



# Next-generation pulse welding for optimized automotive welding

**Wire-Feed-Controlled Pulse**

Vehicles are made of parts of wide-ranging plate thicknesses and shapes.

- **CO<sub>2</sub> short-circuit welding**

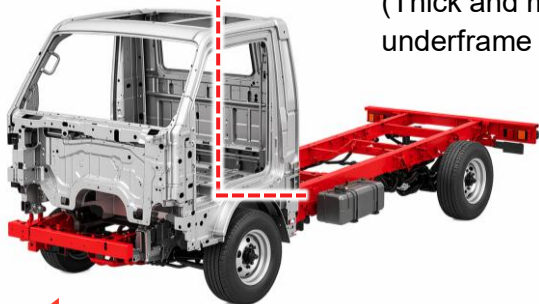
(Thick and medium plates: underframe parts, etc.)

- **MAG short-circuit welding**

(Thin plate: interior parts, body, etc.)

- **MAG pulse welding**

(Thick and medium plates: underframe parts, etc.)



Thick

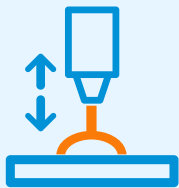
Part plate thickness

Thin

## Expertise in setting welding conditions

- Optimal welding method for each part
- Setting appropriate conditions for plate thickness
- Methods to reduce spatter

# One High-Quality Welding Process for the Entire Vehicle Body



**Cutting-edge  
technology**

SynchroFeed wire feed  
control



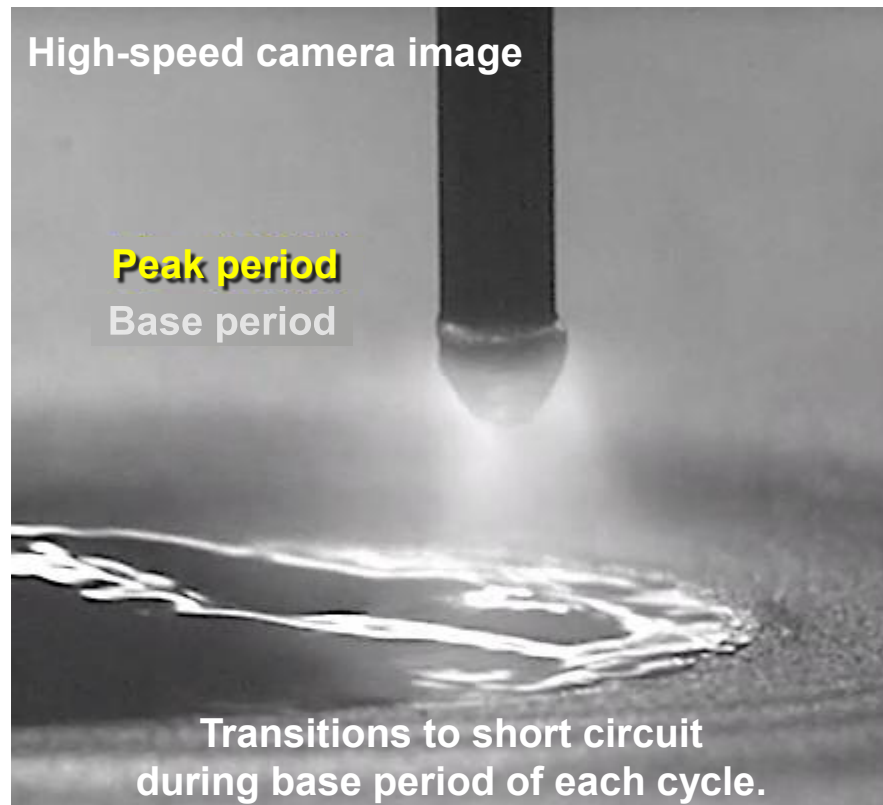
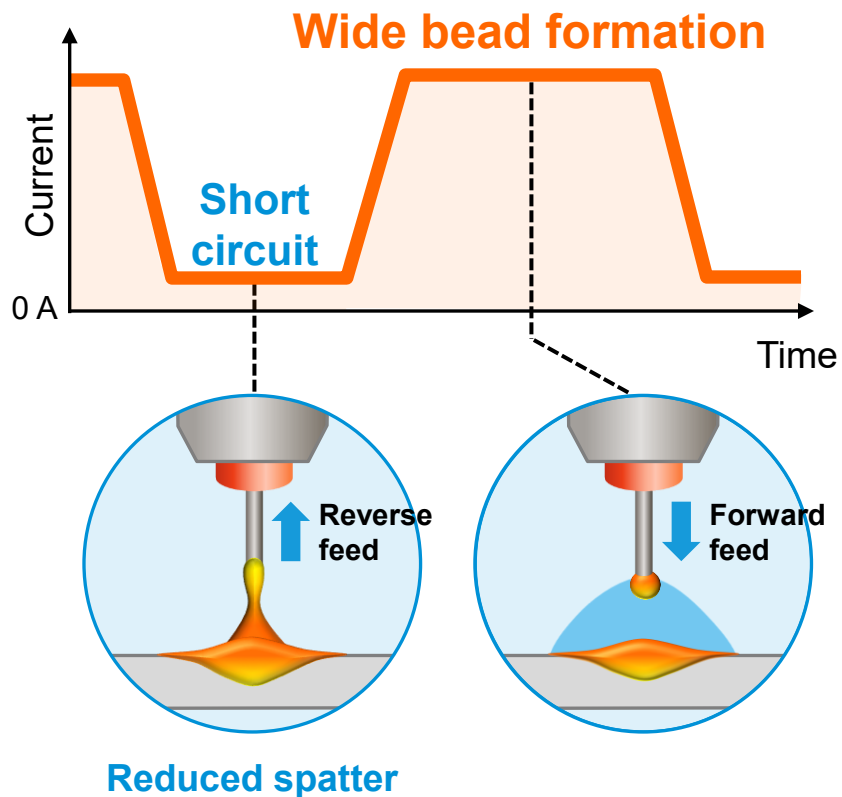
**Years of  
experience**

Proprietary pulse  
welding technology



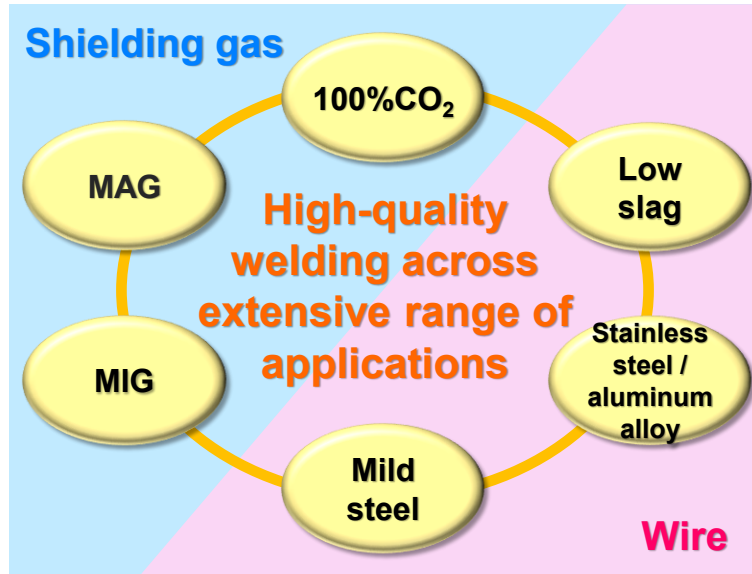
**Wire-Feed-Controlled Pulse**  
- A new arc-welding method -

# Mechanism for Wire-Feed-Controlled Pulse

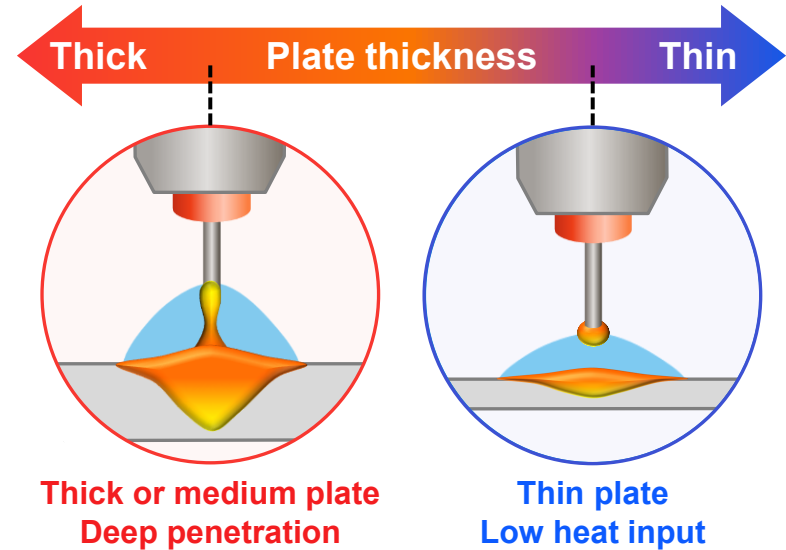


# High-Quality Welding of Parts of Varying Materials and Plate Thicknesses

## 1. Compatible with all kinds of wire material/shielding gas



## 2. Ensures optimal penetration for specific plate thicknesses.



# Demonstration: 100% CO<sub>2</sub> Low-Spatter Thick/Medium Plate Welding

Medium/heavy  
vehicles

body frames, etc.



**90%**  
reduction  
in spatter

- Reduced labor for spatter removal
- High-efficiency, high-quality welding

## Demonstration conditions

|                                               | Conventional CO <sub>2</sub><br>welding | Wire-Feed-<br>Controlled Pulse |
|-----------------------------------------------|-----------------------------------------|--------------------------------|
| Current/voltage<br>setting                    | 275 A / 26.0 V                          | 200 A / 22.5 V                 |
| Base metal<br>thickness /<br>tensile strength | 4.5 mm /<br>590 MPa                     | 4.5 mm /<br>590 MPa            |
| Welding speed                                 | 70 cm/min                               | 70 cm/min                      |
| General-<br>purpose<br>wire/diameter          | YGW12 /<br>Φ1.2 mm                      | YGW12 /<br>Φ 1.2mm             |

# Demonstration: MAG High-Speed Thin Plate Welding

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Small  
vehicles

seat frames, etc.



**3 times**  
bigger gap

**60%**  
faster  
welding  
speed

- Improved robustness
- Reduced cycle time

## Demonstration conditions

|                                               | SynchroFeed<br>welding | Wire-Feed-<br>Controlled Pulse |
|-----------------------------------------------|------------------------|--------------------------------|
| Current/<br>voltage setting                   | 100 A /<br>16.0 V      | <b>175 A /<br/>18.0 V</b>      |
| Base metal<br>thickness /<br>tensile strength | 1.0 mm /<br>980 MPa    | <b>1.0 mm /<br/>980 MPa</b>    |
| Gap                                           | <b>0.5 mm</b>          | <b>1.5 mm</b>                  |
| Welding speed                                 | <b>60 cm/min</b>       | <b>100 cm/min</b>              |
| General-<br>purpose<br>wire/diameter          | YGW12 /<br>Φ1.2 mm     | <b>YGW12 /<br/>Φ1.2 mm</b>     |

**Wire-Feed-Controlled Pulse supports**  
**parts of wide-ranging materials and plate**  
**thicknesses to ensure ultra-low-spatter,**  
**high-efficiency welding over the entire**  
**vehicle body**

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