

• ASSEMBLY

Putting together various components, subassemblies, and systems can be a complex process. Using specialised equipment applicable to final assembly requirements, such as clicker torque wrenches, BHI's substantial team of experienced technicians are skilled at assembling earthmoving equipment ensuring due care is taken during assembly processes, for example, minimising hose twist.

• OUR TEAM

Our team of over 800 skilled machinists, welders, and assemblers are among the best in the country owing to the company's own training centre. This plays a crucial role in sustaining BHI with qualified apprentices to ensure it maintains a high standard of expertise, quality, and safety throughout its manufacturing processes.

In addition, BHI can draw on an affiliated company for a team of qualified, highly experienced South African design engineers who make use of parametric modelling, finite element analysis, and dynamic simulation during the design process. This team works closely with our factory to optimise design for manufacturing (DFM).

• DELIVERY ON TIME, WITHIN BUDGET

BHI has invested in a state-of-the-art solar grid-tied system and industrial generators as a backup to ensure the due date delivery of projects irrespective of electricity supply challenges.

• SCOPE OF WORK

With our engineering expertise and facilities, BHI offers turnkey solutions and is confident in tackling any project, no matter how large or complex.



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• BHI - BELL HEAVY INDUSTRIES

Based in the industrial hub of Richards Bay, KwaZulu-Natal, BHI is a 55% black-owned and 24% black women-owned company that undertakes project engineering and contract manufacturing.

With almost seventy years of demonstrated expertise in complex engineering, heavy fabrication, and machining, our state-of-the-art facility has 45 000m² of undercover manufacturing area and performs to world-class standards.

Accredited with the ISO 9001: 2015 Quality Management System, BHI follows lean manufacturing principles for efficiency and cost-effectiveness. The latest technologies and innovations drive continuous improvement throughout the processes and assure the quality of end products.

OUR PRECISION MANUFACTURING PROCESSES

• MATERIAL PREPARATION

Material preparation, as a crucial aspect of manufacturing, impacts significantly on product quality, efficiency, and cost effectiveness. BHI carefully selects, processes, and handles raw materials before they are transformed into finished products. This includes cutting, chamfering, bending, and rolling.

BHI is capable of oxyfuel cutting up to 75mm material thickness, plasma cutting up to 32mm, and laser cutting to 12mm of a variety of metal sheets.

Chamfering offers numerous benefits from improved safety by removing sharp edges and corners on the material to providing a more even distribution of stress to prevent premature failure or cracking of material. Other functional benefits include ease of assembly and improved corrosion resistance.

When used correctly bending parts, rather than cutting and joining with welding, can increase strength. BHI can perform 40- and 80-ton vertical bends of <150mm wide, 130- and 160-ton vertical bends of <3 000mm wide, and 520- and 600-ton vertical bends of <6 000mm wide.

Rolling is a form of bending primarily used to straighten material. BHI has the capacity to roll material no thicker than 20mm with a width of up to 1 000mm, or a thickness of 40mm and a width of up to 500mm.

• FABRICATION AND WELDING

BHI welds to SAIW and ISO 3834-2 quality standards to deliver quality fabrication and supply world-class products to the global market. Quality assurance systems ensure that quality control measures are built into each work bay to deliver a proven reject rate of less than 0,07%. In addition, a comprehensive analyst support system allows tracing back to analyse the conditions under which parts or components were originally fabricated.

To reduce lead times and expand capabilities, BHI has dedicated 10-ton cranes to turn and manipulate extremely large components, in addition to 5-ton overhead cranes and jib cranes varying from 0,25t to 2t. Custom-made welding manipulators, complete with lifelines and high-lift platforms, improve throughput and work to the highest safety standards.

BHI is capable of welding 1mm to 1,6mm welding wire. Pulsed arc welding is used to produce high-quality welds for sheet metal operations and three robotic welders optimise the quality of long, continuous welds.

• MACHINING

Precision machining processes, including turning, milling, and boring, are needed to create highly accurate parts such as gears, axles, and hydraulic components.

Two bandsaws are capable of handling most engineering diameter tubes, pipes, and shafts, and are supported by radial arm drills and manual plasma cutting.

To assure accuracy and quality assurance BHI uses three co-ordinate measuring machines (CMMs), a Zeiss 1,5m (L) x 1,2m (W) x 1m (H) that provides an accuracy of up to four decimal points, a Sheffield 600mm (L) x 600mm (W) x 600mm (H) that measures to an accuracy up to three decimal points and a Hexagon Global Lite CMM, 1,5m (L) x 1,2m (W) x 1,0m (H), to an accuracy of 3 microns.

With an onsite friction welder providing superior fusion and weld penetration, BHI manufactures cylinders and struts of various lengths and diameters and has the capability to cycle and pressure test these during the manufacturing process

More than 40 machining centres, both vertical and horizontal, including 5-axis boring mills with various table sizes, together with a variety of cutting and drilling tools, are used in the machining of components to achieve optimal accuracy and efficiency.

• SURFACE TREATMENT

To protect end products from wear and corrosion BHI offers various surface treatments in its facilities, which include a 5m x 4m x 3m blasting booth, a 1 000m³ filtered spray booth, a powder coating plant, and a galvanising bath (sub) 10m possible 5m x 1m x 2m.



EQUIPMENT	QUANTITY
5-Axis boring mills	6
Vertical & horizontal machining centres	44
Bandsaws	8
Gear shapers	8
Friction welder	1
Specialised machining equipment	15
Laser cutting machines	4
High-definition plasma cutter	2
Oxyfuel cutting machine	1
Press brakes	8
Milling machines	4
Chamfering machines	4
Plate rollers	2
Robotic plasma cutter	2
Co-ordinate Measuring Machine	3

