Advantages of induction bending

1) Amount of weld joints decreases
   Whole pipe length can be used in induction bending because to one pipe can be made several bends without intermediate weld seams. Amount of weld seams and waste material can be minimized.

2) Bending radius as a variable in piping design
   Possibility to choose bending radius free enables bend design according to hydrodynamic calculations. Induction bending do not need special tools for every bending radii.

3) Purchase goes easier
   For induction bending can normally be used same pipe as for straight pipe parts. Material has to be bought as early as possible because material deliveries may take several months. If you are using induction bending method, material can be purchased before final geometry of pipeline is decided.

4) Delivery time will be shortened and costs reduced
   Please refer to above.

5) Materials suitable for induction bending
   * Normal carbon steels like P235GH
   * Alloved heat resistant steels 16Mo3 … 13CrMo4-5 … 10CrMo9-10
     X10CrMoVNb9-1 … X10CrWMoVNb9-2
   * Fine grain steels like API 5LX and lower qualities
   * Austenitic stainless steels X5CrNiMo1812 and equivalents
   * Equal materials according to ASME standard

At workshop in Ylivieska has
3 induction bending machines, which can be used for pipe 42,4…914 mm. Method is also suitable for square and rectangular pipes. Wallthickness of pipe to be bended can be 4…90 mm.

Please note
   * in a bending of 90° the pipe shrinks about 50 mm/bending.
   * thinning of bending outside can be calculated an indicative \( s_i = \frac{R}{R+0.5*D)}s_0 \)
   * out of roundness of bending can be calculated an indicative \( (0.2*D)/R \)

From following page you can find detail information about our induction bending machines.

More information is available from sales department at workshop in Ylivieska:

Olli Poutiainen  tel. +358 400 374 730  Tommi Pudas  tel. +358 40 596 5306
Olavi Hautamäki  tel. +358 40 840 2557
firstname.lastname@recion.fi
Restrictions of bending machines

**UZTM-500 - bends to right**
Pipe size: Outer diameter Ø88.9...530
Wall thickness up to 90 mm
Bending angle: 0°...90° R<1030
0°...180° R>1200
Radius: Smallest possible R=330 mm or 1.5xD
Rather use R=2.5xD, so the wall scarcely restricts bending
Radii R=1030...1200 are not possible
Greatest possible R=15 m
Fasting lengths: Before and between bending
R<1030 DN80...250 350 mm
DN300...500 450 mm
R>1200 DN80...400 470 mm
DN450-500 800 mm
After last bending 1600 mm
At 180° bending (see drawing)
when A ≤ 2200 mm  B ≤ 400 mm
when A > 2200 mm  B ≤ 2100 mm
Bendings level: Hight from floor level is 1400 mm

**Gregson 900 - bends to left**
Pipe size: Outer diameter Ø323.9...914
Wall thickness up to 80 mm
Bending angle: 0°...90°
Radius: Smallest possible R=1200 mm or 2xD
Rather use R=3...5xD, so the wall scarcely restricts bending
Fasting lengths: Before and between bending
DN300...600 850 mm
DN650...900 1400 mm
After last bending 3500 mm
Bendings level: Hight from floor level is 1180 mm

**Gregson 2-12” - bends to right**
Pipe size: Outer diameter Ø42.4...323.9
Wall thickness up to 60 mm
Bending angle: 0°...180°
Radius: Smallest possible R=200/450 mm or 1.8xD
Rather use R=2...4xD, so the wall scarcely restricts bending
Fasting lengths: Machine has two arms, which restrictions are different from each other

<table>
<thead>
<tr>
<th>pipe size</th>
<th>R&lt;1030</th>
<th>before</th>
<th>after last</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arm 1</td>
<td>DN32...150</td>
<td>200</td>
<td>1400 mm</td>
</tr>
<tr>
<td>Arm 2</td>
<td>DN150...300</td>
<td>450</td>
<td>1400 mm</td>
</tr>
</tbody>
</table>

Bendings level: Hight from floor level is 550 mm