



DOUBLE YOUR WELDING PRODUCTIVITY WITH THE ICE™ TECHNOLOGY

- UP TO 100% INCREASE IN DEPOSITION RATE

ICE™ - Integrated Cold Electrode

Unrivalled performance advantages

- 50 – 100% increased deposition rate
- Increased welding speed
- 10 – 40% reduction in flux consumption
- High Deposition Root™
- Flat Cap Control™
- Reduced heat input and distortion
- Energy savings





OFFSHORE



I.P. HUSE

- The worlds most productive single power source SAW solution

COMPANY: Global leader in the design and manufacture of winches for anchor-handling vessels.

APPLICATION: 4 welding stations utilizing the ESAB ICE™ technology welding various sections of the winches.

CONSUMABLES:

OK 15.24S cored 2.4mm wire and OK Flux 10.62

PERFORMANCE: Average deposition rate between 20-25kg/h, and even up to 30kg/h using a single power source and heat input below 3kJ/mm. Welding speed at 85cm/min. Satisfying ISO 15614 and impact toughness requirements at -40°C

BENEFIT: Deposition rate increase of up to 60% compared to previously used ESAB Twin process. Comparing to single wire welding with same heat input, ICE™ technology provides up to 150% higher productivity.



OFFSHORE



16 deg milled 355G8+M

- Highest productivity for the toughest requirements

APPLICATION: Offshore, 75mm plate thickness
Welded with Tandem Single 4mm DCEP + ICE™ AC 3*2,5.
LAF and TAF power sources. Qualified @ -60°C

CONSUMABLES:

OK Autrod 12.32
OK Flux 10.62

PERFORMANCE:

| | |
|-----------------|-------------------|
| Deposition rate | 28 kg/h (average) |
| Heat input | 2,6 kJ/mm (max) |
| Welding speed | 950 mm/min |

BENEFIT:

Increased deposition rate
Reduced flux consumption by 45 % compared to single wire



OFFSHORE



355G8+M, 22deg

- Highest productivity for the toughest requirements

APPLICATION: Offshore, 50mm plate thickness
Welded with Tandem Single 4mm DCEP + ICE™ AC 3*2,5. LAF
and TAF power sources. Backside welded with Single 4mm
DCEP. Qualified @ -60°C

CONSUMABLES:

OK Autrod 12.32
Ok Flux 10.62

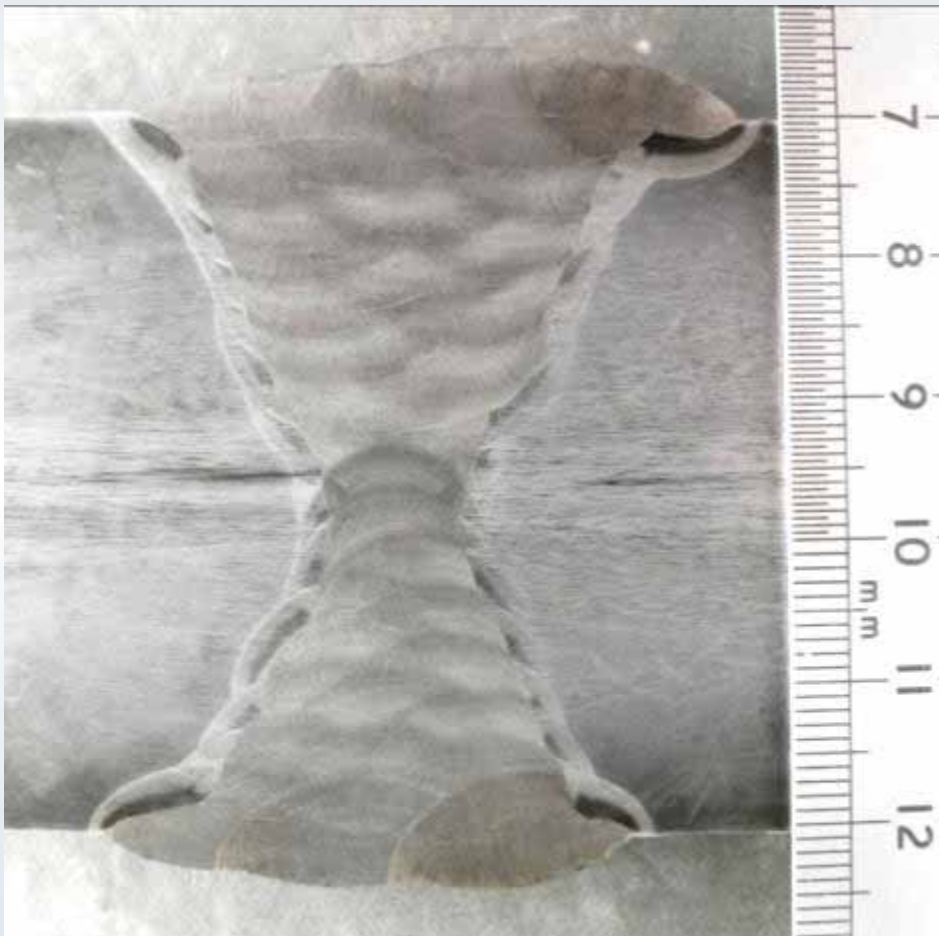
PERFORMANCE:

| | |
|-----------------|---------------------------|
| Deposition rate | 28-29 kg/h (filling runs) |
| Heat input | 3,35 kJ/mm. |
| Welding speed | 850mm/min |

BENEFIT:

Increased deposition rate, reducing the number of runs from 28
with a single wire to 15 with ICE™.
Reduced flux consumption by 45 % compared to single wire.





OFFSHORE



690QT 50mm

- Low heat input, high productivity

APPLICATION:

Offshore, ICE™ DC+ 3*2,5mm. Objective: As low heat input as possible and high deposition rate. CVN@-40°C

CONSUMABLES:

OK Autrod 13.43

OK Flux 10.62

PERFORMANCE:

| | |
|-----------------|---------------------|
| Deposition rate | 12,2 kg/h (average) |
| Welding speed | 650 mm/min |
| Heat input | 1,3-1,7 kJ/mm. |

BENEFIT:

Increased deposition rate by 70% compared to single wire. In small diameter circular objects the time needed to wait for the correct inter pass temperature is eliminated using low heat input.



OFFSHORE



Momek Group

COMPANY: MOMEK Group is a construction company with 3 divisions, steel fabrication, maintenance and civil. Since the start 1998 the MOMEK Group has grown to become one of the largest contractors in Northern Norway

APPLICATION: After several years with mechanized Twin arc processes we are now taking the step up to ESAB ICE™ technology. The first Momek-project utilizing the ESAB ICE™ will be the Suction anchors for the Aasta Hansteen field.

BENEFIT: Deposition rate increase of up to 60-100% compared to previously used ESAB Twin process with solid wires.





WIND



25mm 355NL

- 2 runs, 25mm, unique tandem solution!

APPLICATION:

Onshore wind. Welded with Tandem single 4mm DCEP + ICE™
AC 3*2,5mm. Qualified @ -40°C

CONSUMABLES:

OK Autrod 12.22

OK Flux 10.72

PERFORMANCE:

Deposition rate 31 kg/h (average)

Welding speed 1000 mm/min

Heat input 3,4 kJ/mm

BENEFIT:

80% increased deposition rate compared to conventional tandem

Increased deposition rate, 2 runs instead of 3-4

Reduced flux consumption by 20%

Flat Cap Control, 11% less wire used from 1mm lower cap

Not removing the continuous tack weld

Energy savings by 17%



WIND



30mm 355NL

- From 15kg/h to 30kg/h just by changing to ICE™

APPLICATION: Onshore wind. Topside welded with Tandem single 4mm DCEP + ICE™ AC 3*2,5mm. Bottom side welded with single 4mm. Qualified @ -40°C

CONSUMABLES:

OK Autrod 12.22

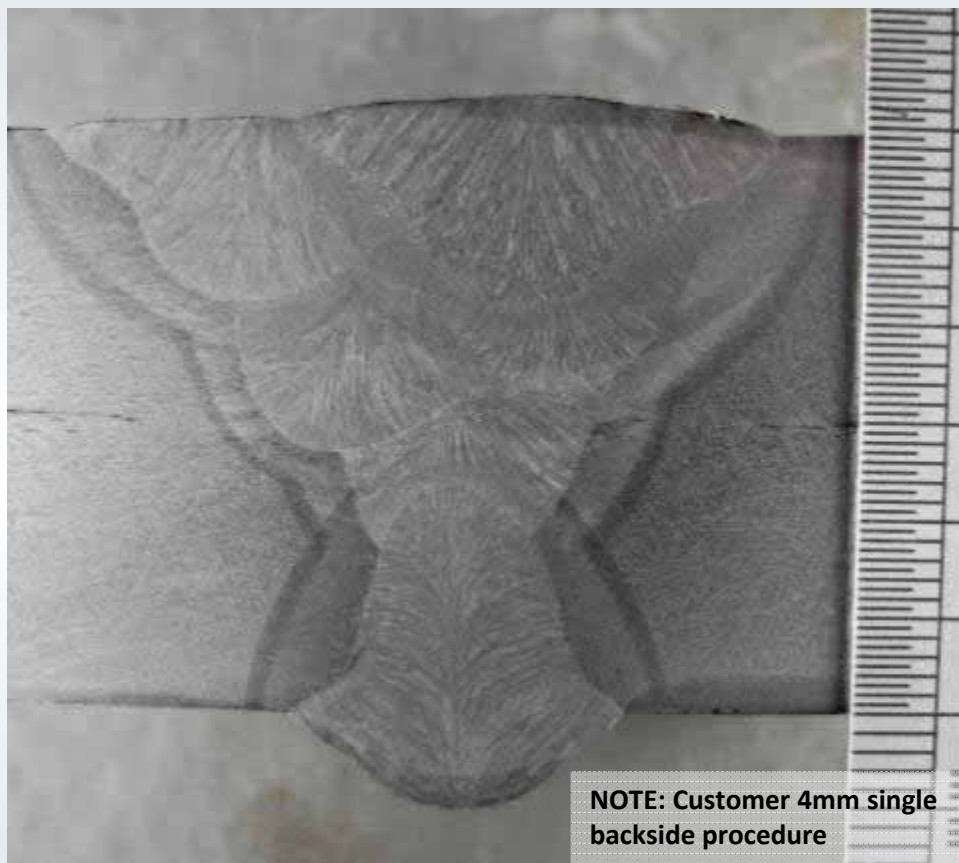
OK Flux 10.72

PERFORMANCE:

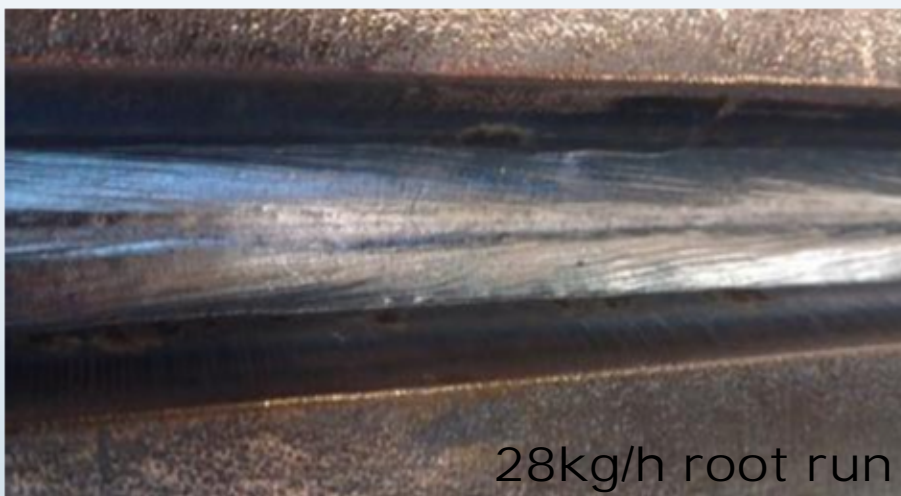
| | |
|-----------------|---------------------------------|
| Deposition rate | >30kg/h (average on topside) |
| Welding speed | 850mm/min (customer limitation) |
| Heat input | 3,1kJ/mm (customer limitation) |

BENEFIT:

70% increased deposition rate compared to conventional tandem
28% reduced energy consumption.
Reduced flux consumption by 20% compared to conventional 4mm tandem



NOTE: Customer 4mm single
backside procedure



35mm 355NL

- 35mm, 6 runs!

APPLICATION: Onshore wind. Topside welded with Tandem single 4mm DCEP 4mm + ICE™ 3*2,5mm AC. Single 4mm DCEP bottom side. Qualified @ -40°C

CONSUMABLES:

OK Autrod 12.22

OK Flux 10.72

PERFORMANCE:

Deposition rate 30,7 kg/h (average)

Welding speed 850-1000 mm/min.

Heat input 3,1-3,5 kJ/mm

BENEFITS:

113% increased deposition rate compared to existing tandem process.

5 runs to complete the topside

Reduced flux consumption by 20%

22% in energy savings



40mm 355NL

- 40mm, still 6 runs!

APPLICATION: Onshore wind. Topside and bottom side welded with Tandem single 4mm DCEP 4mm + ICE™ 3*2,5mm AC. Qualified @ -40°C

CONSUMABLES:

OK Autrod 12.22

OK Flux 10.72

PERFORMANCE:

Deposition rate 33,5 kg/h (average)

Heat input 3,2 kJ/mm

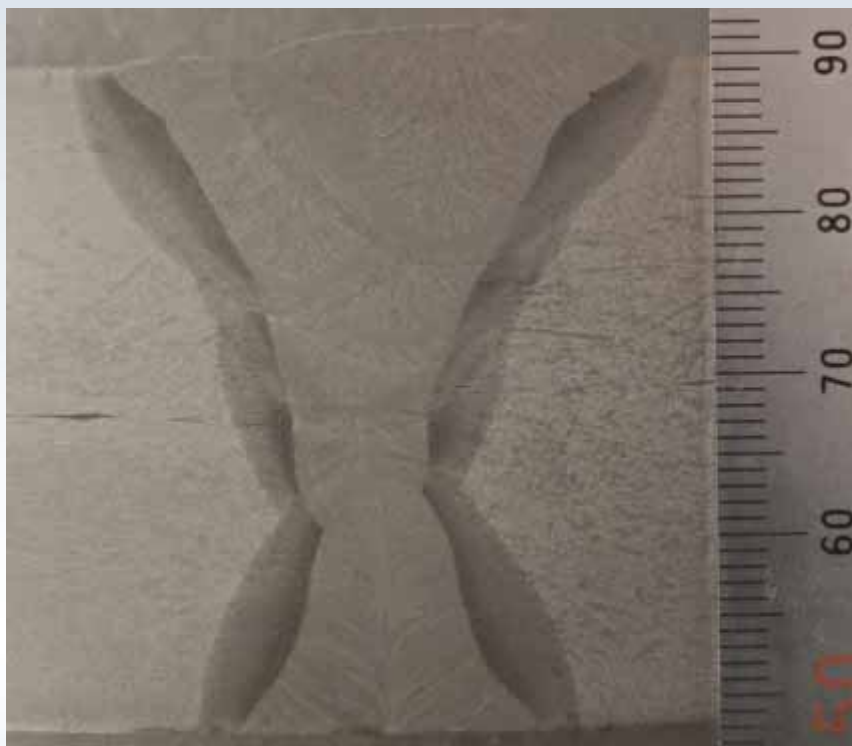
Welding speed 1000 mm/min

BENEFIT:

Filling runs of 36kg/h

No removal of the continuous tack weld

Flux reduction of 20% compared to tandem





57mm 355NL

- 12 runs!

APPLICATION: Onshore wind. Topside and bottom side welded with Tandem single 4mm DCEP 4mm + ICE 3*2,5mm AC. Qualified @ -40°C

CONSUMABLES:

OK Autrod 12.22

OK Flux 10.72

PERFORMANCE:

Deposition rate 28,2 kg/h (average)

Heat input 3,3 kJ/mm

Welding speed 850 mm/min

BENEFIT:

Approximately 20% reduced flux consumption

58% increased deposition rate compared to existing tandem.

| | Welding speed | Heat input | Deposition rate | Joint prep |
|------|---------------|------------|-----------------|------------|
| 5 mm | 1700mm/min | 1,2 kJ/mm | 17 kg/h | 1mm |
| 7 mm | 1500mm/min | 1,6 kJ/mm | 18 kg/h | 1mm |



SHIPBUILDING



OSW ICE™

- Low heat input, low distortion and highest SAW welding speed!

APPLICATION: One sided welding of ship panels.
Welded with ICE™ DC+ 3*2,5mm

CONSUMABLES:

OK Autrod 12.22
OK Flux 10.70 or OK Flux 10.71
OK Flux 10.69 or ceramic

PERFORMANCE:

| | |
|-----------------|------------------|
| Welding speed | 1500-1700 mm/min |
| Heat input | 1,2-1,6 kJ/mm |
| Deposition rate | 17-18 kg/h |

BENEFIT:

Increased welding speed by more than 100%
Lowered heat input and reduced distortion. ICE enables to weld in square butt joints with smaller gap than conventional SAW using less consumables. 40-65% reduced wire consumption because of smaller gap required for the ICE™ process



SHIPBUILDING



OSW ICE™ 10mm

- Increased productivity and less distortion

APPLICATION: One sided welding of ship panels.
Joint configuration: 10mm Single V 60 degree included angle.
Root face 3mm. Welded with ICE™ DC+ 3*2,5mm

CONSUMABLES:

OK Autrod 12.22

OK Flux 10.72

OK Flux 10.69 (Backing flux)

PERFORMANCE:

Welding speed: 1400 mm/min

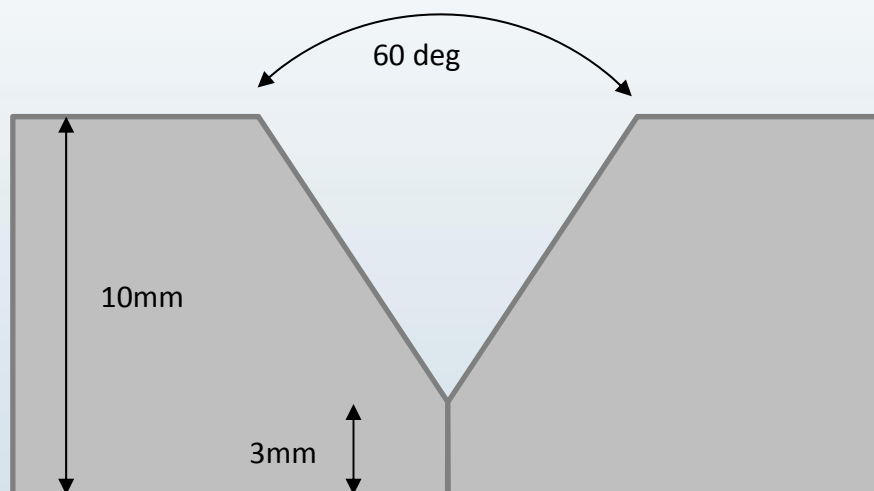
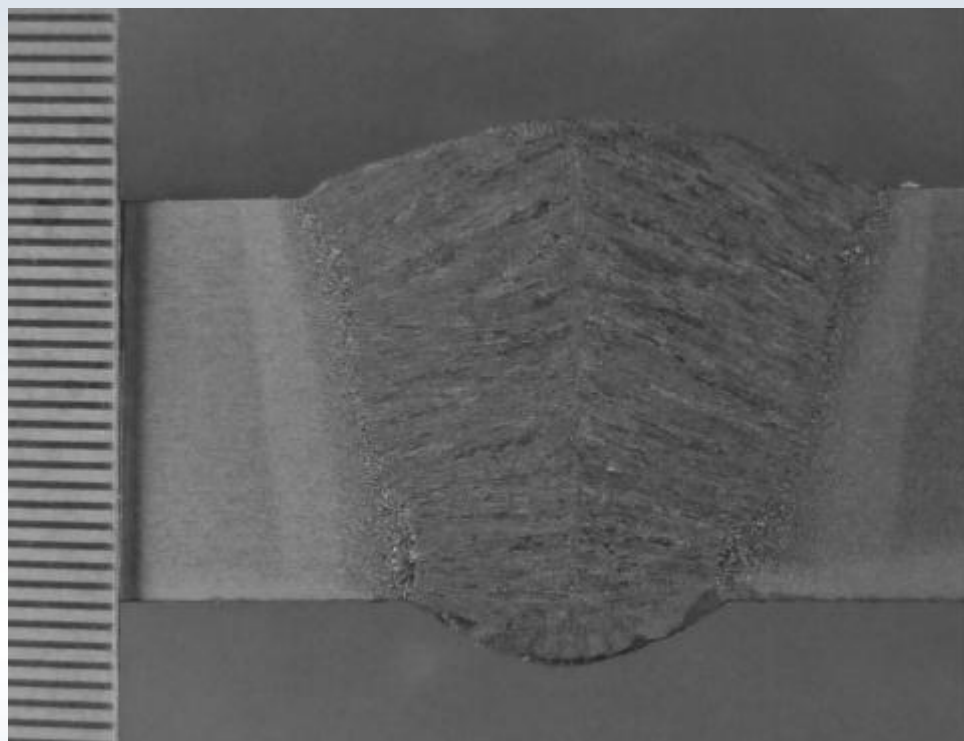
Heat input: 2,03 kJ/mm

Deposition rate: 23,9 kg/h

BENEFIT:

Increased welding speed .

Lowered heat input and reduced distortion.





SHIPBUILDING



OSW 15mm Tandem 4mm DCEP + ICE™ AC

- Reduced number of runs in thick plate OSW

APPLICATION: One sided welding of ship panels.

Joint configuration: 15mm Single V 60 degree included angle.

Root face 4mm. Welded with Tandem Single 4mm DC+ and ICE™ AC 3*2,5mm

CONSUMABLES:

OK Autrod 12.22

OK Flux 10.71

OK Flux 10.69 (Backing flux)

PERFORMANCE:

Welding speed: 1600 mm/min

Heat input: 2,9 kJ/mm

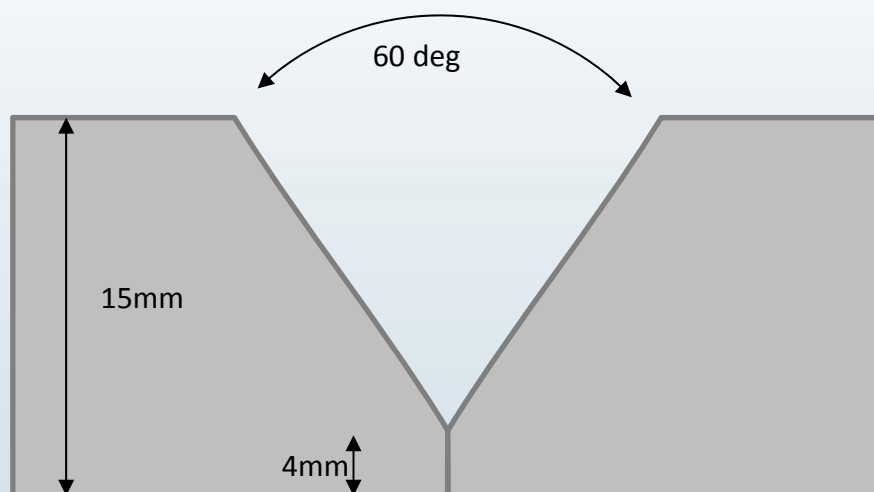
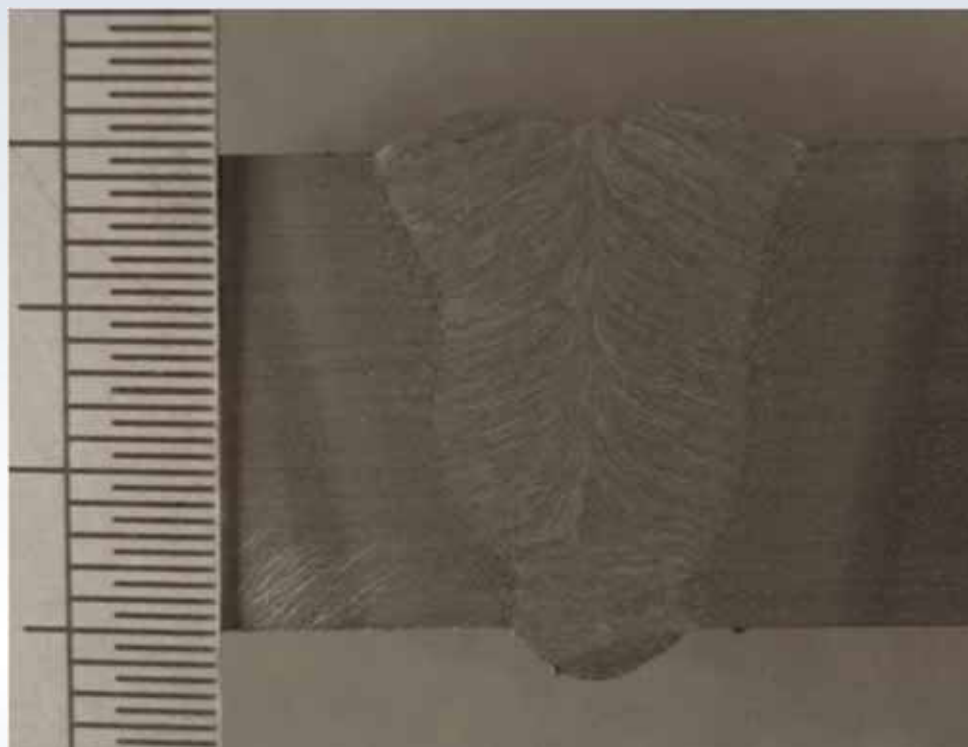
Deposition rate: 47 kg/h

BENEFIT:

Reduce the number of runs in thick plate OSW.

Lowered heat input and less distortion.

Lowered flux consumption.





SHIPBUILDING



OSW 20mm Tandem 4mm DCEP + ICE™ AC

- Reduced number of runs in thick plate OSW

APPLICATION: One sided welding of ship panels.

Joint configuration: 20mm Single V 60 degree included angle.

Root face 4mm. Welded with Tandem Single 4mm DC+ and ICE™ AC 3*2,5mm and Aristo™ 1000 AC/DC

CONSUMABLES:

OK Autrod 12.22

OK Flux 10.71

OK Flux 10.69 (Backing flux)

PERFORMANCE:

Welding speed: 750mm/min

Heat input: 6,6kJ/mm

Deposition rate: 62kg/h

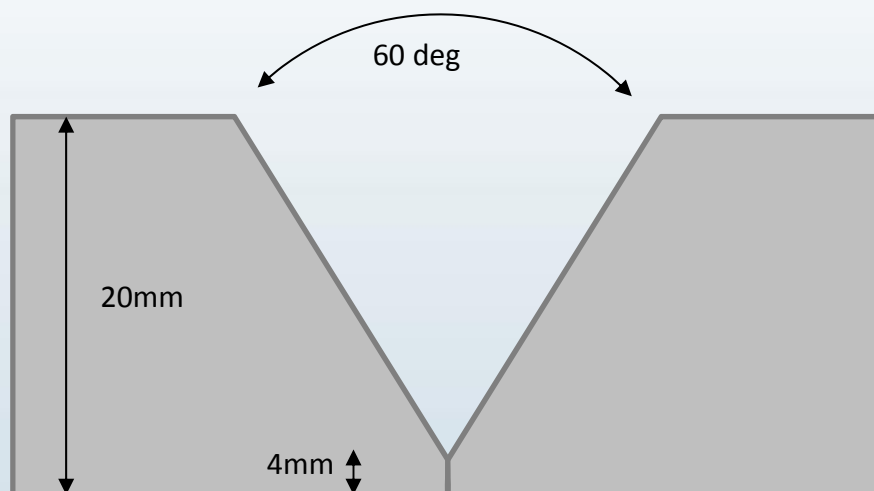
CVN 52J@-20C

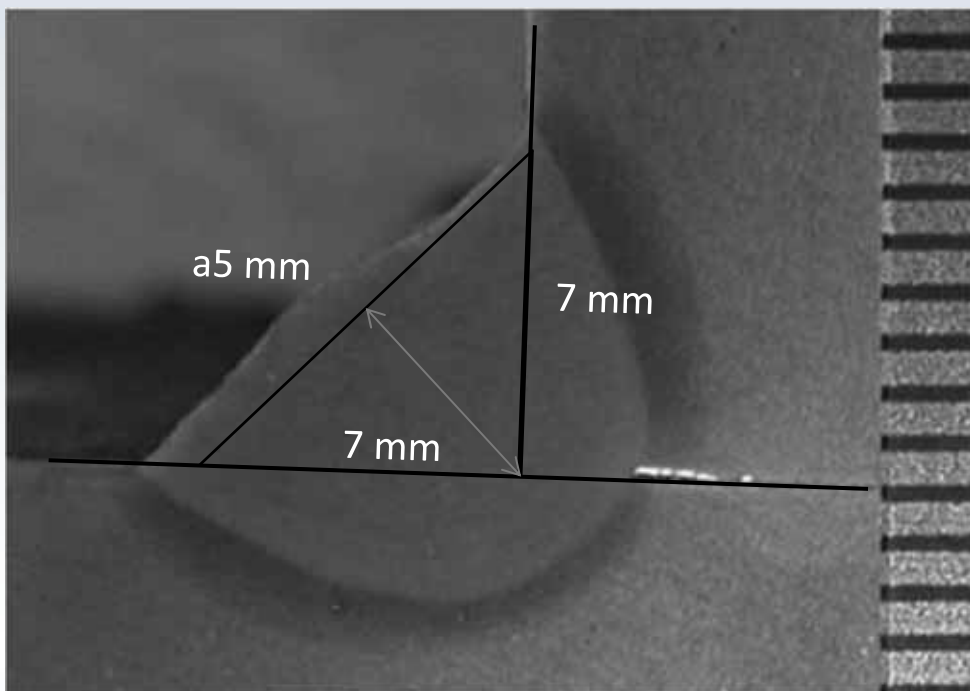
BENEFIT:

Reduce the number of runs in thick plate OSW.

Lowered heat input by 50% compared to triple wire SAW

Lowered flux consumption.





BEAM



7*7mm fillet

- The fastest fillet welding

APPLICATION:

Fillet welding in beam production PA position

CONSUMABLES:

OK Autrod 12.22

OK Flux 10.71

PERFORMANCE:

Welding speed 1700 mm/min

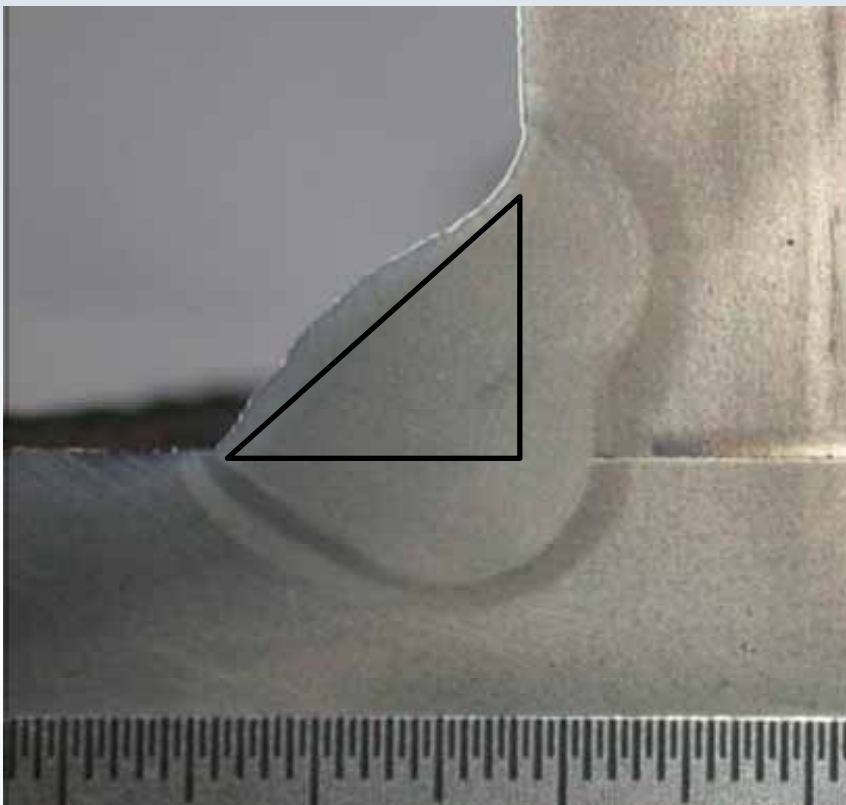
Heat input 1,3 kJ/mm

Deposition rate 18,9 kg/h

BENEFIT:

Lowered heat input than conventional SAW solutions. Lowered heat input will reduce distortion.

Increased welding speed and deposition rate will increase production throughput.



BEAM



12*12mm fillet

- 13*13mm in one run

APPLICATION:

Heavy fabrication and beam welding in plate thicknesses above 24 mm. S460 steel. Welded with ICE™ AC 3*2,5mm + Twin AC 2*2,5mm. Qualified @ -20°C

CONSUMABLES:

OK Autrod 12.32

OK Flux 10.71

PERFORMANCE:

Welding speed 880mm/min

BENEFIT:

Conventional SAW welding requires 3 runs to weld a 12*12mm fillet. The ICE™ + Twin does this in one run.

Flux reduction by 40%



HEAVY
FABRICATION



CIB, Italy

- 200mm plates, narrow groove at 16,4 kg/h

COMPANY: Production of cement and mining plant components, hydro mechanical equipment, equipment for steel Industry, pressure vessels and boilers manufacturing and structural steel for industrial buildings.

APPLICATION: Thick plate components where high deposition rate is important to boost productivity. 22 degree J-joint. Plate thickness 200mm

CONSUMABLES:

OK Autrod 12.22

OK Flux 10.72

PERFORMANCE:

Deposition rate 16,4kg/h

Heat input 2,7kJ/mm

Welding speed 650mm/min

BENEFIT:

150% increased deposition rate compared to existing single wire solution.

Reduced flux consumption by 17%



HEAVY
FABRICATION



Thurston Machine Co. Ltd.

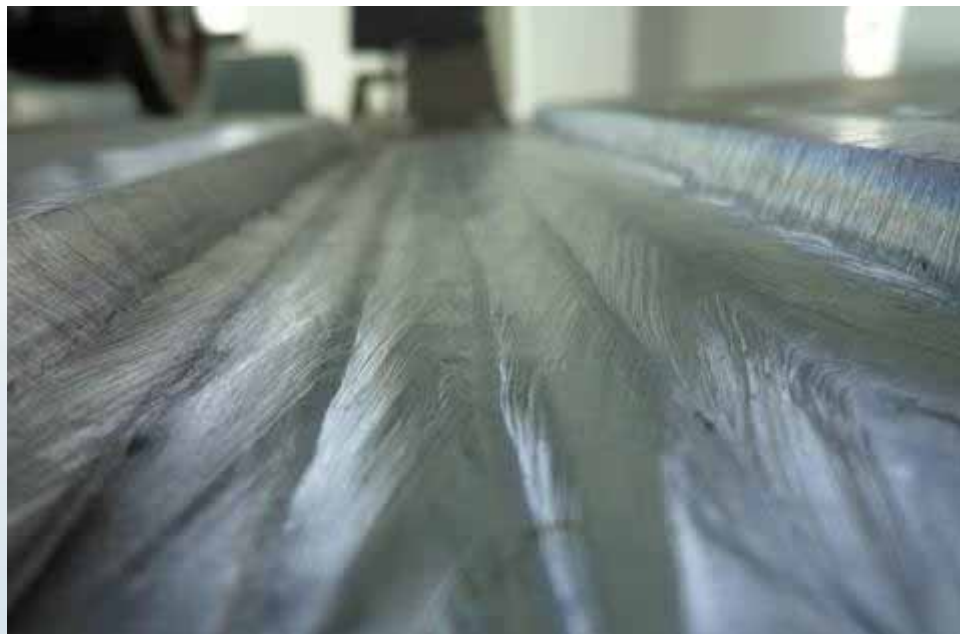
- 50% reduced welding cycle time

COMPANY: Established in 1915, Thurston Machine Company Ltd. has been servicing steel mills, mining heavy off road truck, locomotive, power generation and many other industrial sectors.

APPLICATION: The ESAB CaB 300M welding stations utilizing the A6S with ICE™ technology was used for splicing 6" thick plate. ESAB Spool Arc 81 wire and OK Flux 10.72 employed for high productivity and weld quality.

PERFORMANCE: Average deposition rate of approximately 13kg/h with one power source and heat input below 2,2kJ/mm meeting the requirements.

BENEFIT: Weld time on the station was reduced by approximately 50% and the wait time between passes virtually eliminated. The ICE™ technology helped Thurston to complete the project ahead of schedule and below the estimated cost. The ease of operation was the key to the success on this installation. After a short training session, the operator was comfortable with the PEK controller and was amazed on how easy the process was to control.



SHIPBUILDING



Piston cladding

- 40% increase in deposition rate

APPLICATION: Reconditioning of large pistons, piston heads and valves for ship engines is a very weld intensive production. The time to weld a single piston can be up to 35 hours and up to 300kg of wire used. Welding ICE™ DCEP 3*2,5mm will significantly reduce the welding time.

CONSUMABLES:

OK Autrod 12.22 or OK Autrod 13.10

OK Flux 10.71

PERFORMANCE:

Deposition rate 11,6kg/h

BENEFIT:

40% increased deposition rate compared to twin welding

22% reduced flux consumption

26% reduced energy consumption



Duplex & Super Duplex

- 19,6kg/h with one ICE™ torch!

APPLICATION: Stainless steel pipes. Welded with ICE DCEP 3*2,5mm.

CONSUMABLES:

OK 2209 (for 2205)

OK Flux 10.93

PERFORMANCE:

| | |
|-----------------|------------|
| Deposition rate | 19,6 kg/h |
| Welding speed | 900 mm/min |
| Heat input | 1,8 kJ/mm |

BENEFIT:

Increased deposition rate by 85% compared to previous Twin solution.

64% increased welding speed.





WALTER TOSTO SpA

- 14kg/h average in a 26 degree joint!

CUSTOMER:

WALTER TOSTO SpA is a leading manufacturer of critical, long lead equipment including heavy wall hydrocracking, hydro treating, GTL and EO reactors for various applications within Oil & Gas, Petrochemical, Power & Energy, Food & Pharmamedichal markets.

APPLICATION: SA 240 Tp321 153mm thickness.
Welded with ICE™ DCEP 3*2,5mm

CONSUMABLES:

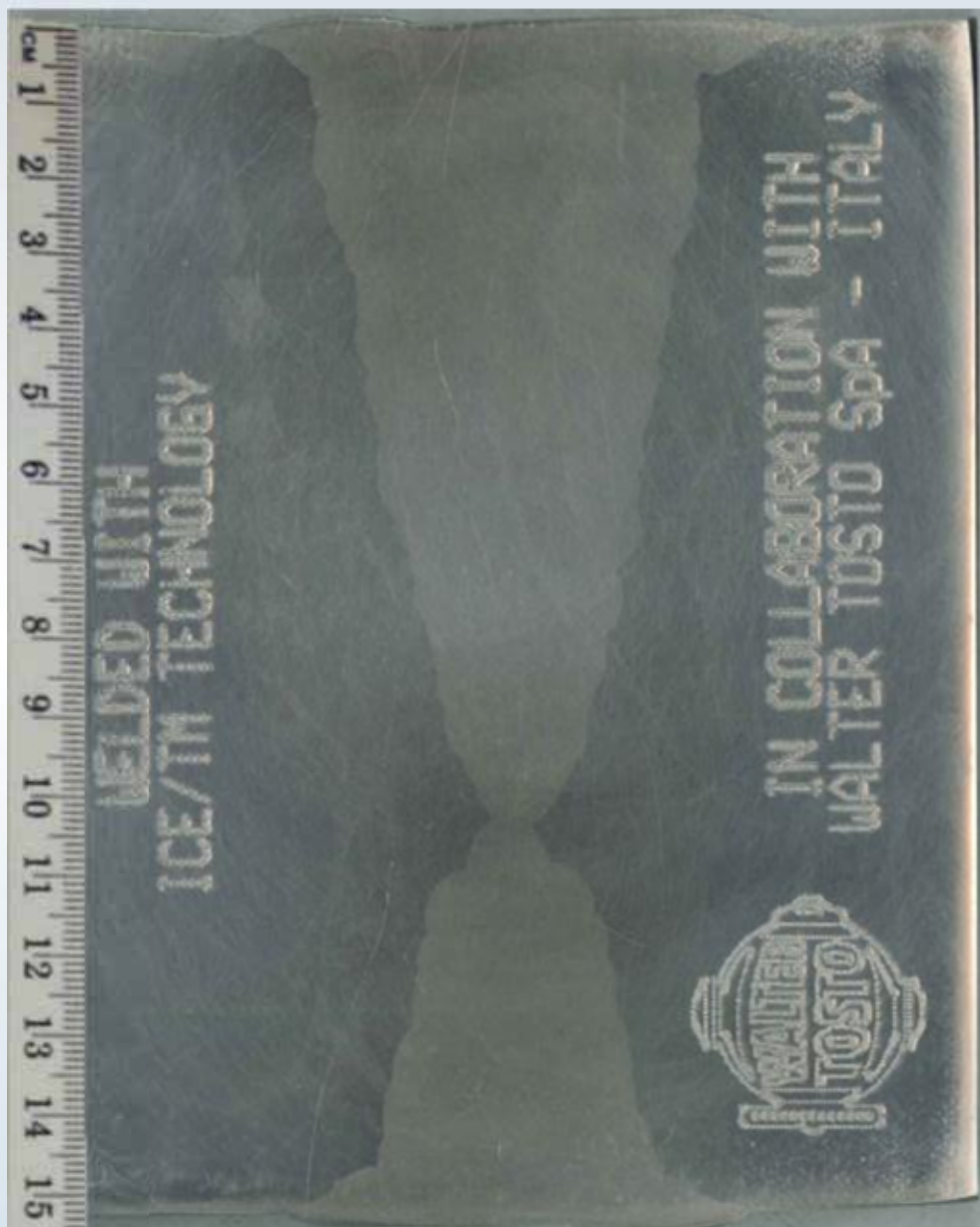
OK Autrod 347
OK Flux 10.93

PERFORMANCE:

Deposition rate average 14 kg/h
Welding speed 900 mm/min
Heat input 1,6-1,8 kJ/mm

BENEFIT:

Increased deposition rate by 91% compared to single wire.





esab.com

