

trinity
mechanical

to engineer solutions that shape the future

about us

Trinity Mechanical Services (TMS) is an engineering service provider with three decades of experience in repair, reconditioning and manufacturing of critical mechanical components and assemblies. Since its establishment in 1988 as a machine shop, TMS has kept pace with ever changing requirements of diverse industries such as oil & gas, marine, dredging, power generation, construction and heavy engineering.

TMS's purpose-built, state-of-the-art workshops are equipped with heavy and CNC machinery and a dedicated welding and fabrication yard that can handle large equipment and components. Today, TMS is a preferred service provider due to its commitment to quality, alignment to customer needs, and capability in providing turnkey mechanical solutions.

quality and HSE focus

At TMS, all operations are carried out in line with internationally accepted quality standards. The company is constantly upgrading its testing, measuring and monitoring equipment and acquiring new processes to enhance its workmanship and quality.

TMS conforms to ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018 quality management, environment and health & safety standards. It is also approved by the American Petroleum Institute with the license to monogram API 5CT, 7-1 and 8C products.



ISO 9001:2015
ISO 14001:2015
ISO 45001:2018
Certified Organization

Management Systems
Certification Body

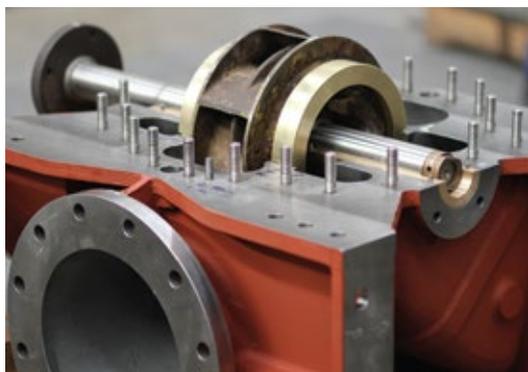


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services

- 0 CNC MACHINING & EDM
- 0 HEAVY MACHINING
- 0 DEEP HOLE DRILLING & HONING
- 0 ENGINE PARTS RECONDITIONING
- 0 IN-SITU MACHINING
- 0 ALLOY STEEL BAR SUPPLIER
- 0 WELDING & FABRICATION
- 0 DYNAMIC BALANCING
- 0 METAL CASTING
- 0 HEAT TREATMENT
- 0 PLATING
- 0 THERMAL SPRAY
- 0 WHITE METAL / BABBITT BEARINGS
- 0 EQUIPMENT OVERHAULING
- 0 TURNKEY PROJECTS
- 0 HYDRAULIC SYSTEMS



CNC machining & EDM

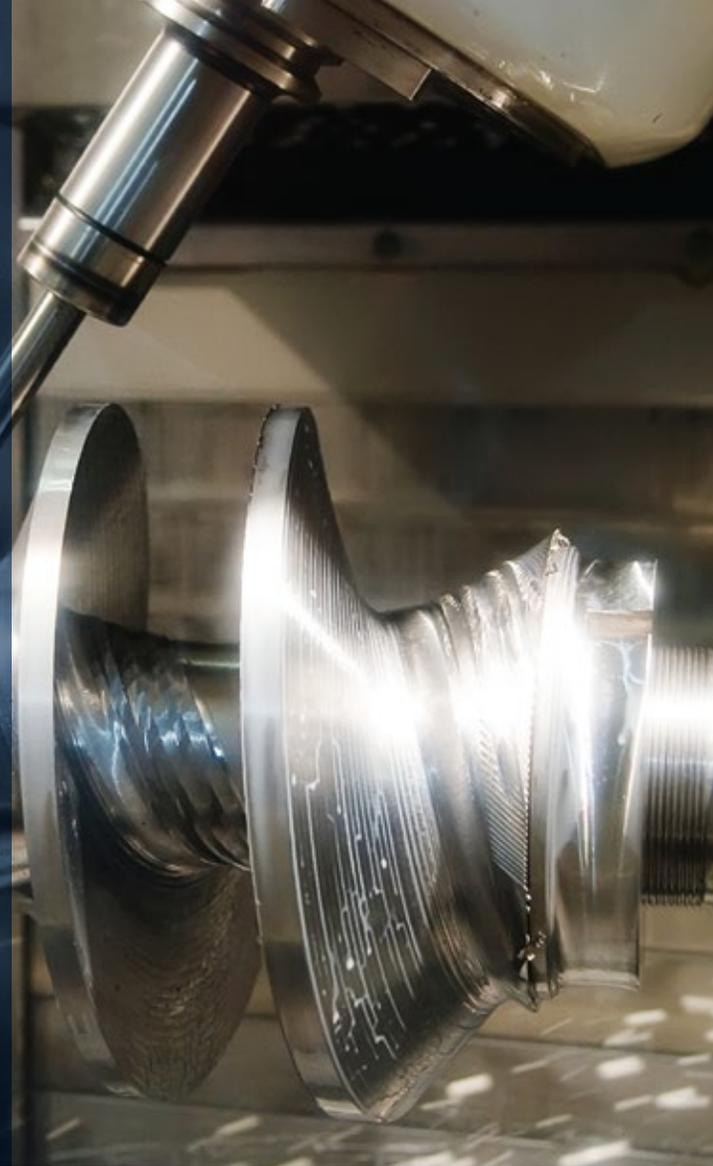
TMS is equipped with a variety of high precision CNC machines to cater to the ever evolving engineering needs of its customers.

CNC machines include:

- Ø Multi-axis vertical machining centers
- Ø Multi-axis horizontal machining centers
- Ø Turn-mill centers
- Ø Hollow spindle turning centers

Electrical Discharge Machines (EDMs) include:

- Ø Multi-axis spark EDM
- Ø Multi-axis wire EDM
- Ø Rapid drilling



heavy machining

TMS offers a full range of machining services from turning of simple components to complete machining of complex, large structures.

Heavy machining capabilities include:

- Ø Turning - up to 1.2 m dia and 9 m long
- Ø Flange facing - up to 4.5 m dia
- Ø Horizontal machining (up to 28 m long and 3.5 m high)
- Ø Gear hobbing, hardening and grinding - up to 1.7 m dia and 20 module
- Ø Cylindrical grinding (up to 8 m long)
- Ø Deep hole drilling and honing (up to 9 m long)



Crane pedestal machining on CNC floor borer



Repair of dredger cutter shaft

engine parts reconditioning

TMS offers reconditioning services for most engine types, ranging from compact, high speed, 4-stroke petrol engines to large, slow speed, 2-stroke diesel engines. Such engines are used in generators, boats and ships, heavy equipment and commercial vehicles.

Components reconditioned are:

- 0 Engine blocks
- 0 Crankshafts
- 0 Connecting rods
- 0 Piston rods
- 0 Cylinder heads
- 0 Exhaust valve assemblies - valves, seats, housings, cages
- 0 Camshafts
- 0 Piston crowns and skirts
- 0 Cylinder liners

in-situ machining

TMS caters to the in-situ needs of heavy industries for machining and alignment of equipment / structures such as:

- 0 Engine components - engine blocks, liners
- 0 Flanges - crane pedestals, thruster mounting locations, spades
- 0 Trunnion pins
- 0 Stern tube housings and A-frames
- 0 Construction equipment components such as buckets, sticks and booms
- 0 Large fabricated steel structures
- 0 Precision foundation surfaces



Engine block line boring



Marine engine crankshaft grinding



In-situ facing of crane pedestal flange



In-situ facing and boring of cement rotary kiln



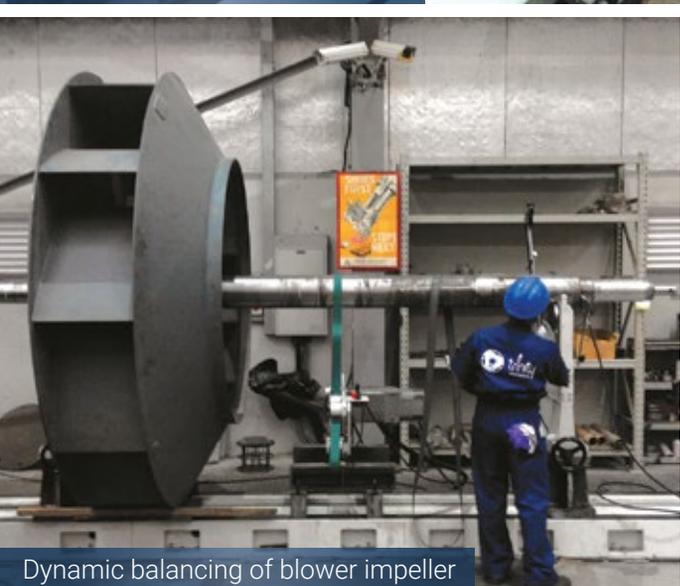
Fabrication of silo



Repair of dredging ball joint by welding



Dynamic balancing of crankshaft



Dynamic balancing of blower impeller

welding & fabrication

TMS uses various welding processes to cater to different applications and materials. The welding processes include:

- ⦿ Tungsten Inert Gas (TIG)
- ⦿ Metal Inert Gas (MIG)
- ⦿ Submerged Metal Arc (SMAW)
- ⦿ Submerged Arc (SAW)
- ⦿ Plasma Transferred Arc (PTA)
- ⦿ Fusion welding

Structures and components fabricated include:

- ⦿ Dredging equipment - Dredge pipelines, gate valves, ball joints, pump pedestals, cutter parts
- ⦿ Construction equipment - Booms, sticks, buckets, roller drums
- ⦿ Heavy industry equipment - Silos, tanks, lifting spreaders
- ⦿ Material handling equipment - Crane girders, screw conveyors, trolleys, winch drums, sheaves

dynamic balancing

TMS is equipped with advanced dynamic balancing machineries to cater to components of various shapes, sizes and weight configurations. Components that are regularly balanced include:

- ⦿ Blower fans
- ⦿ Couplings
- ⦿ Drive gears
- ⦿ Crankshafts
- ⦿ Flywheels
- ⦿ Impellers
- ⦿ Multi-stage rotor assemblies
- ⦿ Central and offset loaded rigid rotors
- ⦿ Propeller drive shafts
- ⦿ Cardan shafts

metal casting

Industrial components are cast in a foundry that houses a CNC pattern shop, induction furnaces and a metallurgical laboratory.

Cast materials include:

0 Ferrous

- Gray cast iron
- Ductile iron
- White cast iron
- Plain carbon steels
- Low alloy steels
- Manganese steels
- High chrome steels
- Stainless steels
- Duplex steels
- Ni-hard and Ni-resist
- Heat resistant steels
- Tool steels

0 Non-ferrous

- Aluminium alloys
- Aluminium bronze
- Manganese bronze
- Phosphorus bronze
- High lead tin bronze
- Gunmetal
- Brass
- Pure zinc
- Pure copper
- Pure lead

heat treatment

A variety of heat treatment services are available for parts that have special engineering requirements such as high toughness, surface hardness and / or corrosion resistance.

Heat treatment processes include:

- 0 Gas carburizing
- 0 Gas nitriding
- 0 Induction hardening
- 0 Liquid nitriding / TRIBOX (equivalent to quench, polish, quench)
- 0 Flame hardening
- 0 Furnace hardening
- 0 Stress relieving
- 0 Annealing
- 0 Normalizing and tempering



Induction hardening of wire rope groove of sheave



Heat treatment of crusher parts

plating

Plating processes carried out include:

- 0 Hard chrome plating
- 0 Electroless nickel plating
- 0 Low-stress nickel plating
- 0 Copper plating
- 0 Zinc plating
- 0 Selective in-situ plating

Regularly repaired components include:

- 0 Hydraulic jack piston rods & cylinders
- 0 Mud motor rotors
- 0 Downhole tools
- 0 Compressor crankshafts
- 0 Plungers & spools
- 0 Pump shafts
- 0 Motor shafts

thermal spray

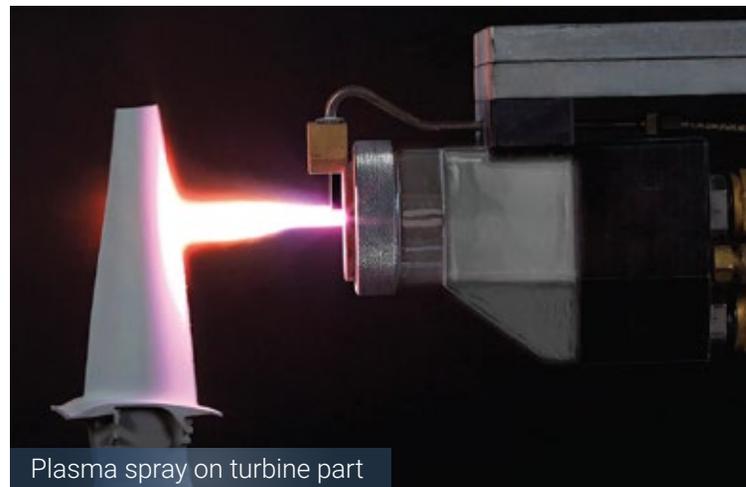
Mechanical parts that require repair by build-up or resistance to abrasion, wear, corrosion or temperature can be coated with the use of following thermal spray processes:

- 0 High Velocity Oxy Fuel (HVOF) spray
- 0 Plasma spray
- 0 Twin wire arc spray

Components that are repaired or coated include:

- 0 Engine piston rods and crankshafts
- 0 Turbine parts
- 0 Rotor shafts
- 0 Downhole tools
- 0 Steel mill rolls
- 0 Print and plastic industry rolls
- 0 Hydraulic cylinder piston rods

Other coatings include SermeTel® and SermaLon® for power industry components.



Plasma spray on turbine part



Stern tube repair by thermal spray

white metal / babbitt bearings

TMS offers manufacturing and refurbishment of hydrodynamic bearings for OEMs and operators of rotary equipment. Chemical analysis, ultrasonic bond testing and dye penetrant testing are carried out to ensure high quality and compliance with industry standards. Bearing types worked with are:

- 0 Journal bearings - plain and multi-lobe
- 0 Thrust bearings - tilt pad and self-levelling
- 0 Tilt pad journal bearings
- 0 Pedestal bearings
- 0 Vertical thrust and guide bearings

equipment overhauling

TMS carries out complete overhauling of various types of assemblies. Some examples of equipment refurbished include hydraulic cylinders, pumps, gearboxes, crushers, dredging assemblies and material handling equipment.

The typical overhauling process involves:

- 0 Dismantling of received assembly
- 0 Complete pre-inspection of individual parts
- 0 Replacement or manufacturing of items that are beyond repair
- 0 Repair of components in consultation with customer
- 0 Final inspection of new or repaired components
- 0 Final assembly as per functional requirements
- 0 Factory Acceptance Test (FAT) and equipment inspection, depending upon customer requirement and feasibility



Manufacturing of gearbox babbitt bearings



Refurbishment of jaw crusher



Overhauling of dredging equipment

turnkey projects

Drawing synergies from sister companies, TMS offers an end-to-end solution to its customers. The company has the infrastructure and capability to take on projects involving complete production of large, complex structures and assemblies.

Scope of activities includes:

- 0 Designing
- 0 Sourcing
- 0 Manufacturing
- 0 Special treatment / processing of materials
- 0 Coatings
- 0 Factory Acceptance Test (FAT)

Turnkey projects undertaken range from large material handling equipment to multiplex gearboxes and everything in between.



hydraulic systems

TMS offers hydraulic engineering solutions for critical operations in the oil & gas and marine industries.

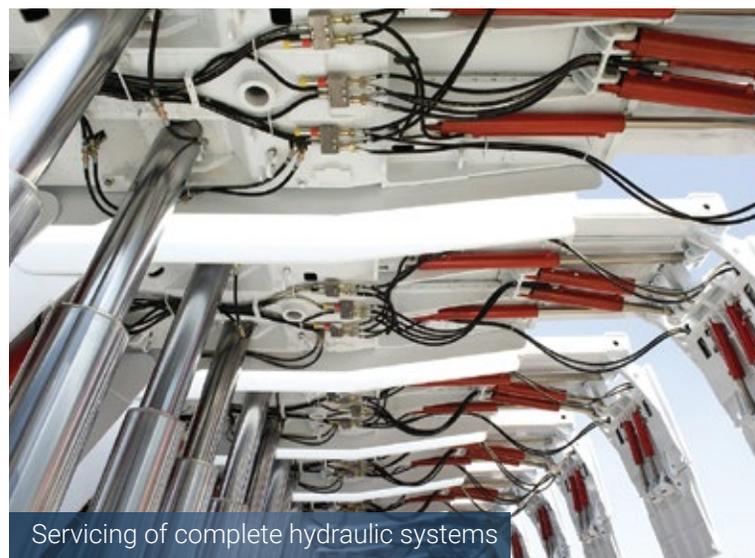
Services offered include:

- 0 Designing, manufacturing and commissioning of new hydraulic systems
- 0 Upgradation and refurbishment of cylinders, hydraulic power packs, valves, pumps, motors and winches
- 0 Piping, pressure testing and flushing of hydraulic lines

Leveraging a team of OEM certified experts and its workshop facility, TMS is poised to offer economical and quality hydraulic solutions to its customers.



Hydraulic cylinder refurbishment



Servicing of complete hydraulic systems

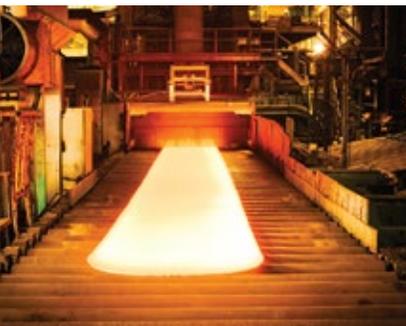


Material handling equipment



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mechanical

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