One-Pass, High-Fusion Welding of Thick Plates

Twin Arc Laser Hybrid

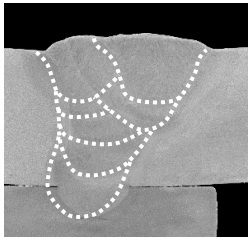
2024 Japan International Welding Show

Problems within the plant

＜Problems in improving productivity＞

① Normally thick plate welding requires bevel machining to ensure penetration

② Welding speed is slow and productivity is poor in thick plate welding.

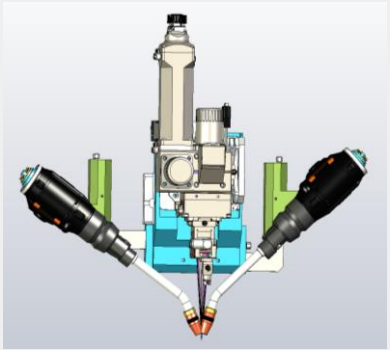


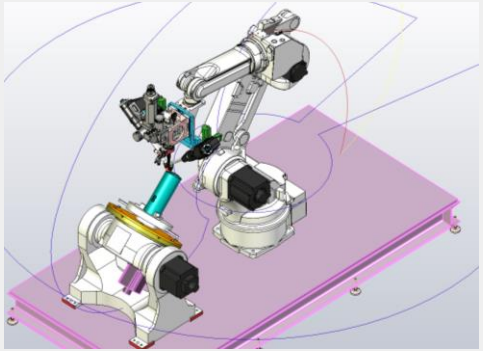
＜Countermeasures＞

① Twin Arc Laser Hybrid Ensures Beveless and Ensures Penetration

② Reduction of welding time by up to 90% with high welding by combination of arc and laser

Twin arc laser hybrid system





What is a laser hybrid?

Arc welding

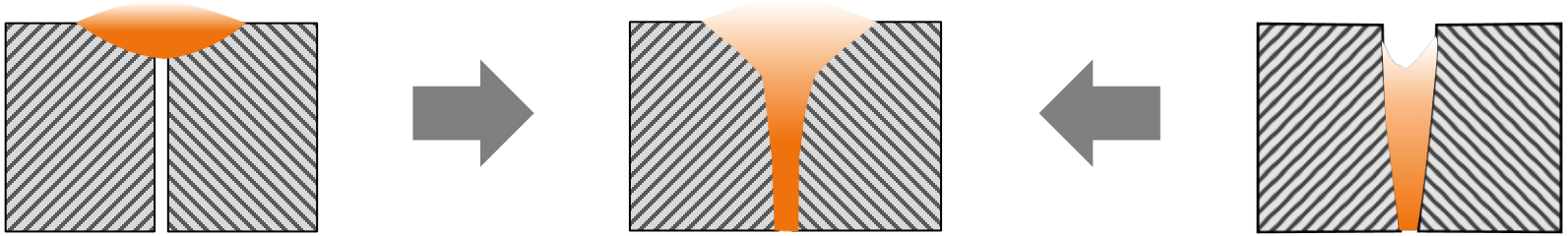
× Shallow penetration
× Limit the speed
◎ Have a high gap margin

Laser hybrid welding

◎ Deep penetration
◎ High-speed welding is possible
◎ Have a high gap margin

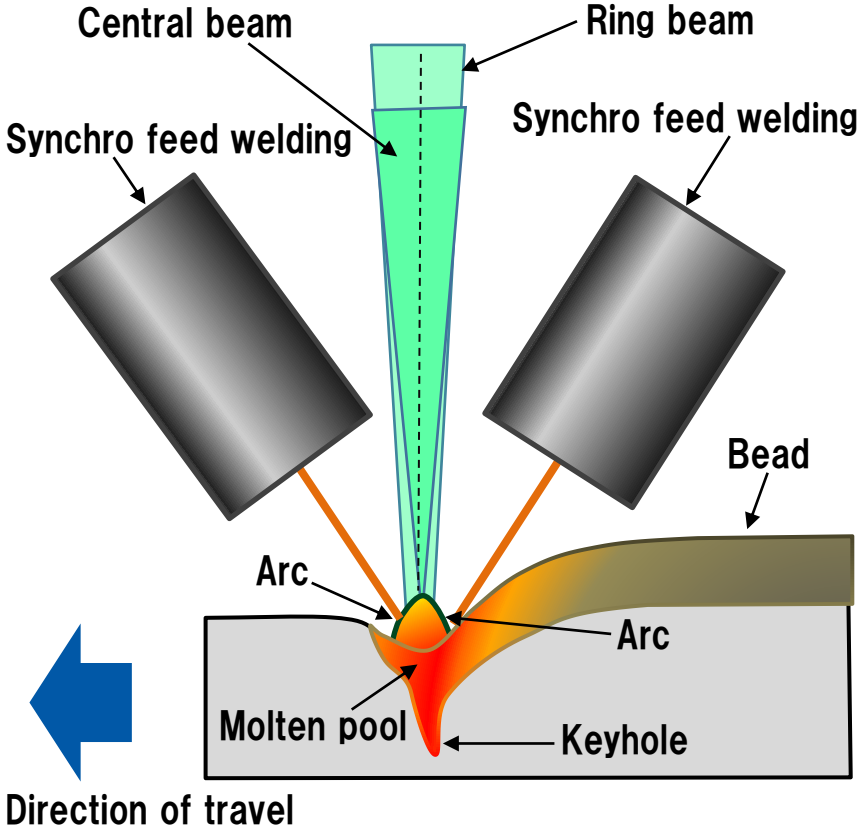
Laser welding

◎ Deep penetration
◎ High-speed welding is possible
× Vulnerable to gaps

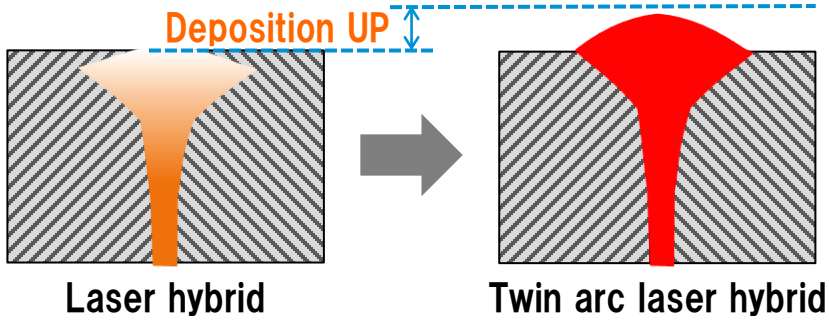


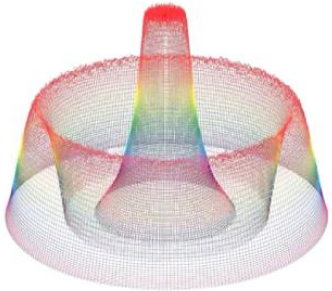
Laser hybrid with deep penetration and improved gap tolerance

What is a twin arc laser hybrid?

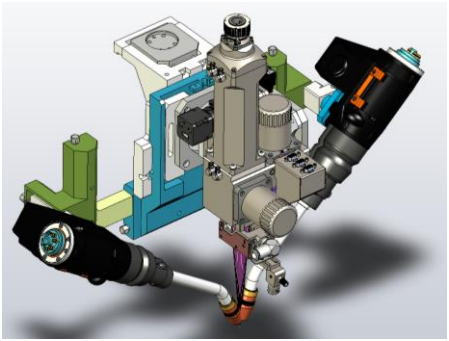


Further than the laser-arc hybrid
To achieve high speed and high welding speed, we solve this problem with twin!

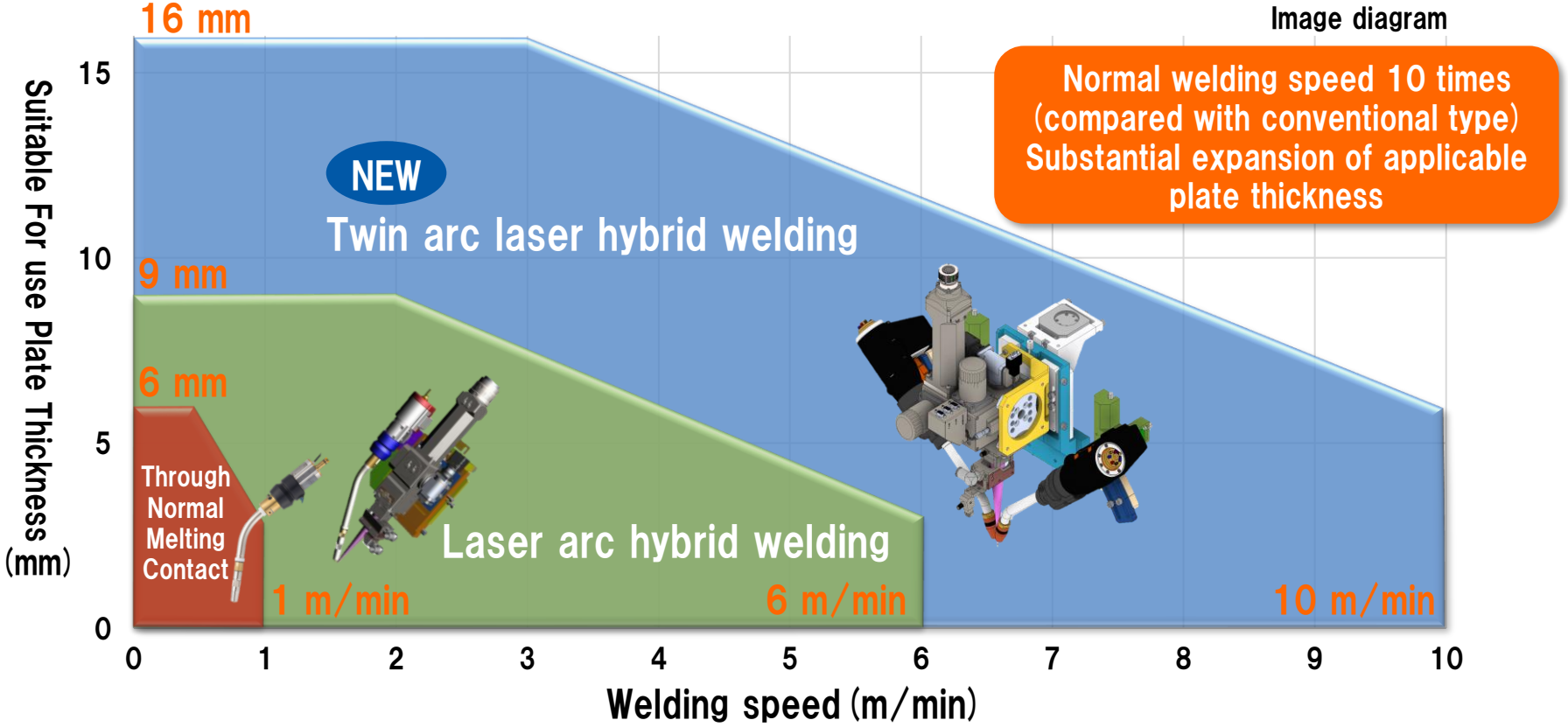




Ring mode laser



Applicable plate thickness and welding speed



Demonstration of circumferential welding of pipe

Welding conditions	
Laser output	10 kw (central + ring)
Welding current	300 A+300 A
Welding speed	7.5 m/min
Base metal	STKM plate thickness 2.5 mmt
Shield gas	MAG CO_2 80% Ar 20%
Wire	YGW-12 1.2 mmΦ

Demonstration of welding thick plates

Welding conditions	
Laser output	10 kw (central + ring)
Welding current	200 A+250 A
Welding speed	80 cm/min
Base metal	SS400, thickness 12 mmt
Shield gas	MAG CO_2 80% Ar 20%
Wire	YGW-12 1.2 mmΦ

With DAIHEN's twin-arc laser hybrid,
We will propose customers' productivity improvements and high-quality systems


DAIHEN