

Thermal Profile Scanner (TPS) for "Real - Time"

Monitoring of Weld Quality

- Realizing a set up help for optimal welding parameters based on the heat signature
- Recognition of visible and invisible welding faults, cold joints, and excessive root penetration.
- Color marking faults
- Re-place Eddy Current Detection Systems since these can not detect these faults

Application Data TPS

Distance to torch : **100 mm**

Working distance: **60 mm**

Gas purge Shield gas: **3 l/min**

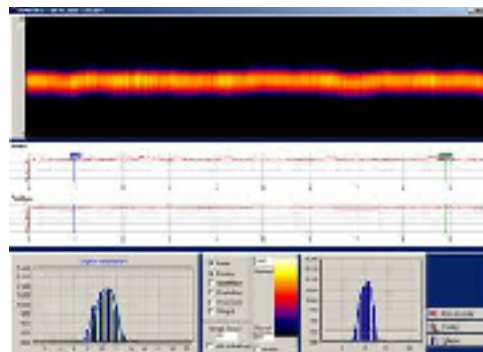
Welding speed: **80 m/min**

Water cooling

Pipe dimensions: **13 x 2,5 mm**

HFI-Generator 250 kW – conductive HF-welding

Pipes are spooled to coil



Work monitor with actual seam evaluation and heat signature

Captured are:

- Generator output
- Band position and -speed

Heat signature of a 21 m tube

Using the thermal field are calculated:

- Welding seam position
- Width of temperature zone
- Symmetry of heat field

Special features for seam pipe welding

Graphic display of the last 25 tubes in tube monitor application.

Heat field when fault through cold fusion joint

When the melting temperature is not reached, the temperature is falling in the joining zones.

The sensor is calculating the heat field width via a set temperature threshold. Cold welding joints can be clearly seen in the diminishing heat field width.

Detecting cold fusion points

Width of heat field and learned thresholds values.

Welding capacity adjusted wrongly

Thermal field at too highly adjusted welding capacity

A result of that are failures like big excess penetrations, spatters, burnings. The breadth of the thermal field shows the heat input is too big.

Comparative representation

Thermal field of an i.O. - seam compared to a seam with irregular thermal field.