



Physical AI incorporating welding expertise to enable even unskilled workers to weld easily

AI Welding Robot

Challenges facing welding sites

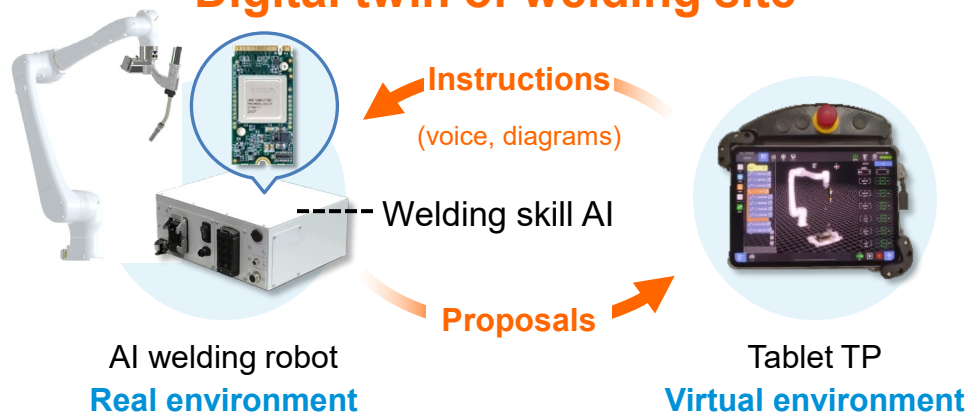
Reduced welding work efficiency due to **shortage of skilled welders**



Physical AI at welding sites

AI welding robot incorporating Daihen **welding expertise** helps **improve efficiency at welding sites** in high-mix, low-volume production.

Digital twin of welding site



Transferring expert welding skills
to physical AI



Voice instructions



Drawing instructions

Coming
soon

Phase 1: AI Welding Program Suggestions

DAIHEN

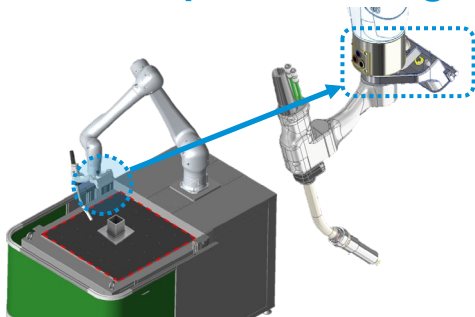
Robot **"views"** the workpiece and generates movements automatically.

Additionally, the robot suggests optimal welding conditions.

Involves just
three operations.

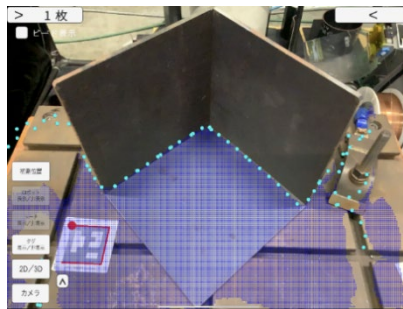
Cuts teaching/condition setting time
by approx. **90%**.

1 Mount the workpiece
and capture an image.



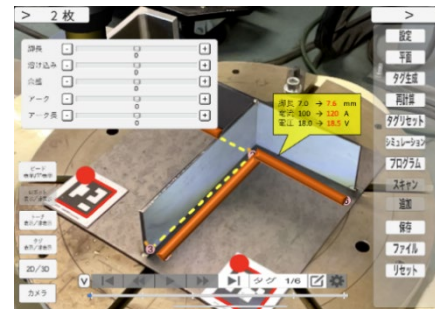
Robot hand-mounted camera automatically photographs workpiece on the work table.

2 Check proposed
program.



Robot estimates and proposes weld locations.
AR display of optimal weld bead

3 Welding instruction



Welding starts once the robot movement has been checked.

Demonstration: Arc Welding Movement for Roughly Placed Workpiece

Step 1

Place the workpiece at the approximate position and begin imaging.

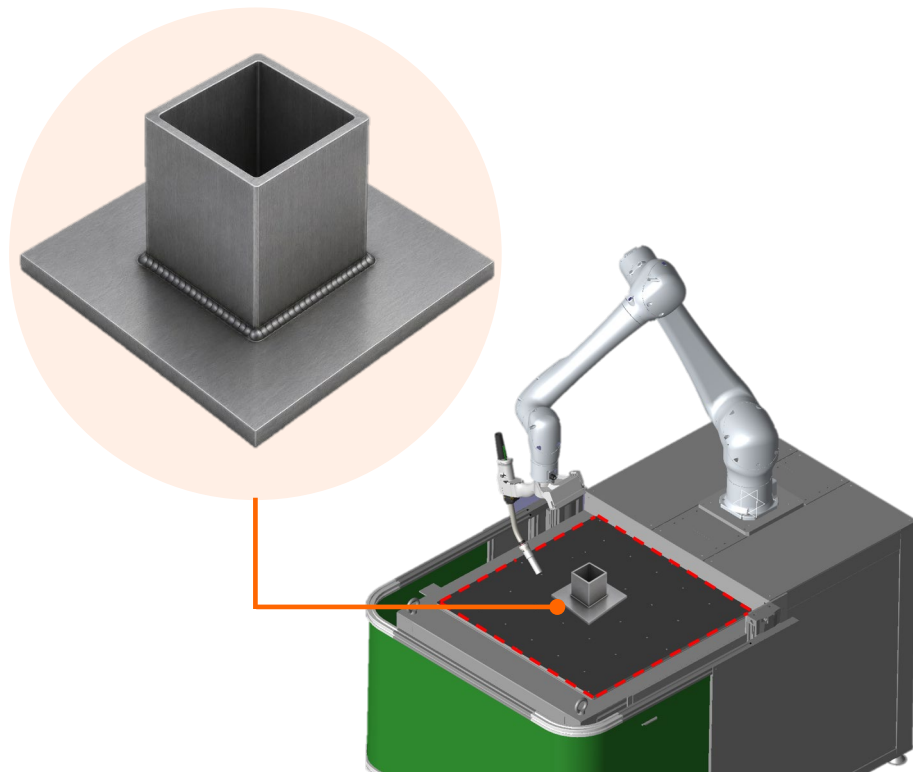
⇒ **Automatically generates robot movement and welding conditions.**

Step 2

Check welding order and bead appearance.

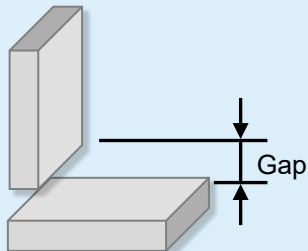
Step 3

Confirm robot movement and begin welding.

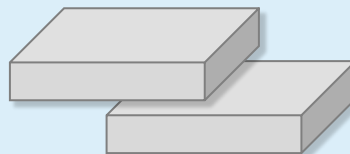


AI automatically recognizes possible weld lines based on the workpiece shape.

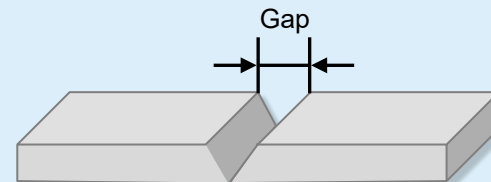
Phase 1



Fillet joint

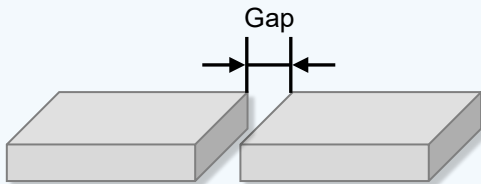


Lap joint

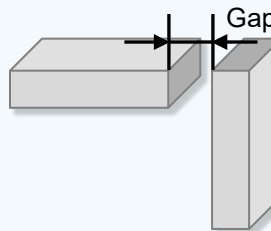


V joint

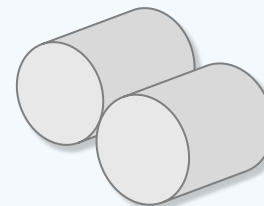
Phase 2



Butt joint



Corner joint



Pipe shape

**Daihen will continue to
incorporate its
welding expertise
into AI welding robots.**



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