Innovative Flight Forming Technology

HELIX FLIGHT Forming Machine
Blank Cut Design Manager
**Introduction to Helix Flight Business**

We would like to introduce our revolutionary technology that can change the ‘craftsman’s black art’ of forming sectional helices into high quality high production factory line operation. With Helix Flight software and Ultra Adjustable forming machines you can form helices of different specs faster, easier and in a cost effective way with no waste. Single machine range can cover from 200(8”) to 1525 mm(60”) diameter helices, up to 800 mm(32”) pitch can be formed with material thickness ranging from 1.5mm (1/16”) to 38mm(1 ½”) giving ideal cover for a professional conveyor manufacturing company targeting across the range market segments & applications.

The quality of helices formed by our machine is superlative; accurate fit for helix to shaft click on fit up, helix internal edge parallel to the shaft and accurate true helix shape every time giving uniformity and integrity for weld procedure, corner stone to every screw pile.

---

**True Form Helices - Every Time**

**Accurate Fit to shaft for efficient handling** - The helix flight should click into position on the specified shaft in an efficient tight manner and without any secondary process such as grinding or cutting.

**Uniformity for weld procedure** - Critical to “robotic welding processes” and very important to manual operations is the consistency of;
- **Pitch angle** - If pitch angle is not a uniform linear spiral, welding will require a variety of tracking adjustments to follow the non linear spiral
- **Helix flange perpendicular to shaft** - a typical incorrect helix usually causes a variety of weld angles around the helix. This will affect both the positional requirements of the weld, and consistency of both throat and root of welding between helix and shaft.

**Helix internal edge parallel to shaft** - the potential variability in the gap between the shaft and the edge of the inner helix edge. If not parallel, can result in a significant variation in the weld root and hence consistency and quality of weld.
Blank Cut Design Manager - FREE*

Customers of HFMMML are provided access, on an exclusive basis, to our flight blank cut design software, Helix Flight “Blank Cut Design Manager”. This allows for the design of perfect helix flight blanks, then production of perfect helix flights every time.

- Round or square centers
- Variable diameter 50mm to 4000mm
- Variable thickness 2mm to 40 mm
- Right or left hand
- Tapered OD or ID
- Notched, or tooth type helix OD’s
- Calculating overlap with option to keep or remove for 360 degree coverage only

HF1 Ultra Adjustable Flight Forming Machines

HF1 series charts are for typical range of production but can be modified to best suit specific production requirements

### Helix Flight HF1 SD Ultra Adjustable Helix Forming Machine

<table>
<thead>
<tr>
<th>Small Diameter</th>
<th>Helix OD mm</th>
<th>Helix ID mm</th>
<th>Helix Pitch mm</th>
<th>Plate Thickness mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range 14.3°</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum</td>
<td>50</td>
<td>10</td>
<td>20</td>
<td>0.5</td>
</tr>
<tr>
<td>Maximum</td>
<td>350</td>
<td>275</td>
<td>350°</td>
<td>12</td>
</tr>
</tbody>
</table>

### Helix Flight HF1 MD Ultra Adjustable Helix Forming Machine

<table>
<thead>
<tr>
<th>Medium Diameter</th>
<th>Helix OD mm</th>
<th>Helix ID mm</th>
<th>Helix Pitch mm</th>
<th>Plate Thickness mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range 16.3°</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum</td>
<td>200</td>
<td>75</td>
<td>50</td>
<td>0.5</td>
</tr>
<tr>
<td>Maximum</td>
<td>1000</td>
<td>610</td>
<td>1000°</td>
<td>32</td>
</tr>
</tbody>
</table>

### Helix Flight HF1 LD Ultra Adjustable Helix Forming Machine

<table>
<thead>
<tr>
<th>Large Diameter</th>
<th>Helix OD mm</th>
<th>Helix ID mm</th>
<th>Helix Pitch mm</th>
<th>Plate Thickness mm</th>
</tr>
</thead>
<tbody>
<tr>
<td>Range 18.3°</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Minimum</td>
<td>450</td>
<td>75</td>
<td>50</td>
<td>0.5</td>
</tr>
<tr>
<td>Maximum</td>
<td>4000</td>
<td>2000</td>
<td>1500°</td>
<td>40</td>
</tr>
</tbody>
</table>
Consistency in pitch is crucial to accurate feed rates and to eliminate over loading the screw

Poorly formed helices where helix internal edge is not parallel to the shaft can cause variability in pitch that can result in different feed rates over the length of conveyor, causing inefficiency. If auger pitch is not consistent as you can see in the diagram below, the rate of flow of material under different pitch sections (L) vary, material start squeezing up in smaller pitch sections, generates uneven load points and builds enormous pressure on forward blades.

If $P_2 < P_1$: Uneven load bearing points occur, wear & tear happens faster than normal
If $P_2 > P_1$: Semi empty sections lead to inefficiency

Clearance between flight and inside diameter of casing is critical when using different commodities

Uniformity of clearance can be achieved with the combination of our blank cut design manager and helix Flight forming machine up to the precision of plus minus 2mm. One of the great advantages of true form helices is the angle between the shaft and helix always remains perpendicular that creates uniform welding joints through out the auger length.
Key Offerings

• On line machine monitoring and diagnostic support
• Super fine continuous adjustment of diameter (previously incremental)
• Super fine continuous adjustment of pitch (previously incremental)
• Adjustable stroke for increased production speed
• Fast approach function increased production speed
• Additional safety features
• Greater control of forming sequence by programmable logic controller (PLC)
• High strength ware resistant forming plates
• Reduced number of forming plates
• Reduced cost of forming plates
• Reduce cost of maintaining ware parts.
• Increase in OD range
• Greater overall chassis strength & durability
• Higher capacity hydraulic system
• New self cleaning parts for added durability
• Quick release interchange of forming plates

20+ years experience in sectional helices industry

- Daniel Coats
  Managing Director

BENEFITS

Ease and speed of training operators (2 days)

Eliminating many of the causes of injury (Following a survey industry incidents over last 30 years)

Speed of production (less than 1 minute for simple items)

Quality of true form helices and tightness of fit (now limited by shaft manufacture tolerances)

Expanded range of adjustability (HF1 MD - massive range of sectional helix configuration from 200-1500 mm diameter and 800mm pitch, up 40mm thickness)

No waste (items formed with forming error can be re-run through machine and corrected.)
Testimonials

“We are pleased with the simplicity, flexibility and reliability of the HF1 as it continues to produce perfect pitch and helix to pipe fit ups.” Ken goes on to note “as industry becomes increasingly familiar with screw piles, our sophisticated clients are requiring true pitch helices as part of their specifications. They recognize that in order to meet the design requirements, the pressing of the helix is a critical quality element.”

– Ken Stebner, Director of Speical Project, North America

New Zealand Based Technology

We are a New Zealand based technology supported by NZ Govt R&D funding agency Callaghan Innovation, specialising in producing machines for manufacture of helix flights used in production of augers, screw conveyors, agitators, marine anchors, screw piles, screw presses, combines harvesters and many other screw flighted products. Our revolutionary machines and leading software, offers a significant competitive advantage in manufacture of sectional helices.

Our strategic alliance with market leaders in New Zealand, Australia, Japan, Canada, the UK and the USA and over 20 years of experience in development of screw piles and anchors as a turnkey design manufacture, makes us the forefront of helix flight forming technology. We have a great depth of knowledge in all aspects of the business from overall business strategy to enhance long term market development and profitability.