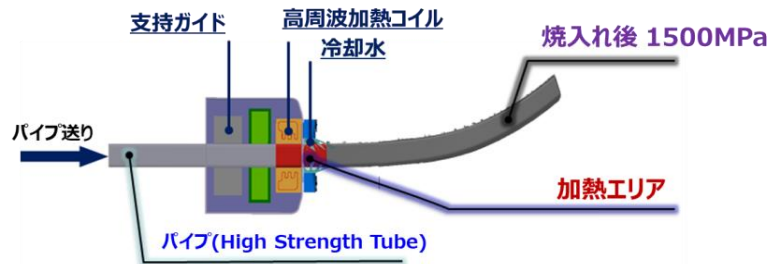


《技術概要》

- ◆ 逐次焼入れと曲げ加工を同時に実施
- ◆ 閉断面構造に1500MPa級材適用



《製作可能範囲と設備仕様》

パイプ板厚外径比	t/D = 2~10% (造管目安)
パイプ投入長さ	600~2,016mm
パイプ焼入長さ	30~1,500mm
パイプ断面サイズ	最大 □90×70
	最大 φ70

サイクルタイム (3DQプロセス)	パイプ長と送り速度に依存 ex: 製品長さ1,200mm、 80mm/sec送り⇒15sec
しわ発生 限界曲げR	断面形状・板厚に依存 ex: φ31.8-1.8t⇒R127 (パイプ中心)
最大曲げ角度	90°(曲げR200以上の場合)



<加工設備>



<形状サンプル>

- ◆ 高強度、高い形状精度、閉断面部材によるフランジレス化の特性があります

自動車骨格部品に世界初採用



<Honda NSX>



<部品外観>

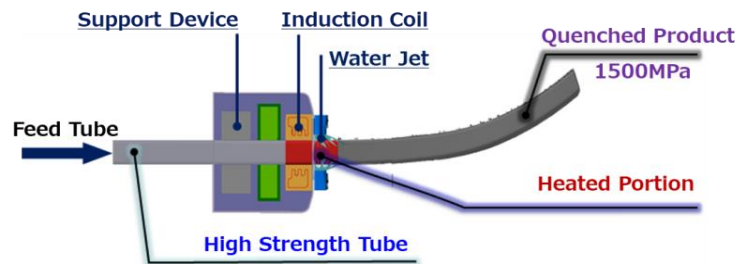
焼入れパイプへ三次元曲げ形状を付加し
高い形状精度と高強度を兼ね備えた部品を量産化

特許取得済み技術

日本製鉄株式会社、日鉄鋼管株式会社と共同開発

《Technical overview》

- ◆ Simultaneous bending and Sequential Induction heating.
- ◆ Strengthening by applying 1500MPa class materials and closed section structure.



《Available range and equipment specifications》

Thickness / Outer diameter ratio	$t/D = 2 \sim 10\%$ (Tube making indication)	Process time (only 3DQ)	Depends on tube length and feeding speed ex : Tube length 1,200mm, feeding speed 80mm/sec \Rightarrow 15sec
Input tube length	600~2,016mm	Wrinkling limit bending radius	Depends on cross-sectional shape and thickness ex : $\phi 31.8-1.8t \Rightarrow R127$ (on tube center)
Quenching tube length	30~1,500mm	Bending angle	Max: 90° (when bending R200 or more)
Cross section tube size	Max: □90×70		
	Max: $\phi 70$		



<Processing equipment>



<Shape sample>

- ◆ A framework with high shape accuracy, high strength of 1500MPa class by heat treatment, and flangeless structure with closed cross-sectional shape.

The first time in the world as an automotive framework.



<Honda NSX>



<Part appearance>

Mass production of parts with high shape accuracy and strength by adding 3D bending shape to quench tube.

Patented technology

Jointly developed with NIPPON STEEL CORPORATION & NIPPON STEEL PIPE CO., LTD.

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