

Automated Casing LASER WELDING TONG

Replace Threaded Clutch Joints with Orbital Pipe Welding







TongWELD AUTOMATED CASING LASER WELDING TONG

Replace Expensive & Exposed Threaded Clutch Joints with LOWER COST & STRONGER WELDED JOINTS

DRILL FASTER AT LOWER COST

ENABLES CASING WHILE DRILLING

- > 30% less metal consumption
- 2X less soil rock removal
- up to 3X less cement consumption

Dimensions: 1085 x 1680 x 1990 mm Weight: 850 kg Pipe Diameters: 102-178 or 178-245 mm Pipe Thicknesses: up to 10 mm Explosion protection Built-in ultrasonic inspection of welding joints (optional) Pipe laser cutting (optional)



Up to 3X Lower Cost Thinner Steel

> Stronger Welded Joint No Threads

Automated Casing Welding

LOWER DRILLING COST

Utilize SMALLER DRILLING TOOL & WELL DIAMETER
LESS VOLUME of Soil Rocks, Drilling Fluid & Cement

FASTER DRILLING SPEED

• FEWER COMPLICATIONS in Casing Advance Due to Absence of Protruding Clutch Parts

MAXIMUM TORQUE AVAILABLE for Casing Rotation

HIGHER QUALITY

• HIGH QUALITY Cementing with Casing Rotation • HIGH STRENGTH & MORE HERMETIC Casing





Traditional Methods

HIGHER DRILLING COST

• Requires LARGER DRILLING TOOL & WELL DIAMETER • LARGE VOLUME of Soil Rocks, Drilling Fluid & Cement

SLOWER DRILLING SPEED

 CASING ADVANCE COMPLICATIONS Due to Protruding Clutch Parts
LESS TORQUE AVAILABLE for Casing Rotation

LOWER QUALITY

• LOW QUALITY Cementing • WEAKER STRENGTH & LESS HERMETIC Casing



- Threaded clutch joints are the most vulnerable parts of casing pipes, limiting their structural integrity.
 - Clutch joints are weak and require the use of the more expensive grades of thicker steels, increasing the pipe weight and cost.
- Clutch joints protrude and increase the diameter of the well, increasing the amount of removed soil rocks, and the volume of drilling fluid and cement.
- Clutch joints create extra friction against well walls, resulting in complications in the casing advance.
- Clutch joints have less available torque to overcome these complications through pipe rotation.

MOBILE **LASER WELDING SYSTEM** 1 HOUR SET UP TIME

PROVEN CASING SOLUTION VALIDATED IN HARSH FIELD CONDITIONS

Ambient Temperature: -40 to +45 °C Ambient Humidity: up to 100% Operating Conditions: Rain, Snow & Wind up to 20 m/sec





Hours









WELDED JOINTS ENABLE:

- Use of Lower Cost Thinner Steels to Achieve Higher Strength
- Increased Strength and Tightness of Casing
- Increased Available Rotational Torque to Overcome Casing Advance Complications

WELDED JOINT TESTING:







| Torque Test | | | | |
|---------------------|--|--|--|--|
| Ø 102 x 6.5 mm Pipe | | | | |
| 23.4 kNm Force | | | | |
| NO WELD DAMAGE | | | | |

Bending Stress Test NO CRACKS IN WELD JOINT

Tensile Stress Test NO WELD DAMAGE

WELDED JOINTS ADVANTAGES:

| Ø 114 x 7.3 mm Pipe | Threaded Clutch | Welded Joint | |
|----------------------------|--------------------------------|----------------------------|--|
| Steel Type | Premium High Cost N80 Steel | LOW COST A 516-55 Steel | |
| Yield Strength, kN | 1367 | >1600 | |
| Maximum Pressure, bar | 623 | 700 | |
| Maximum Torque, kNm | 13 | >34 | |
| Drilling Tool Diameter, mm | 152 | 126 | |
| Pipe Cost, \$/km | 36000 | 20000 | |

CASING STRING PARAMETERS:

| | | | Threaded clutch | | Welded Joint | | | |
|-------------------|-------------------------|-----------|----------------------|----------------------|----------------------|----------------------|--|--|
| | Length, m | Ratio | Pipe diameter, mm | Well diameter, mm | Pipe diameter, mm | Well diameter, mm | | |
| Conductor pipe | 60 | 1,60 | 323,90 | 393,70 | 244,48 | 295,30 | | |
| Surface casing | 900 | 1,40 | 244,48 | 293,70 | 177,80 | 212,70 | | |
| Production casing | 3000 | 1,15 | 177,80 | 220,70 | 139,70 | 155,60 | | |
| Liner | 1000 | 1,05 | 114,30 | 152,40 | 114,30 | 126,00 | | |
| | Metal consumption, tons | | | | | | | |
| | | 185 | | 125 | | | | |
| | | Soil volu | ume, m³ | | | | | |
| | | 203 | | 107 | | | | |
| 37-32 3 | | Anus | Cement volume, m³ | | | | | |
| | | | 76 29 | | 9 | | | |

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