Hall Longmore uses the submerged arc-welding (SAW) process to manufacture spiral welded pipe. This entails helically forming a hot-rolled steel strip and welding it both internally and externally to create a weld seam stronger than the parent metal.

Immediately after welding, seams are ultrasonically inspected to ensure the quality of each weld. Thereafter pipes are cut to length, ends are bevelled and pipes are hydrostatically tested and inspected for final approval. A facility also exists for full length radiographic testing of pipes and ends.

From the mill and testing bays, pipes proceed to belling, lining and/or coating in accordance with specifier and customer requirements.

Spiral welded pipes are produced in outside diameters ranging from 660 mm - 2 540 mm, and in wall thickness as shown in Table 1.
Spiral manufacturing facilities

The D1900 Spiral mill features the latest welding and ultrasonic technology for the manufacture of spiral welded pipe. The mill conforms to the highest specifications required by leading water, oil and gas customers.

**Edge Milling and Helical Forming**

Hot rolled strip in coil form is fed through an edge milling unit followed by edge defect ultrasonic testing. Strips are helically formed between 3 roller beds.

**Internal and External Welding**

Spiral pipe is welded using the submerged arc welding process with 2 internal and 2 external welding heads in a tandem configuration.

**Seam Tracking and Weld Control**

An automatic seam tracking system ensures real-time consistent weld bead positioning for both internal and outer welds.

The weld control system not only ensures automatic temperature control but has a data collection / memory system for setup optimisation.

**Flux Recycling**

A flux feed/recycling unit controls flux temperature, humidity and flow rate. Equipment was designed and built by U&S Schweisstechnik of Germany.
Quality Inspection

After forming and welding, pipes are inspected in line for body lamination and weld defects using automatic ultrasonics.

Cut Off

Pipes are cut to length using an automatic plasma cut-off system.

Finishing and Final Inspection

Pipes pass through auxiliary machines which bevel pipe ends and hydrostatically test. A facility exists for full length radiographic inspection inclusive of pipe ends.

In-house Testing Facilities

Facilities include: Hardness and tensile strength; Charpy V-notch testing; Spectrographic and Metallographic assessment and drop weight tear testing machine (DWTT).
SAW Range

Table 1.

SPIRALLY WELDED (SAW) PRODUCTION RANGE

<table>
<thead>
<tr>
<th>STEEL GRADE AVAILABILITY</th>
<th>DIAMETER RANGE</th>
<th>LENGTHS</th>
</tr>
</thead>
<tbody>
<tr>
<td>SANS 1 431, 32001A</td>
<td>from 660 mm to 2540 mm</td>
<td>9,144 m (30 FEET)</td>
</tr>
<tr>
<td>API 5L X42 to X60</td>
<td>Any other diameters / thicknesses available on request.</td>
<td>12,192 m (40 FEET)</td>
</tr>
<tr>
<td>API 6L X52, X65 to PSL 1 or 2</td>
<td></td>
<td>19,288 m (63 FEET)</td>
</tr>
<tr>
<td>X60</td>
<td></td>
<td>19,320 m (63 FEET)</td>
</tr>
<tr>
<td>Other grades available on request</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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