OTC
DAIHEN Corporation

High-Current, Buried-Arc Transfer Welding

D-Arc

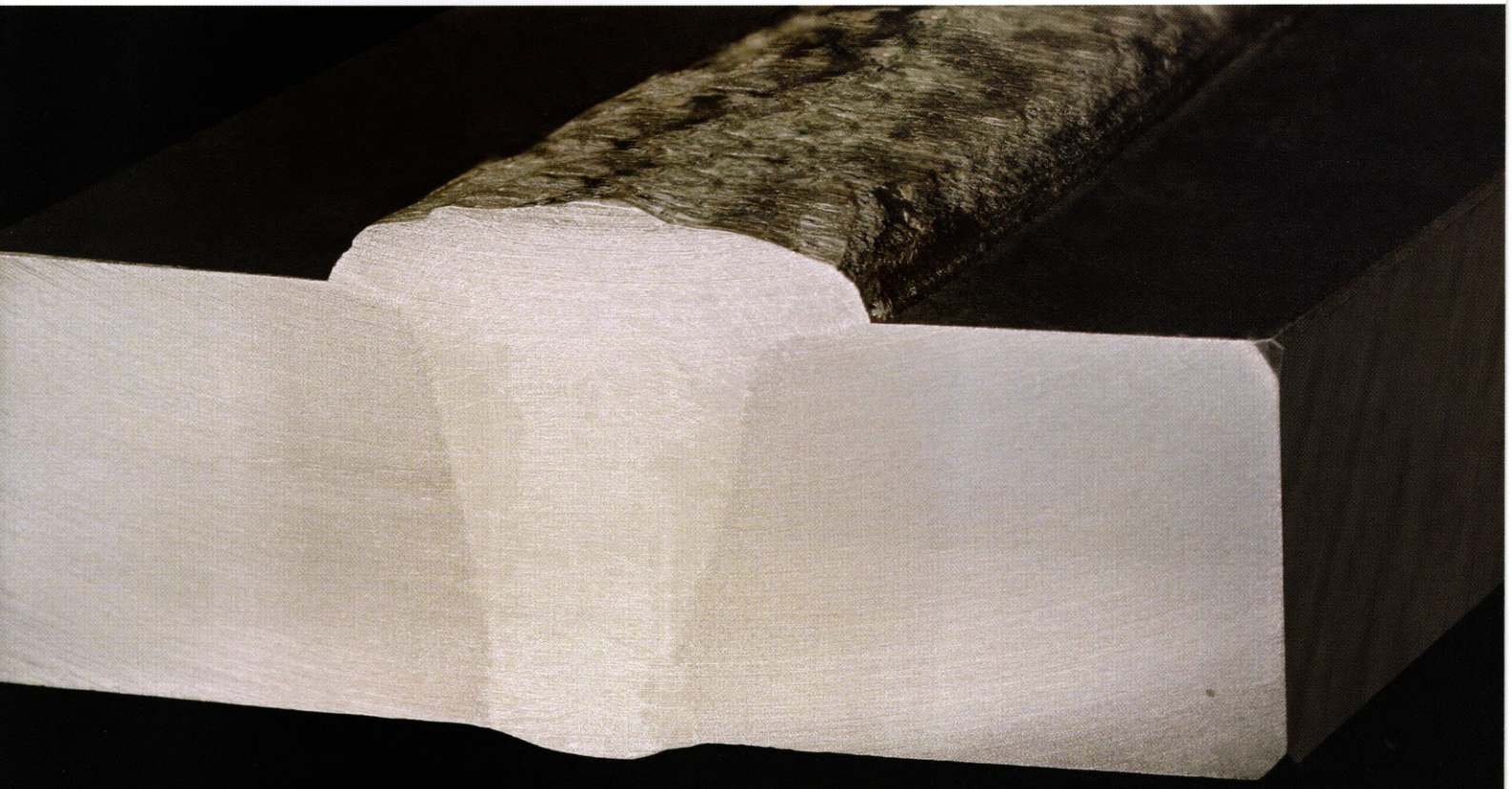
DAIHEN Corporation

Revolutionary Arc Control Delivers High-Performance

DAIHEN's D-Arc is the world's first welding solution delivering stable, high-current control required for buried-arc transfer. Our exclusive technology enables high-efficiency, thick-plate welding with the high-quality required in large structures such as buildings, bridges, marine vessels and construction equipment. An innovative alternative to conventional, multi-layer welding.

High-Current, Buried-Arc Transfer Welding

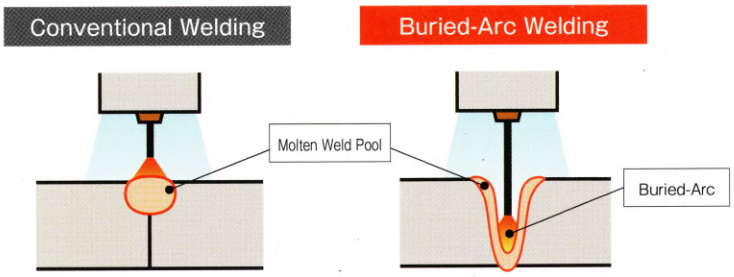
, Thick Plate Welding D-Arc



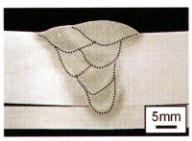
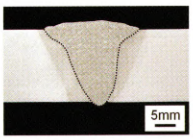
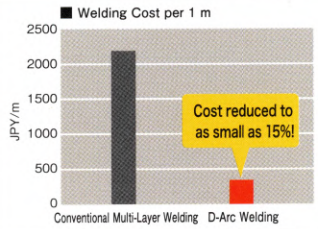
D-Arc, Daihen-Exclusive Technology Delivers Thick-Plate Welding with Unmatched Quality & Efficiency

Buried-Arc Welding

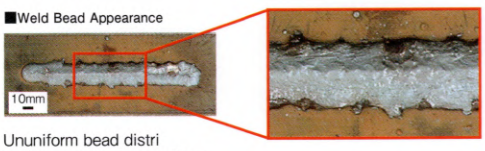
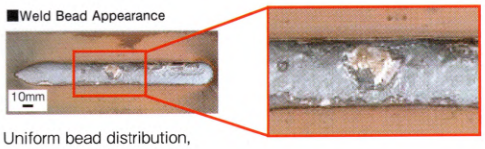
In buried-arc welding, the heat of the electrical arc serves to locally melt the base metal as well as melt the wire filler metal that is being buried into the weld. The heat reaches well inside the substrate to achieve deep penetration.



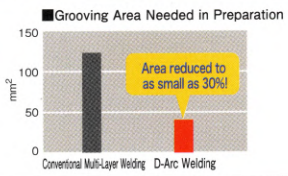
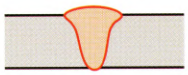
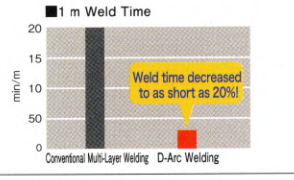
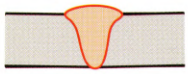
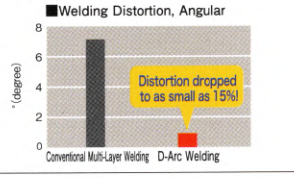
Faster welding speed reduces production cost

Comparison	Conventional Multi-Layer Welding	D-Arc Welding	Comparative Bar Graph
Welding Method	6 passes 	1 pass  * Backing metal used	

Enhanced arc-control ensures high-quality welds

Comparison	Conventional Multi-Layer Welding	D-Arc Welding
Weld Quality	 Ununiform bead distribution, large spatter pattern	 Uniform bead distribution, no spatter mark ●Feed rate: 40 m/min ●Welding current: 570 A ●Welding voltage: 48 V ●Welding wire dia.: ϕ1.2

D-Arc answers the challenges of thick-plate welding

Comparison	Conventional Multi-Layer Welding	D-Arc Welding	Comparative Bar Graph
Simplifies edge preparation	Requires large grooving	Requires no large grooving	
Welds thick plate in one pass	Requires multiple passes	Requires reduced passes 	
Reduces weld distortion	Much weld distortion	Reduced weld distortion 	

High-Current, Buried-Arc Transfer Welding with Current Control provided by Welbee: Welding's Best Electronic Engine

D-Arc is the marriage of a high-output welding system with the stable current control of our exclusive Welbee technology

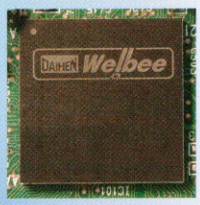
D-Arc combines the precise control of Welding's Best Electronic Engine (Welbee) with our high-output welding system. Purpose-built for high-current and high-speed, D-Arc delivers the world's first high-current, buried-arc welding with stable, high-quality results.

High-Output Welding System

- High-Output Power Supply (650A max welding current)
- High-Speed Wire Feeder (30m/min. max feed speed)
- High-Current, Water-Cooled Torch (650A max welding current)

Waveform Stabilizing Control

Precise welding current waveform control insures stable buried-arc performance



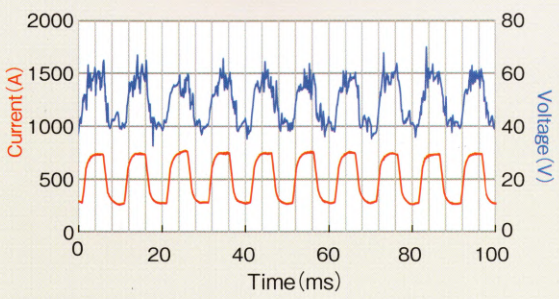
Welding's Best Electronic Engine
Welbee LSI control

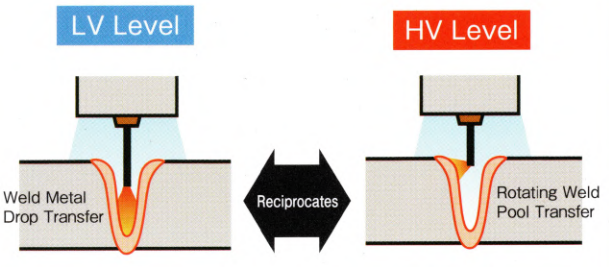
Welbee, the precision waveform control achieved successful stabilization of high current buried-arc

Daihen's exclusive Welbee technology provides the precise welding current waveform control necessary for stable, high-current, buried-arc transfer welding

Voltage Amplitude Control

Alternating between low and high voltage delivers two (2) transfer modes, resulting in the deep penetration and stable weld pool required.





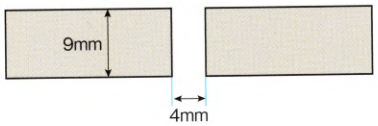
Heat transfers to the base metal bottom for deep penetration

Stirring action to establish and maintain the weld puddle

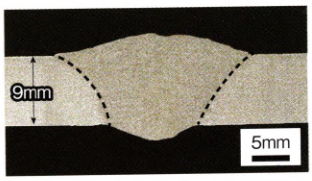
Application examples

Parameter	Specification
Plate thickness	9mm
Weld edge geometry	I groove
Gap	4mm
Backing	Ceramic
Welding current	430A
Welding voltage	40V
Welding Speed	30cm/min

Welding Joint

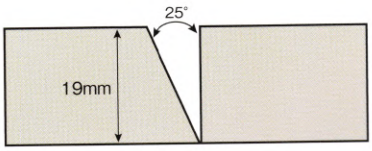


Cross-Section Metallography

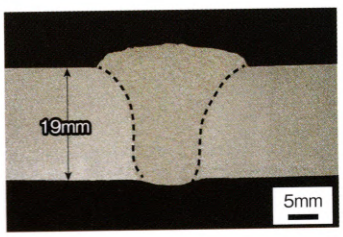


Parameter	Specification
Plate thickness	19mm
Weld edge geometry	Bevel groove
Gap	0mm
Backing	Ceramic
Welding current	580A
Welding voltage	48V
Welding Speed	24cm/min

Welding Joint

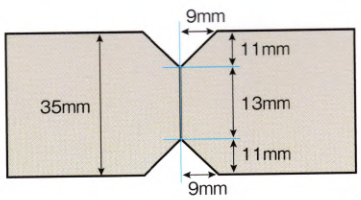


Cross-Section Metallography

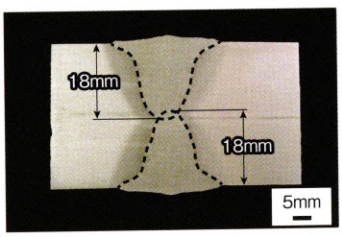


Parameter	Specification
Plate thickness	35mm
Weld edge geometry	Double V groove
Gap	0mm
Backing	None
Welding current	620A
Welding voltage	47V
Welding Speed	30cm/min

Welding Joint

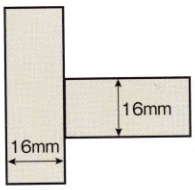


Cross-Section Metallography

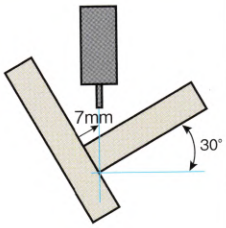


Parameter	Specification
Plate thickness	16mm
Weld edge geometry	I groove
Gap	0mm
Backing	None
Welding current	605A
Welding voltage	44V
Welding Speed	30cm/min

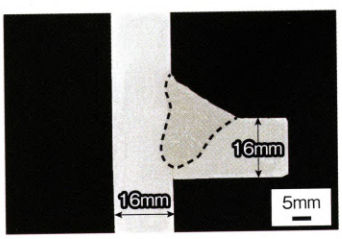
Welding Joint



Work Posture

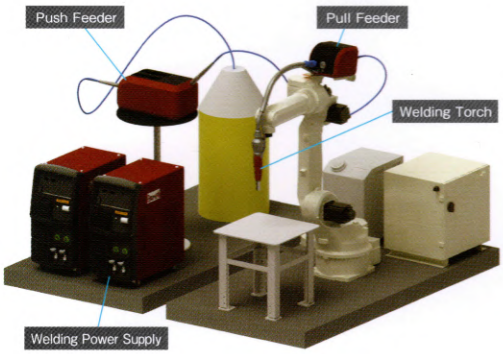


Cross-Section Metallography



Specification

Components

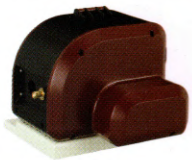


D-Arc Welding		
Parameter	Specification	Remarks
Shield gas	CO_2 100%	Reference flow rate: 30 L/min
Wire	YGW11,18	
Wire diameter	(1.2)、1.4、(1.6)mm	Packed wire only
Base material	Steel, 400 MPa yield strength Steel, 490 MPa yield strength	Stainless steel, excluding high alloy and special steels
Joint type	Square, fillet	
Work Posture	Downward	
Edge type	I, V, Y, bevel, double V, etc.	
Backing	Steel, copper, ceramic	
Plate thickness	6~35mm	19 mmt max: single-layer, thorough 19-35 mmt: front-back, double-layer
Reference welding rate	30±10cm/min	

Welding Power Supply

Welding Power Supply	
Parameter	Specification
Model	WB-DPS
Running method	Dual parallel
Welding mode	D-Arc, DC CO_2
Rated input voltage	200V/220V(common for 50/60 Hz)
Number of phase	3-phase
Rated input power	Per power supply unit: 27.4 kVA (25.7 kW); Parallel run: 50.3 kVA (45.4 kW)
Rated duty cycle	100%
Rated output current range(parallel run)	650A
Rated output Voltage range(parallel run)	55V
Rated output current (parallel run)	40~650A
Output current range (parallel run)	12~60V
Maximum No-load voltage	111V／123V
External dimensions	W395×D710×H810mm, excluding eye bolts
Weight (per unit)	72kg

Wire Feeder



DF-PL

DF-PS

Wire Feeder		
Parameter	Specification	
Model	Pull feeder: DF-PL	Push feeder: DF-PS
Wire diameter	(1.2)、1.4、(1.6)mm	
Wire	Solid wire	
Wire feeding rate	70 m/min max	
External dimensions	W328×D297×H266mm	W268×D646×H322mm
Weight	9kg	19kg

Welding Torch

Welding Torch	
Parameter	Specification
Model	DTWH6500S
Wire diameter	(1.2)、1.4、(1.6)mm
Rated current	650A
Duty cycle	100%
Type of cooling	Liquid cooled
Weight	1kg

In accordance with DAIHEN's policy of make continuing improvements, design and/or specifications are subject to change without notice and without any obligation on the part of manufacturer.

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