rainbow

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ISO 9001 · ISO 14001
ISO 45001

UKAS
MANAGEMENT
SYSTEMS
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to engineer solutions that shape the future

about us

Rainbow Mechanical Solutions LLC, a wholly owned subsidiary of Trinity Holdings, was established in 1991, in Abu Dhabi, to cater to the increasing demand for specialized services in the region. The company offers a variety of services to industry sectors that include oil & gas, marine, dredging, power generation, automotive and construction.

Equipped with Thermal Spray facilities, conventional & CNC machines, electroplating, foundry & heat treatment, fabrication and a large overhauling & fitting section; Rainbow offers end-to-end solutions to various industry requirements.

quality & HSE focus

International certifications and standards to the credit of Rainbow endorse its commitment to high quality and ethical standards. The facility is certified to ISO 9001:2015, ISO 14001:2015, ISO 45001: 2018 and US Navy standards. In addition, Rainbow has the API licenses 5CT, 5B, 6A, 7-1 & 7-2 for the repair, re-certification and manufacture of standard API products in the Middle East.

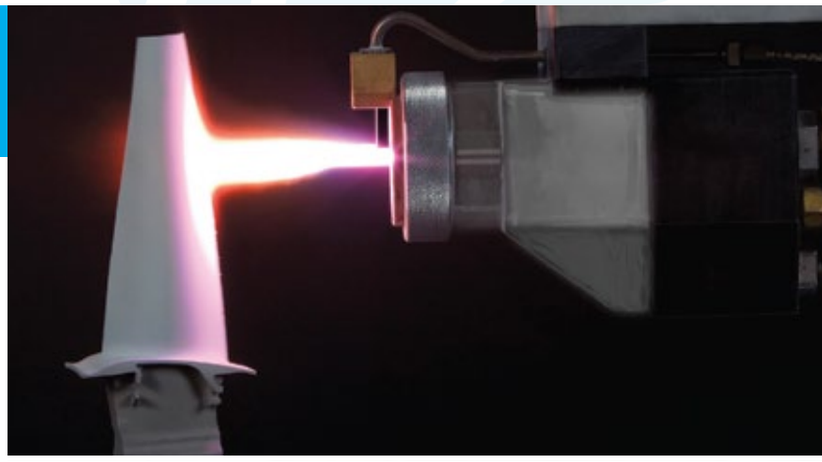
Rainbow is committed to the health and safety of its employees by developing safe procedures, awareness through training and providing protective equipment, conforming to the various services that it offers. By adopting efficient and sustainable practices, the company has been able to minimize the impact of its operations on the environment, and the community as a whole.

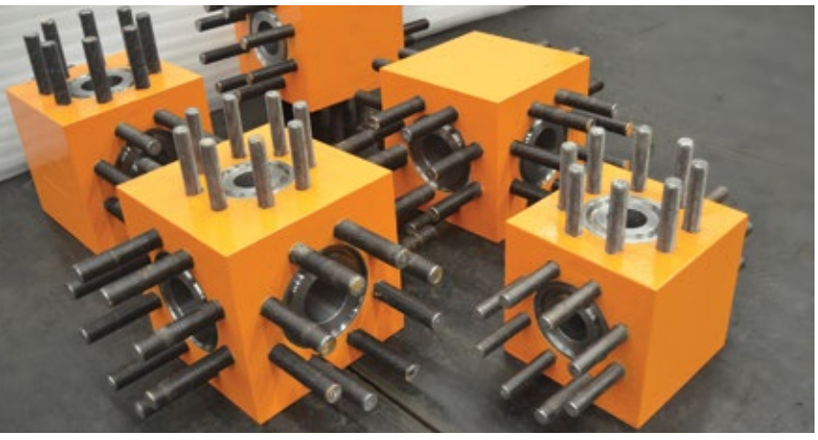
services & products

With a dedicated team of talented engineers and skilled technicians, Rainbow delivers the following services and products that conform to international quality standards.

services

- thermal spray (HVOF, Plasma & Twin Wire Arc spray)
- SermeTel® & SermaLon® protective coatings
- tubular services (repair & manufacturing)
- conventional & CNC machining
- sutomotive engine reconditioning
- welding & fabrication
- repair, recertification and manufacture of API licensed products
- foundry & heat treatment
- electroplating
- in-situ services
- hydraulic projects
- premium connections – VAGT, VA Superior, TMK, TPCQ, UPJM, JPC-4 & JSHET



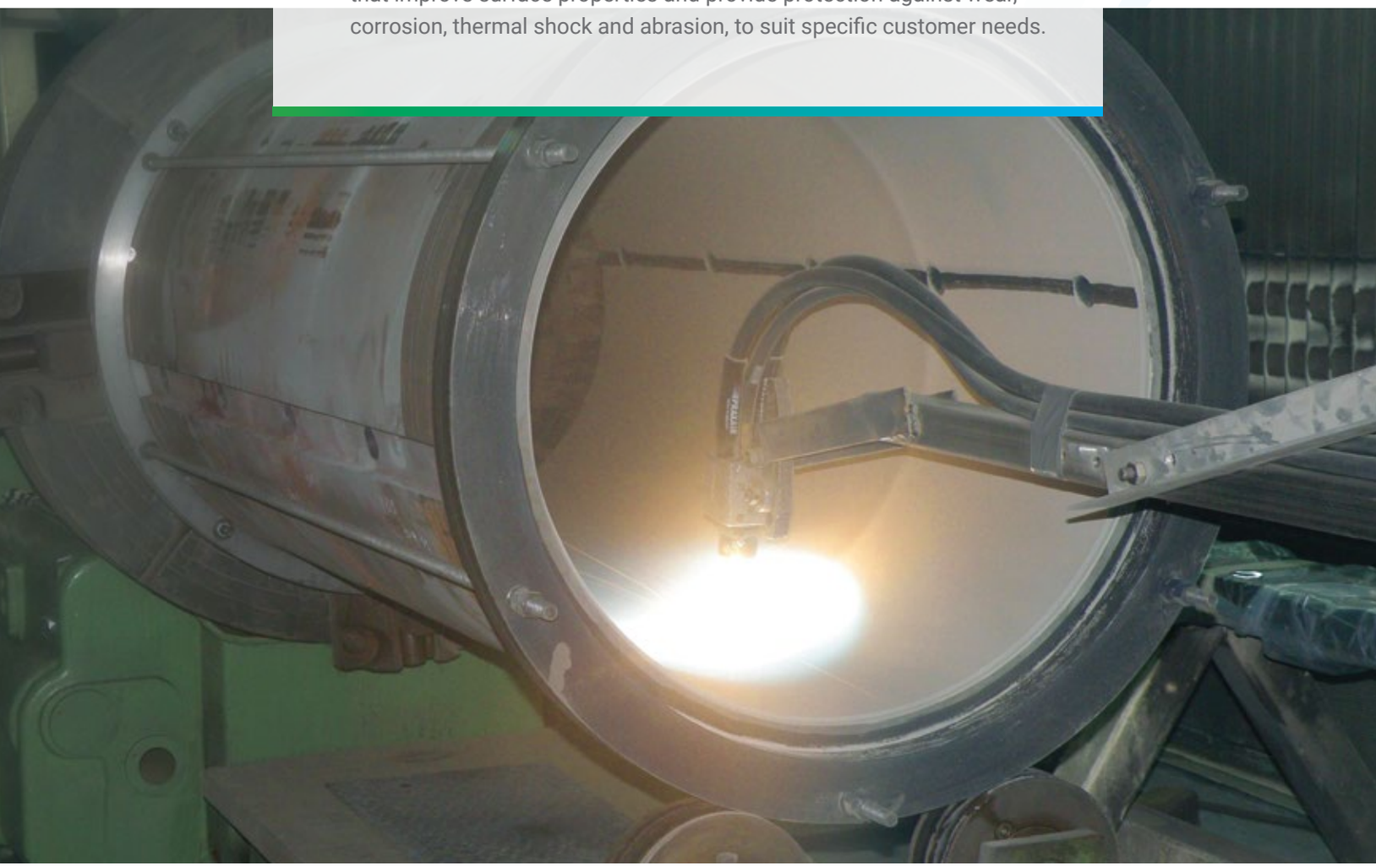


products

- jar components (mandrels, housings, wash pipes)
- tubular products (crossovers, pup joints, subs, pony collars)
- API monogrammed products (flanges, DSAs, tees, crosses, spools, choke & kill lines, pup joints, sheaves)
- pump parts (impellers, casings, shafts and more)
- gear boxes (gears and shafts)
- white metal bearings
- hydraulic jacks
- hydraulic hoses & fittings
- dredging components
- crusher and quarry parts

surface technologies

Rainbow offers a variety of coatings and surface treatment services that improve surface properties and provide protection against wear, corrosion, thermal shock and abrasion, to suit specific customer needs.



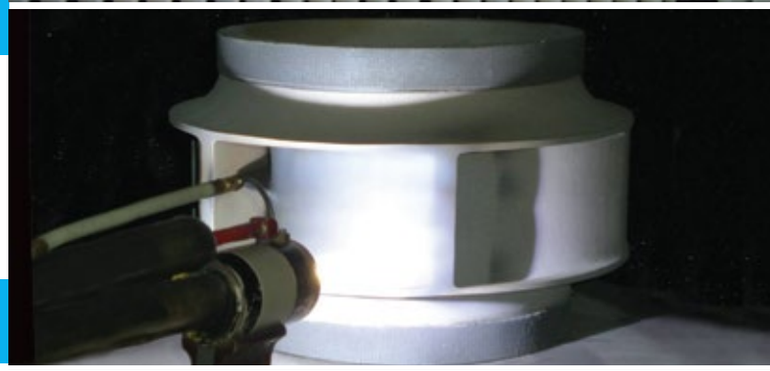
high velocity oxy-fuel (HVOF)

HVOF involves heating the cladding material and firing it towards the component at a supersonic velocity using oxy-fuel. Rainbow carries out following HVOF coatings:

- chrome oxides
- ceramics
- tungsten carbide
- nickel based alloys

plasma spray

Major applications of plasma spray include thermal barrier coatings (TBC) on turbine components, ceramic coatings on hydraulic rods, pump casings and other shafts, build up on worn out components such as bearing journals of shafts, impeller eye and crankshafts among others.



twin arc spray

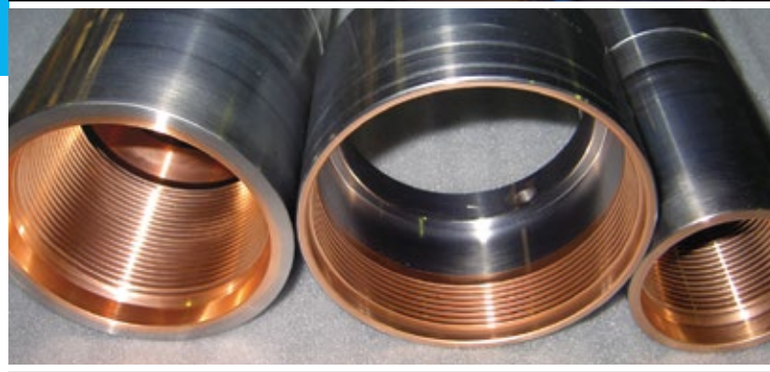
Twin Arc Spray is a wire spraying process used for rebuilding of shafts, special protective coatings or sacrificial coatings on bearing bushes and pump casings. Various grades of materials utilized for the coating include:

- babbitt (white metal)
- stellite
- monel
- nickel-chrome
- aluminum
- zinc
- stainless steel 316L
- other materials

electroplating

Rainbow is specialized in offering a wide variety of plating services that include hard chrome, electro-less nickel, sulfamate nickel, copper, zinc and selective in-situ plating services. Regularly repaired components include:

- mud motor rotors
- mandrels
- fishing jars
- housings
- hydraulic jacks
- shafts
- gas pump plungers
- pump shafts
- motor shafts
- other materials



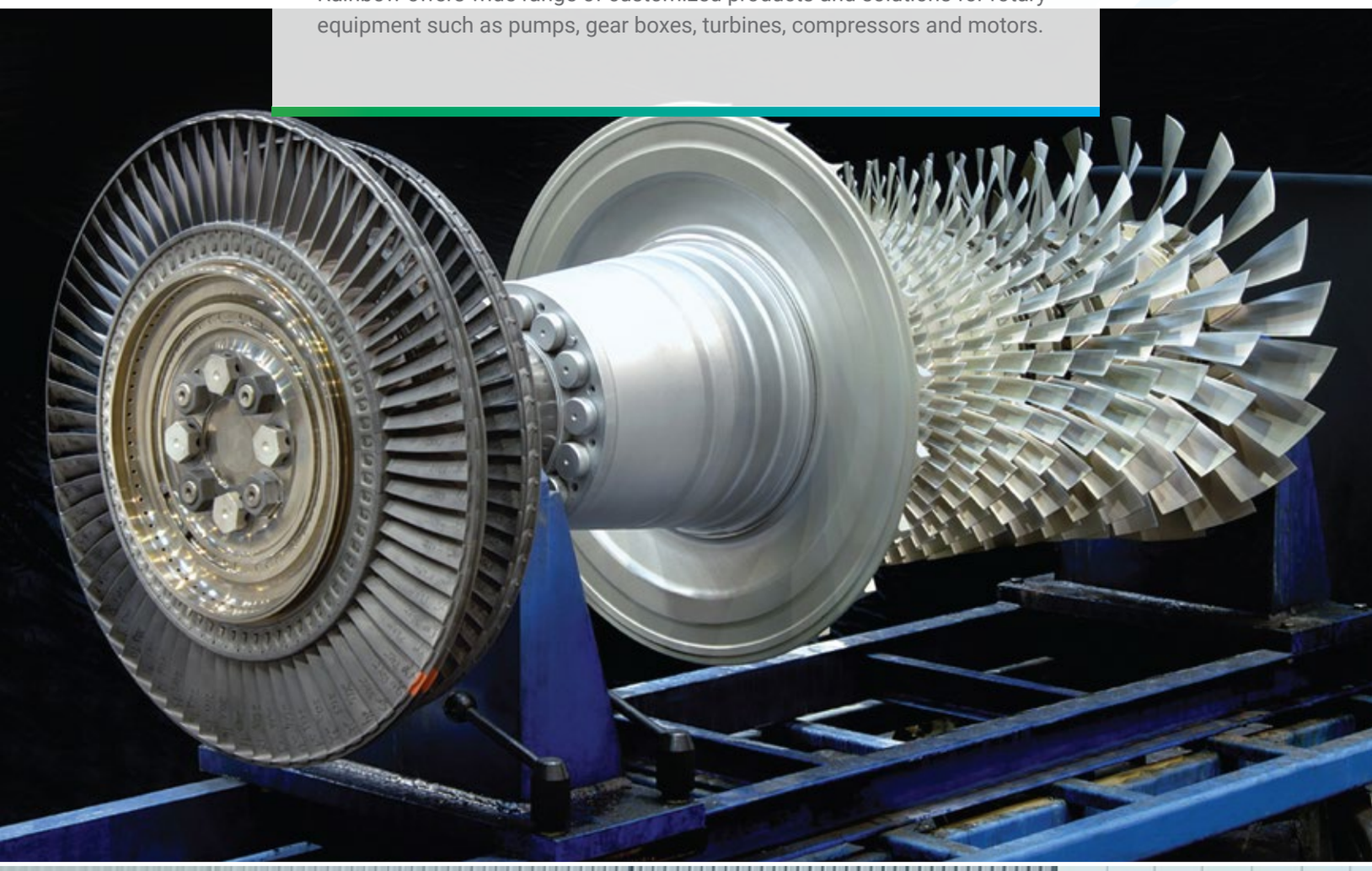
heat treatment

Rainbow carries out many complex heat treating schedules to optimize an alloy's mechanical properties such as increasing the strength, machinability and improving toughness. Heat treatment processes carried out at the facility include:

- gas carburizing
- liquid nitriding
- induction hardening
- flame hardening
- stress relieving
- TRI BOX (Quench Polish Quench - QPQ)
- annealing
- normalizing
- hardening
- tempering

rotary equipment

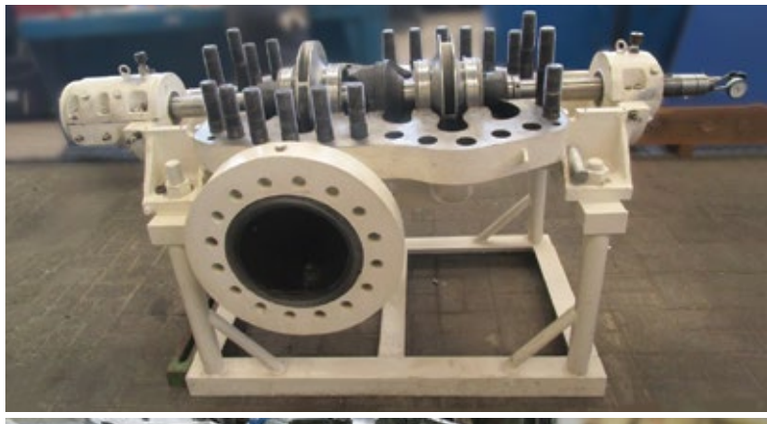
Rainbow offers wide range of customized products and solutions for rotary equipment such as pumps, gear boxes, turbines, compressors and motors.



pumps

Rainbow has the facilities to overhaul, repair, refurbish, fabricate and manufacture a variety of pumps and pump components in materials such as steel alloys, stainless, duplex, super duplex, monel, inconel, bronze alloys and others. Manufacturing of pump components is carried out by customer specification, drawings or by reverse engineering through the samples provided by customer. Commonly manufactured pump components include:

- impellers
- pump casings
- pump shafts
- diffusers
- wear rings
- couplings
- sleeves
- white metal bearings



gear boxes

Rainbow has the expertise to overhaul and machine a large range of gear box assemblies. Gears (spur, helical & bevel), sprockets and splines of various types are manufactured by reverse engineering from samples or drawings. Over the years, Rainbow has manufactured gears used in cranes, industrial gear boxes, sprockets and automotive engines among other assemblies. For manufacturing high quality gears, Rainbow's in-house machine shop is equipped with gear hobbing, gear shaping, milling, slotting and tooth grinding machines to accommodate a large range of sizes.

slurry coatings for gas turbine components

Rainbow offers advanced SermeTel® and Sermalon® protective coatings for the power generation industry. Due to gentle deposition process, the slurry coatings are applied by brushing, flowing, dipping or spraying onto metals, ceramics, glass and composites. SermeTel® slurry coatings provide unsurpassed protection against aqueous corrosion & heat scaling as well as erosion, abrasion and wear. Multilayer Sermalon® coating provides resistance to fouling and aqueous corrosion in gas driven compressors, industrial gas turbine components and steam turbine components.

oil & gas industry

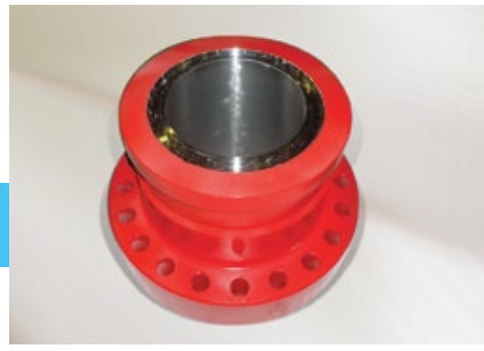
Rainbow offers a vast array of services for the oil & gas industry including manufacturing of certain API products, servicing and parts manufacturing of various rig equipment and downhole tools.

rig equipment

- **main and auxiliary engines -** component re-conditioning
- **mast raising and substructure cylinders -** complete re-conditioning and manufacturing capabilities
- **crown and travelling blocks**
- **top drives -** quill shaft, gears and hydraulic systems
- **BOP hoisting and travelling systems**
- **mud pump -** crankshafts, connecting rods and fly wheel
- **draw works and rotary table -** main shaft, winch drum and gears
- **auxiliary pumps -** casings, impellers, shafts and white metal bearings
- **hydraulic systems -** design, build and commissioning of various rig hydraulic systems including, HPUs, power packs, spooler systems, skidding systems and hoisting systems. Upgrade of manually operated handling systems into hydraulic systems.
- **other services -** fabrication of tool baskets, in-situ machining

wellhead and pressure control equipment

- **wellhead equipment -** adapters, spacer spools. flanged connectors casing & tubing head, tees & crosses, crossover connectors, casing & tubing hangers and others
- **choke and kill manifold**
- **drill thru equipment -** drilling spools, adapters. loose connectors and clamps
- **gates and seats -** refurbishment of gate valve / gate and seats



drilling and downhole tools

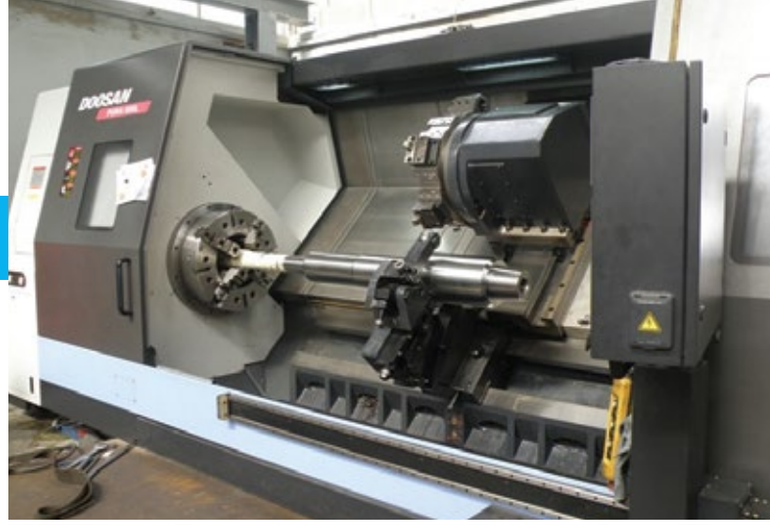
- **casings and tubing -** manufacturing and threading as per API 5CT. Pup joints, couplings, crossover joints, premium connections VAGT, VA superior and TMKPF, TPQC, UPJM, JPC-4, & JSHET. Copper plating of box connections to prevent galling.
- **drill pipes, crossovers and subs -** threading rotary shouldered connection as per API 7-1 and other premium connections such as Hilong. Manufacturing various types of crossovers and subs
- **drilling jars and shock tools -** mandrels, housings, cylinders, spring barrels, pistons, collets. Reconditioning of various housings and cylinders through metal spray and electro plating (chrome and sulfamate nickel)
- **mud motor rotors -** complete reconditioning of rotors including, re-coating, threading connections, stub welding and catcher repairs
- **RSS, LWD and MWD parts -** re-conditioning through built up and protective spray
- **completion and cementing tools -** component manufacturing & reverse engineering capabilitiesspray
- **non-mag collars accessories repair of connections, stub weld, weld overlay, porthole repair and manufacturing**

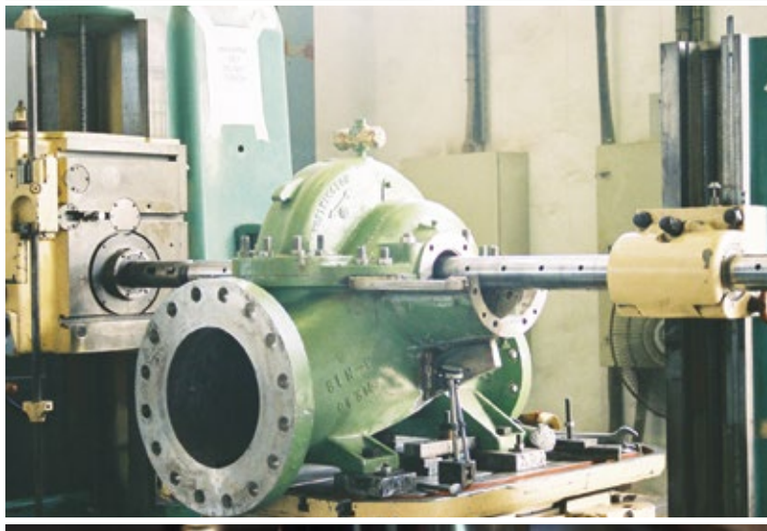
machining

Rainbow is equipped with conventional and CNC machinery to carry out precision machining on complex components with high accuracy and short delivery times. With a range of machines and varying capacities, Rainbow is poised to best serve diverse industries in the region with their rapidly changing requirements .

Rainbow machine shop houses following machines:

- **horizontal & vertical boring**
- **cylindrical & surface grinding**
- **radial drilling**
- **slotting, shaping & planar milling**
- **lathes**
- **milling**
- **VTL**

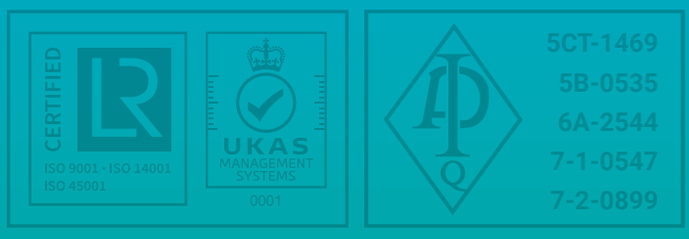




engine reconditioning services

Rainbow has a department dedicated to the servicing of engines used in vehicles, compressors and generators. The engine servicing department works with reputed OE Ms such as Caterpillar, Cummins, Komatsu and Detroit Diesel among others and undertakes repair and reconditioning of any petrol or diesel engine. Rainbow has repaired 2 and 4-stroke engines ranging from single cylinder to 16 cylinders. Rainbow has the capability to repair cracks on engine blocks by metal stitching. Various NDTs and pressure testing for engine blocks and cylinder heads are also carried out. The department has advanced machinery to service the following engine components that may be beyond manufacturer specifications due to wear and tear:

- **cylinder head**
- **engine block**
- **crankshaft**
- **camshaft**
- **connecting rod**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