- Radiator Cooler
- Preheating Pump
- Fresh Water Pump
- Fresh Water Regulator HT and NT
- Preheating Unit

Lubrication Oil unit, consisting of, Lubrication Oil Strainer, Automatic Filter, Lubrication Oil Duplex Filter, Lubrication Oil Radiator Cooler, Lubrication Oil Force Pump, Prelubrication Pump, and Lubrication Oil Thermostat



Unpacking, unloading, preparing, and installing the generators and pumps



Final assembly of diesel engine and generators, and installation of the 22-ton engine on the foundation.

AUGMENTOR TUBE & BLAST BASKET INSTALLATION SERVICES

Fabricate and install augmentor tubes and blast baskets in order to control total air flow through the test facility, facilitate exhaust gas-bypass air mixing, and prepare mixed exhaust gases for test cell exit.

Augmentor Tube

Installed the augmentor tube with dimensions 5.5 meters internal diameter by 27 meters long. This tube was manufactured from 12.5mm thick steel plates that were rolled and welded into sections.

The leading edge of the augmentor tube was finished with a flared section, then transported to the installation site and welded into ring sections. These ring sections are then installed into the augmentor room by lowering them through the open roof and placed on the supports, with

additional temporary supports as required, which allow final position adjustment. Once these ring sections are positioned correctly, the sections are welded together to create the full-length augmentor tube. The tube is mounted on steel supports, also provided and installed by the tube supplier.

The final number and size of the sections is up to the supplier, based on available steel sheet sizes, rolling machine capacity, transport restrictions, and other technical and environmental factors.



Fabricate, manufacture, and install augmentor tubes and blast baskets

The blast basket mixes the hot engine exhaust with the cooler test cell bypass air to reduce and evenly distribute the temperature. It also slows down the speed of the exhaust gases.

Blast Basket

All of this is done in order to reduce the acoustic emissions from the test cell and to allow the acoustic treatment mounted above the basket to function effectively.

The blast basket was a 5.6 meters diameter internal diameter by 10.5 meters long tube mounted at the end of the augmentor tube and located in the exhaust stack. The blast basket is manufactured from 12.5mm thick steel plates that have perforations. The perforated plates are rolled and then welded into sections.

The open area of the blast basket will be finalized during the aerodynamic design phase to achieve the specified entrainment ratio based on the most restrictive engine that will be run in this test facility. Typically the open area of the blast basket is approximately 30-34%. The holes are approximately 30mm in diameter and typically punched in the flat steel sheet prior to rolling.





Assembly of Workstations

CENTEC creates flexible workstations for many environments. They can be fixed or moveable, are adjustable, and can accommodate many different engine types.

WORKSTATION ASSEMBLY SERVICES

The workstations are vertically adjustable, providing a means of positioning the vertical location of the workstation for different sized engines.

Each workstation accommodates many different engine types, with adapter and test nacelle. Vertical

adjustment is achieved by providing several bolt holes at varying elevations on the steel support structure.

Each workstation can be bolted at different elevations, depending upon engine type.



Large workstation being assembled and installed.



Installation of a fixed work station



Installation of a moveable work station

LIFTING BEAM SUPPLY

Lifting Beams are typically used in low headroom applications.

The beams are used to spread the load using multiple point pick-ups for balancing or support, while lifting and moving heavy objects using a load-moving mechanism, such as a monorail or bridge-crane.

The dimensions of the Beam and hook-sizes depend on the load-rating.

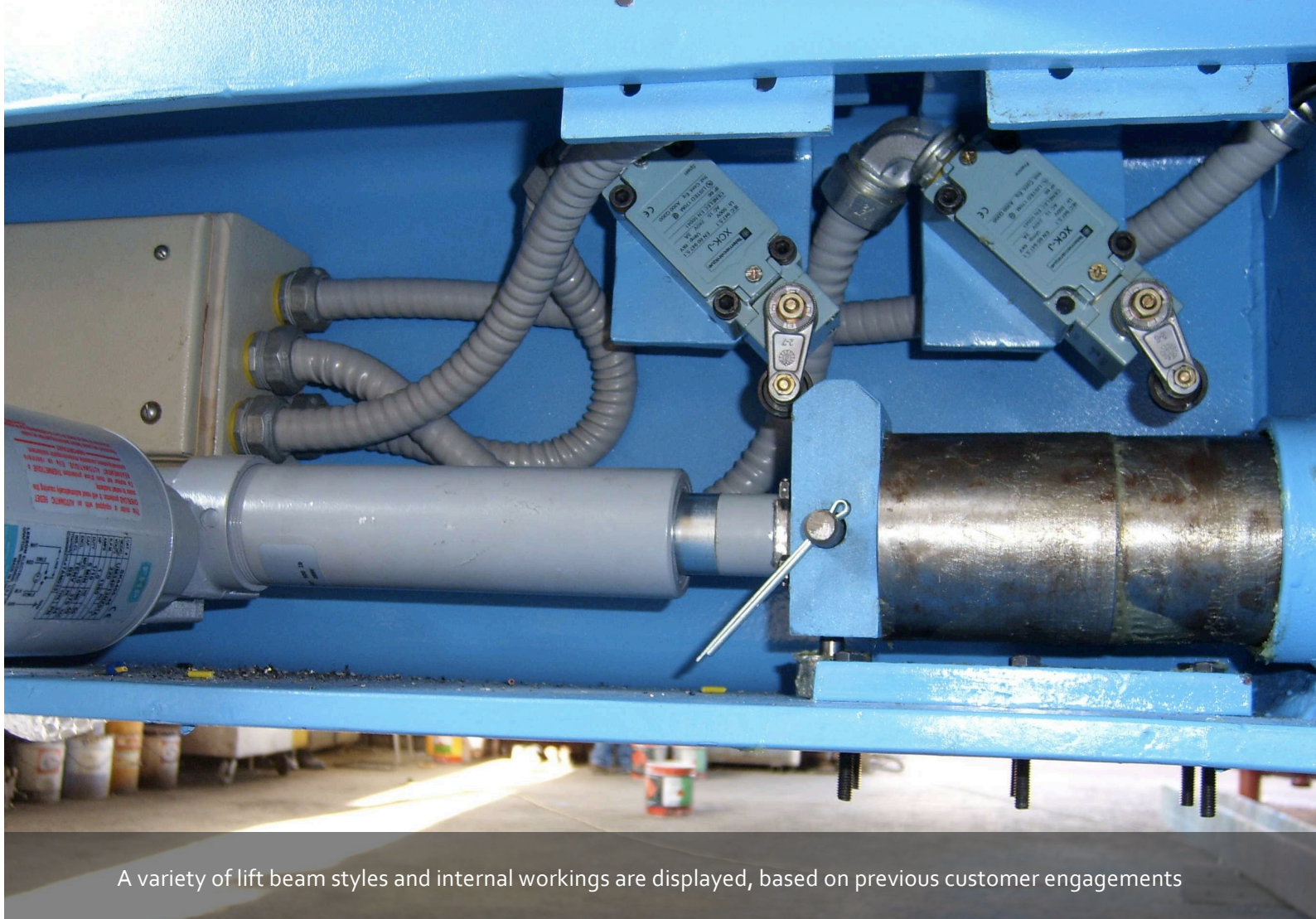


Lift beams can carry up to 35 tons.

CENTEC has the capability to manufacture Lifting Beams on a Build-to-Print basis.



Lift beams can carry upwards of 35 tons



A variety of lift beam styles and internal workings are displayed, based on previous customer engagements

MECHANICAL & ELECTRICAL ENGINEERING SERVICES

For the National Industrial Resin Co. Ltd., provided fabrication and installation of steel and supporting structures and electrical requirements for tanks, reactors, and pipes.

Fabrication and installation of overhead bridges and chimneys.

Installation of Diluting tanks Agitators Hoppers.

Installation of all the equipment and machines required, including:

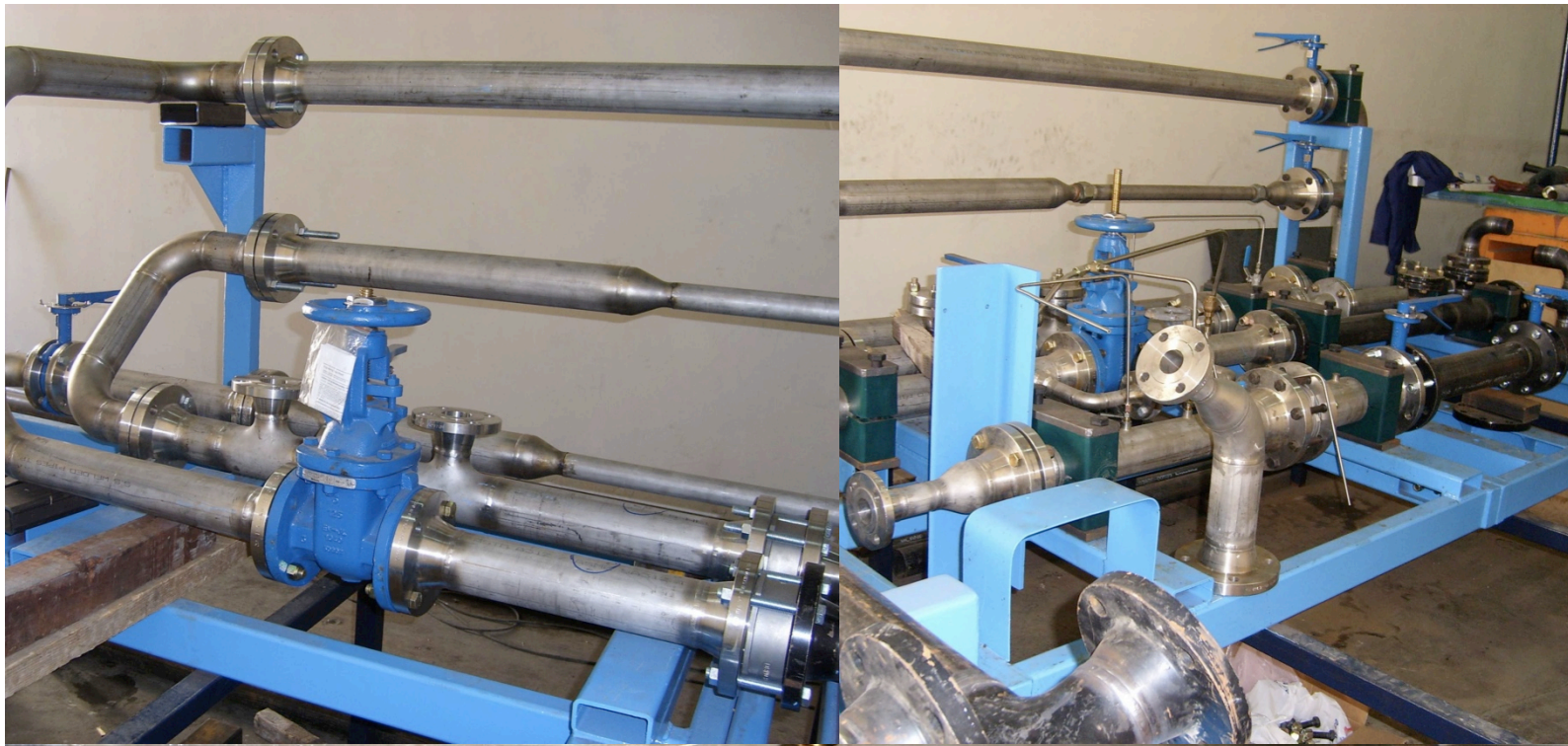
- Installation of stainless steel and carbon pipes
- Installation of Motor Pumps for Storage tanks, dilution tanks, and alkyd blenders
- Installation of vacuum devices
- Testing and commissioning of all of the control devices

Electrical

Pulling cables, wirings, and control cables connectors of transmitter to all the mechanical equipment and control devices – including pumps tanks, flow meter, PLC cabinets, level transmitter, reactors temperature transmitter, pressure transmitter, Modulators valves.

Limit switch to manual valves and automatic valves and other device, including testing and commissioning.





Manufacturing services





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