



High-Current, Buried-Arc Transfer Welding

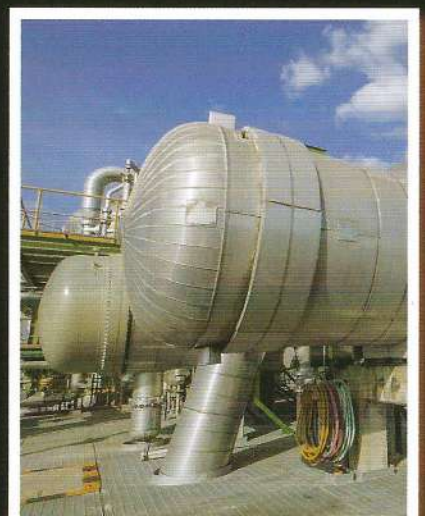
# D-Arc





# Revolutionary Arc Control Delivers High-Performance

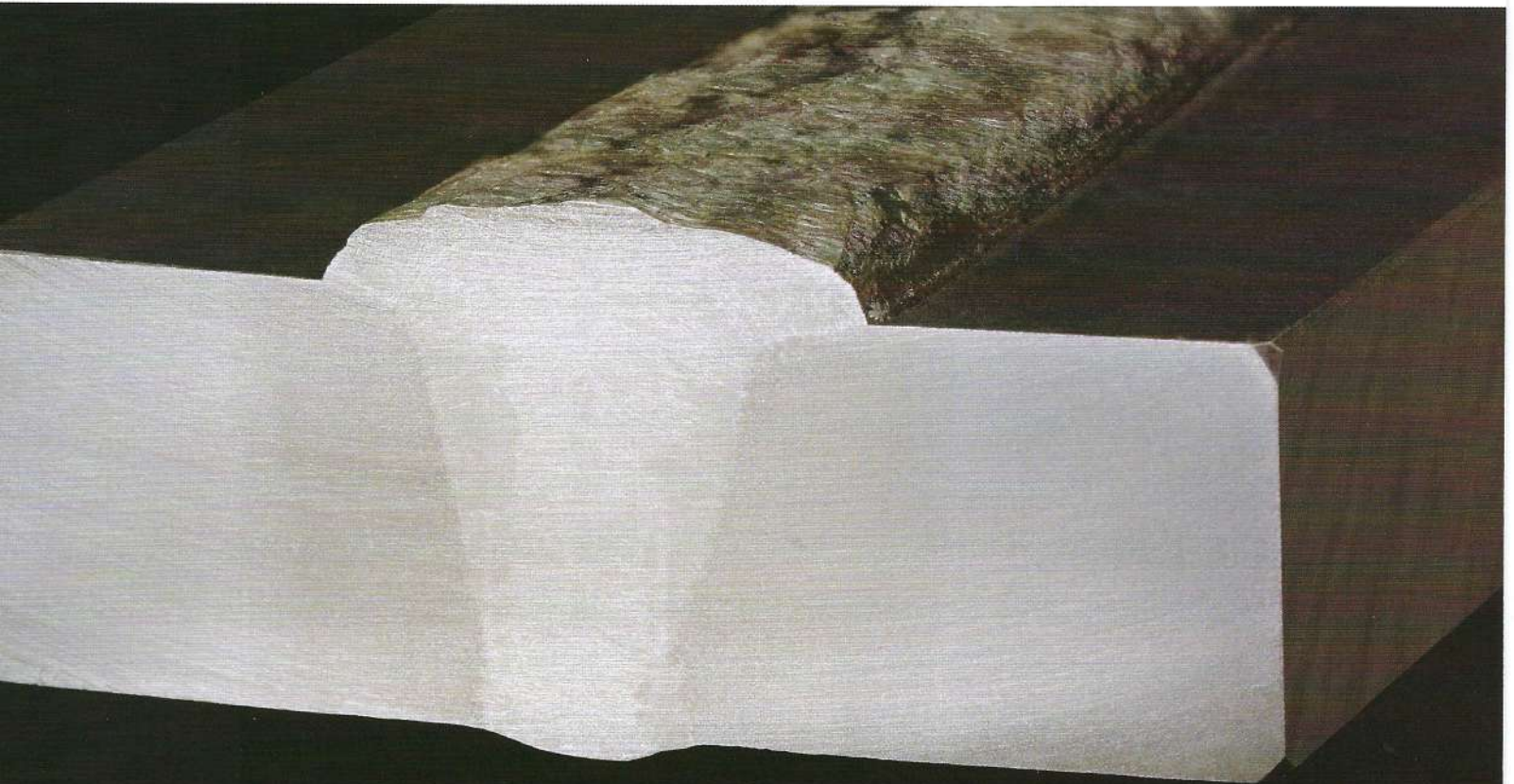
DAIHEN's D-Arc is the world's first welding solution delivering stable, high-current control required for buried-arc transfer. Our exclusive technology enables high-efficiency, thick-plate welding with the high-quality required in large structures such as buildings, bridges, marine vessels and construction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





High-Current, Buried-Arc Transfer Welding

# Thick Plate Welding D-Arc

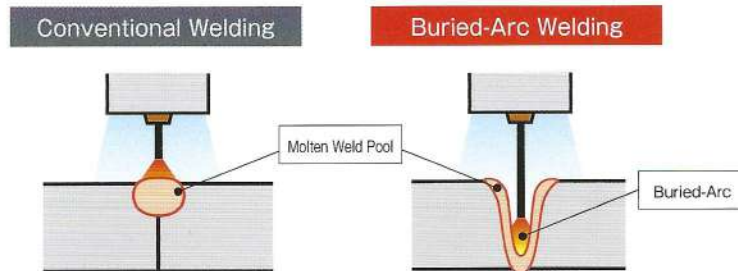




# D-Arc, Daihen-Exclusive Technology Delivers Thick-Plate Welding with Unmatched Quality & Efficiency

## 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	<p>6 passes</p> <p>5mm</p>	<p>1 pass</p> <p>5mm</p> <p>* Backing metal used</p>	<p>Welding Cost per 1 m</p> <p>JPY/m</p> <p>Conventional Multi-Layer Welding D-Arc Welding</p>

## Enhanced arc-control ensures high-quality welds

Comparison	Conventional Multi-Layer Welding	D-Arc Welding
Weld Quality	<p>Weld Bead Appearance</p> <p>10mm</p> <p>Ununiform bead distribution, large spatter pattern</p>	<p>Weld Bead Appearance</p> <p>10mm</p> <p>Uniform bead distribution, no spatter mark</p> <p>● Feed rate: 40 m/min ● Welding current: 570 A ● Welding voltage: 48 V ● Welding wire dia.: φ1.2</p>

## D-Arc answers the challenges of thick-plate welding

Comparison	Conventional Multi-Layer Welding	D-Arc Welding	Comparative Bar Graph
Simplifies edge preparation	<p>Requires large grooving</p>	<p>Requires no large grooving</p>	<p>Grooving Area Needed in Preparation</p> <p>mm²</p> <p>Conventional Multi-Layer Welding D-Arc Welding</p>
Welds thick plate in one pass	<p>Requires multiple passes</p>	<p>Requires reduced passes</p>	<p>1 m Weld Time</p> <p>min/m</p> <p>Conventional Multi-Layer Welding D-Arc Welding</p>
Reduces weld distortion	<p>Much weld distortion</p>	<p>Reduced weld distortion</p>	<p>Welding Distortion, Angular</p> <p>°(degree)</p>

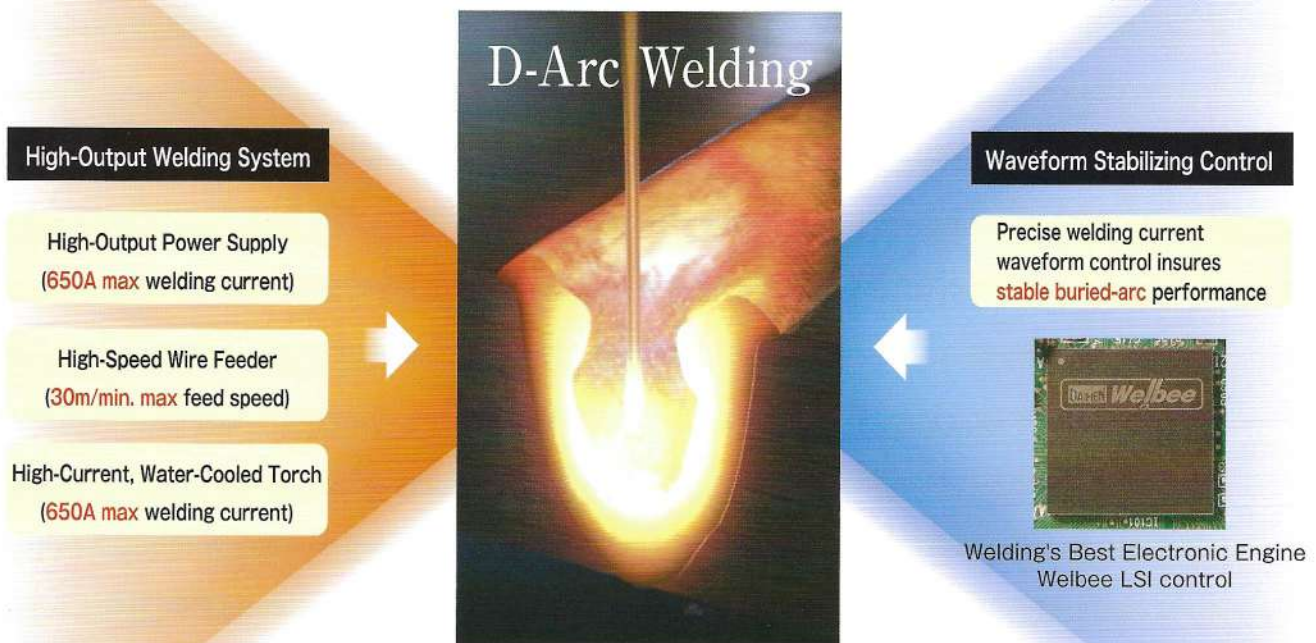


# High-Current, Buried-Arc Transfer Welding with Current Control provided by Welbee: Welding's Best Electronic Engine



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

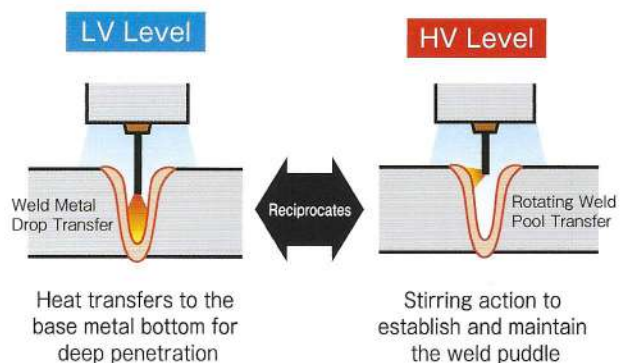
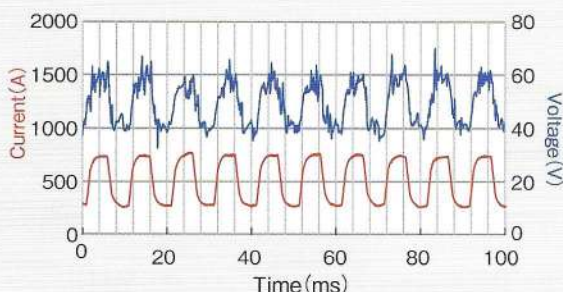
D-Arc combines the precise control of Welding's Best Electronic Engine (Welbee) with our high-output welding system. Purpose-built for high-current and high-speed, D-Arc delivers the world's first high-current, buried-arc welding with stable, high-quality results.



■ 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

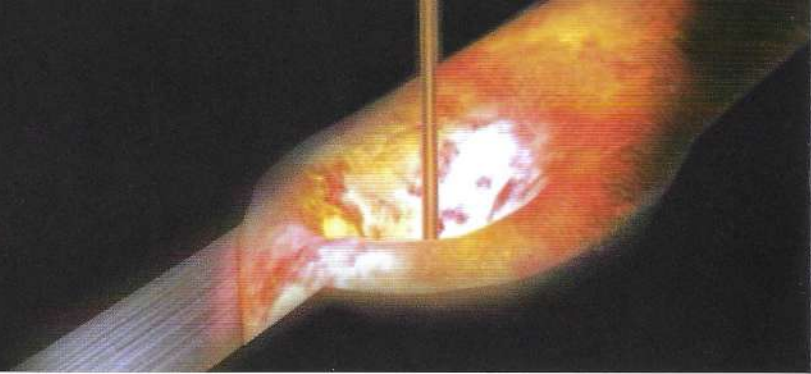
### Voltage Amplitude Control

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





# Application examples



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

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

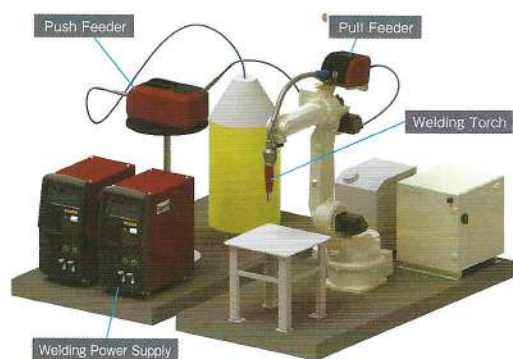
Parameter	Specification	Welding Joint	Cross-Section Metallography
Plate thickness	35mm		
Weld edge geometry	Double V groove		
Gap	0mm		
Backing	None		
Welding current	620A		
Welding voltage	47V		
Welding Speed	30cm/min		

Parameter	Specification	Welding Joint	Work Posture	Cross-Section Metallography
Plate thickness	16mm			
Weld edge geometry	I groove			
Gap	0mm			
Backing	None			
Welding current	605A			
Welding voltage	44V			
Welding Speed	30cm/min			

# Specification



## Components



## Welding Power Supply



## Wire Feeder



## Welding Torch



## D-Arc Welding

Parameter	Specification	Remarks
Shield gas	CO <sub>2</sub> 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 mm max: single-layer, thorough 19-35 mm: front-back, double-layer
Reference welding rate	30±10cm/min	

## Welding Power Supply

Parameter	Specification
Model	WB-DPS
Running method	Dual parallel
Welding mode	D-Arc, DC CO <sub>2</sub>
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

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

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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