

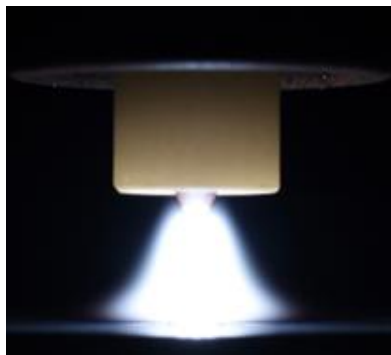


# Highly Efficient Automation of TIG Welding by High Trajectory Accuracy Collaborative Robot

**FD-VC4•TS-Sharpener**

## <Challenges>

- ① Safety fences take up space to install the automation system
- ② Low productivity due to slow TIG welds and labor in replacing electrodes



High speed TIG weld  
Plasma Jet TIG



Cooperating robot  
FD-VC4



Automatic electrode changer  
Tungsten Smart-Sharpener

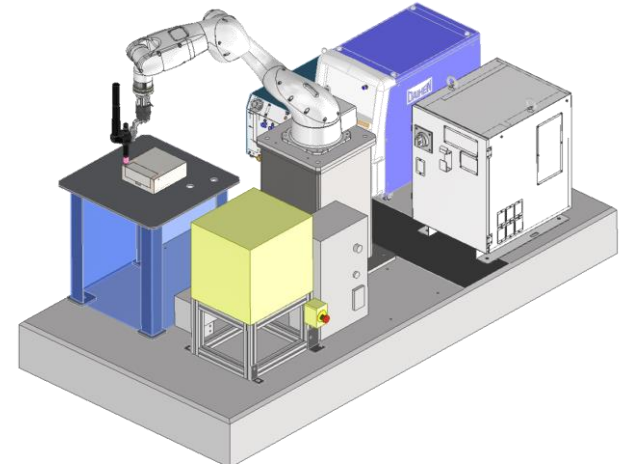
Resolving TIG Welding Problems with Daihen's Automated System

## <Problem ①>

Safety fences take up space to install the automation system

→ Daihen's collaborative robotic VC4 achieves safety fence-less, high-quality welds!

- **No need for safety fences!**  
Safety functions such as collision detection are equipped as standard
- **Compact and lightweight!**  
Flexible response to production line layout changes
- **Intuitive teaching possible!**  
Easy teaching even at beginners with direct teaching



**Space-saving automated system realized!**

## Features of Collaborative Robots Made by Daihen

① High locus accuracy  
Industry-leading level of precision  
and high quality welding possible!

② Teach-less function  
Easy teaching by anyone with  
Daihen's own app

③ Abundant welding-related  
functions, such as touch and arc  
sensors, can be used in the same  
way as industrial robots



**FD-VC4**

**Space-saving and high-quality welding automation is realized!**

## <Challenges ②>

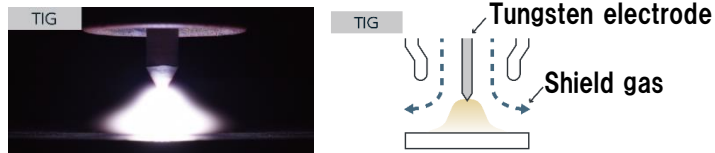
Low productivity due to slow TIG welds and labor in replacing electrodes  
 → Significantly improved productivity with Plasma Jet TIG and Electrode-Automated Polishing System (TSS)!

### Plasma Jet TIG weld

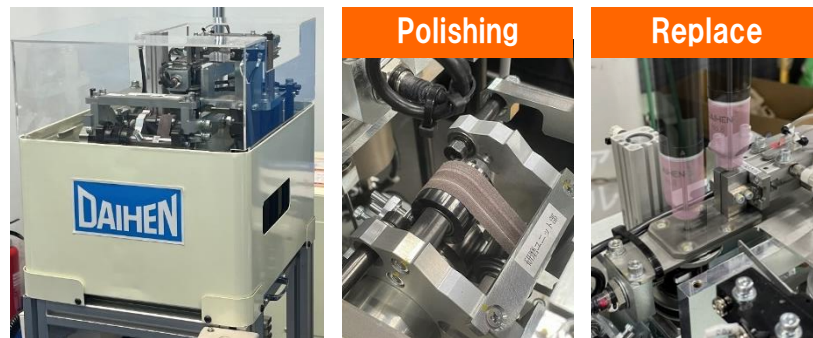


Arcs are concentrated by inner gas, realizing weld speeds approximately twice as fast as conventional TIG!

### Conventional TIG welds



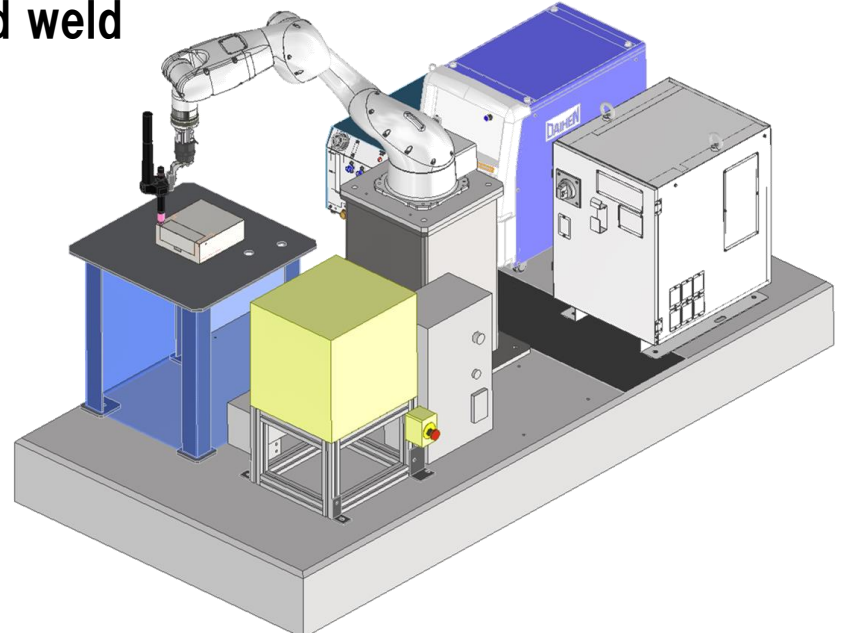
### Tungsten Smart-Sharpener



Fully automated electrode polishing and replacement  
 If the daily replacement is 5 minutes x 16 times,  
 320 hours/year can be reduced

- Fully automation of electrode exchange and polishing
- VC4×PJT → High quality, high speed weld

Plasma JET TIG	
Welding current	DC pulse. : 60-180 A (peak)
Pulse frequency	6 Hz
Pulse ratio	50%
Welding speed	60 cm / portion
Base metal	SPCC plate thickness 2 mmt
Shield gas	100% Ar
Inner gas	100% Ar



Please look at Collaborative robotics for high-efficiency TIG weld automation

**Daihen's collaborative robotic TIG weld automation system will improve productivity**

**DAIHEN**