# Smooth Robotics

Introducing

# SmoothTool

*Making robotic welding easy*

# What is Smooth Robotics?

**2017**
Smooth Robotics was founded

**2019**
First products on the market

**2021**
Launched SmoothTool and obtained UR+ certification

**Now**
Expanding global network of partners and customers

**6 years**
in the market

**36+**
countries

**18**
employees

**500+**
cobots running our software worldwide

# Benefits of automated welding

✓ Cobots do not replace skilled welders, they free up their time and improve work conditions.

✓ The welding process is fully controlled and significantly sped up, driving higher overall productivity.

✓ Cobots are less prone to welding errors achieving 100% consistency in weld quality.

# Cobot as a welder's tool

Smooth Robotics

- ✓ Cobot works alongside welders, as skilled staff is still required to program the cobot and ensure the quality of the final welds.

- ✓ While the cobot takes care of repeated simple welds, the welder can focus on more complex welding tasks.

- ✓ With the help of SmoothTool, a qualified welder is able to operate the cobot within the first few hours of deployment.

# What is SmoothTool?

✓ **Easy-to-use:** Intuitive no-code programming

✓ **Programming Flange:** Use the buttons to simply show your cobot how you want the job done

✓ **Power Source Independent:** Use the preferred power source

✓ **Compatible:** Works with both CB- and E-series UR cobots for MIG/MAG and TIG applications

# Benefits of SmoothTool

✓ The welder can operate the welding cobot without assistance and programming knowledge (no robot operator required)

✓ The welding program can be set up solely by using the programming flange

✓ SmoothTool's features are developed with the welder's user experience in mind and continuously enhanced based on user input

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# SmoothTool – Intuitive and fast

✓ **Weaving:** Choose from a variety of weaving patterns available for both linear and circular paths

✓ **Multipass:** Easily program welds consisting of multiple passes and set their custom parameters

✓ **Tacking:** Tack your weld pieces with precision

✓ **Touch sense:** Let your cobot locate the item and correct the weld path

✓ **Stitch welding:** Control your stitch weld with specific parameters

✓ **Offset welding:** Quickly copy and offset items in X, Y, Z direction and rotation

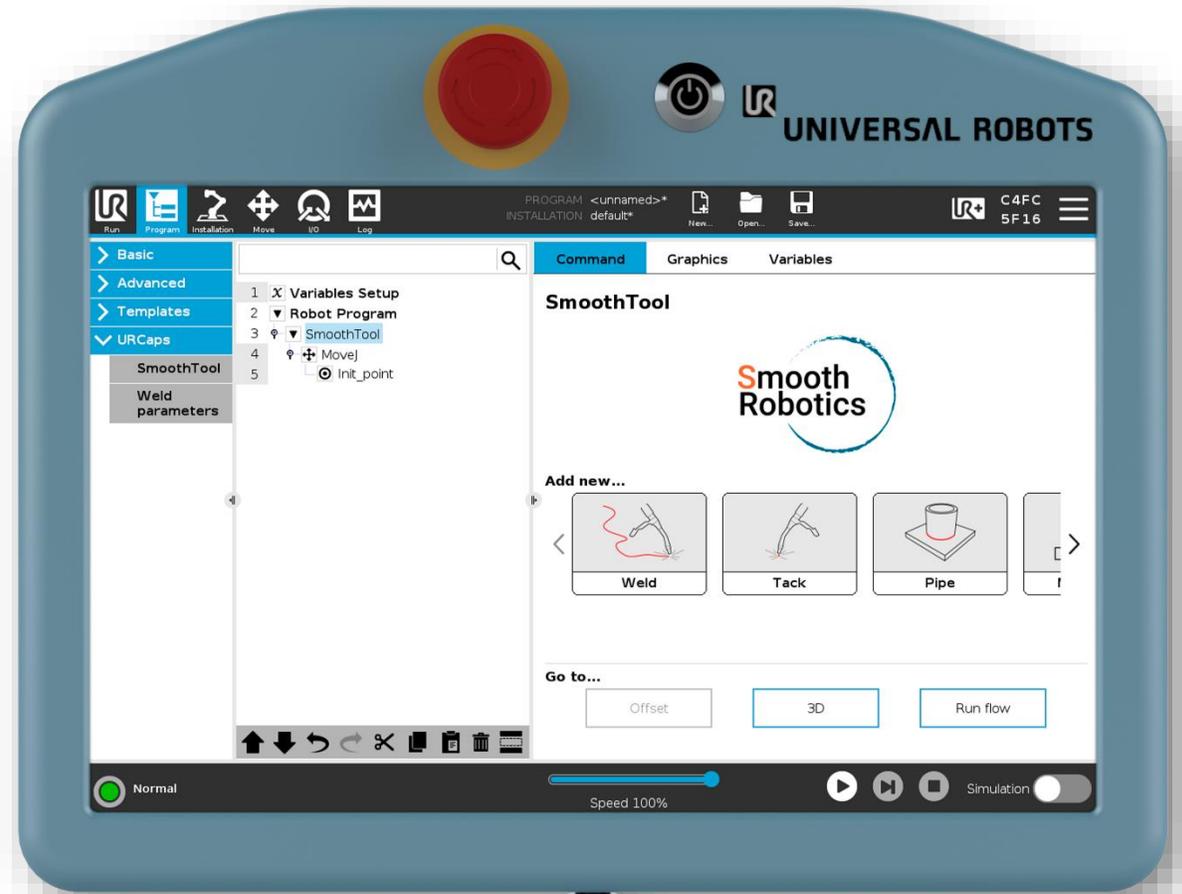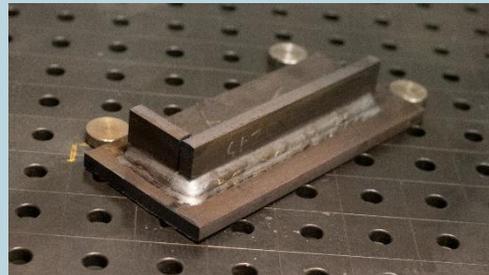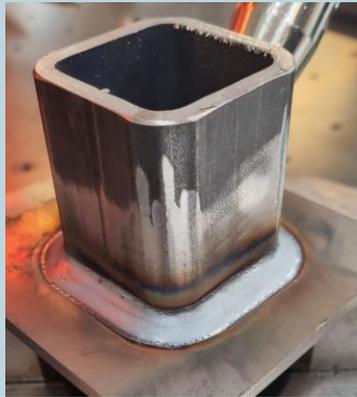✓ **3D Visualization:** Prevent errors by visualizing your weld and easily edit your taught points
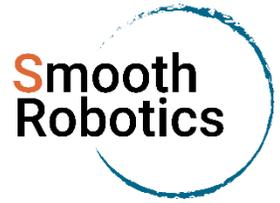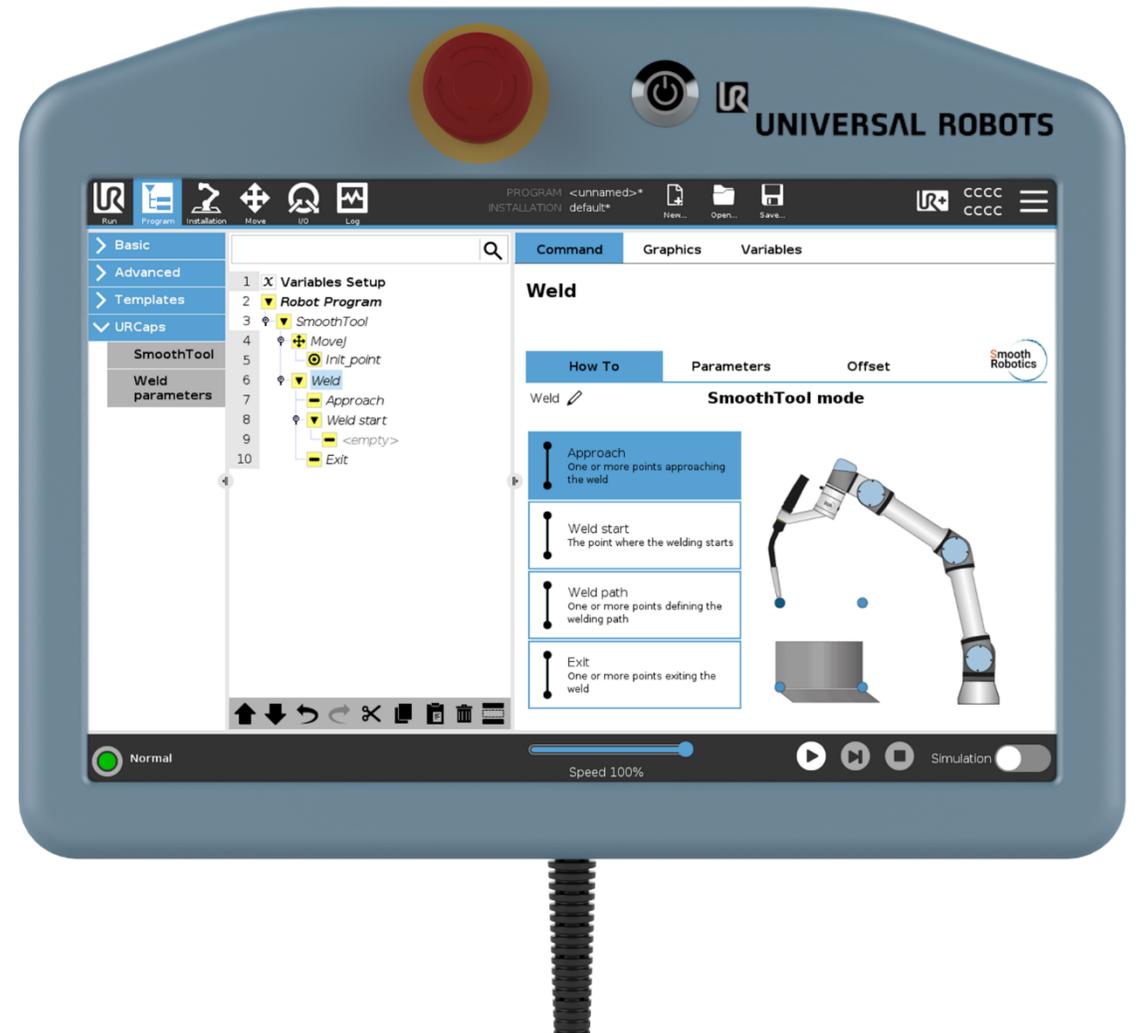
# Cobot welding made easy

## 4-step programming

Front
Back

# Cobot welding made easy

## 3D Visualization

Prevent errors by visualizing your weld

Feature benefits:

- Preview and touch up points on your welding path

- Check the form of the weld and angle directions

- Choose a point to resume the weld in case of an interruption

# Cobot welding made easy

## Multipass

Enhance your workflow with custom multipass welds

**Feature benefits:**

- Quick and easy setup of the number of passes, their individual length and other weld parameters

- Ability to save your multipass weld settings for future use

- The fully customizable Multipass system ensures smooth and efficient delivery of strong and reliable multipass welds

## The Angle System

Set desired work and travel angles with ease and precision

### Feature benefits:

- Achieve consistent angles of the torch throughout the whole weld

- Precise manual angle programming no longer required

- Gain full control over the position of the torch to push or pull your weld
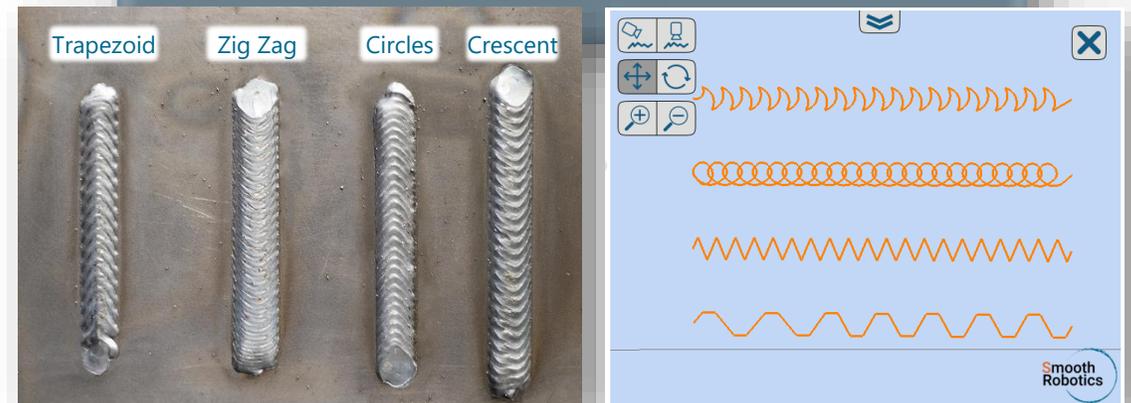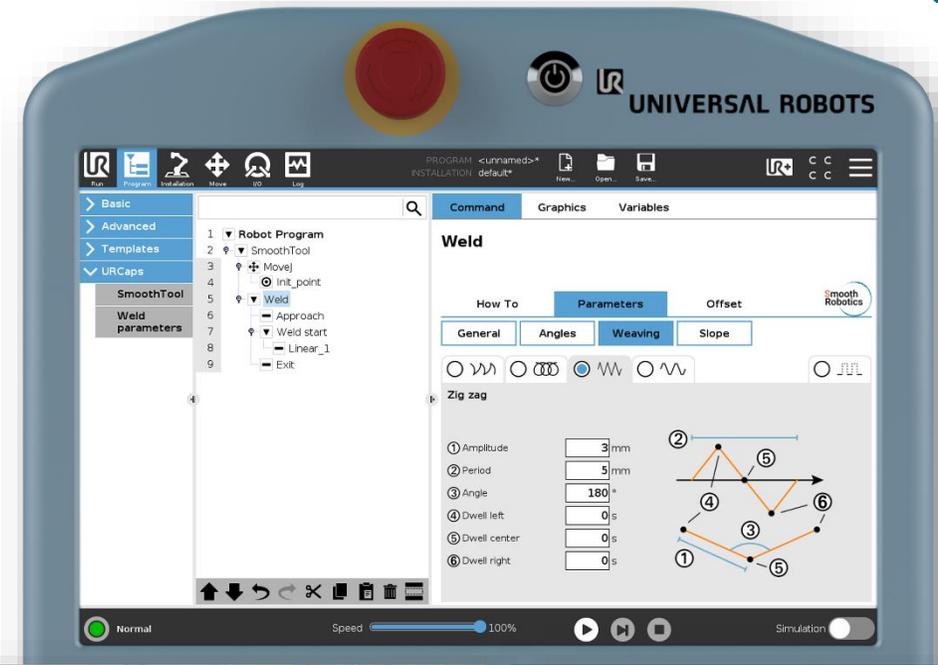
# Cobot welding made easy

## Weaving patterns
Enhance your welding process with weaving application

**Feature benefits:**

- Achieve desired results with our main patterns: Crescent, Circles, Zig Zag, Back and forth and Trapezoid

- Define specific parameters of the weaving movement

- Easy to apply on both linear and circular weld segments

# Cobot welding made easy

## Improved Stitch Welding
Reduce your costs with custom stitch welds

Feature benefits:

- Optimize your welding technique to cut production costs associated with use of material

- Flexible customization of the pattern such as stitch length, number of stitches and many other parameters for precise control over your welding process

- The potential for warping, burn-through and other weld defects is easily mitigated
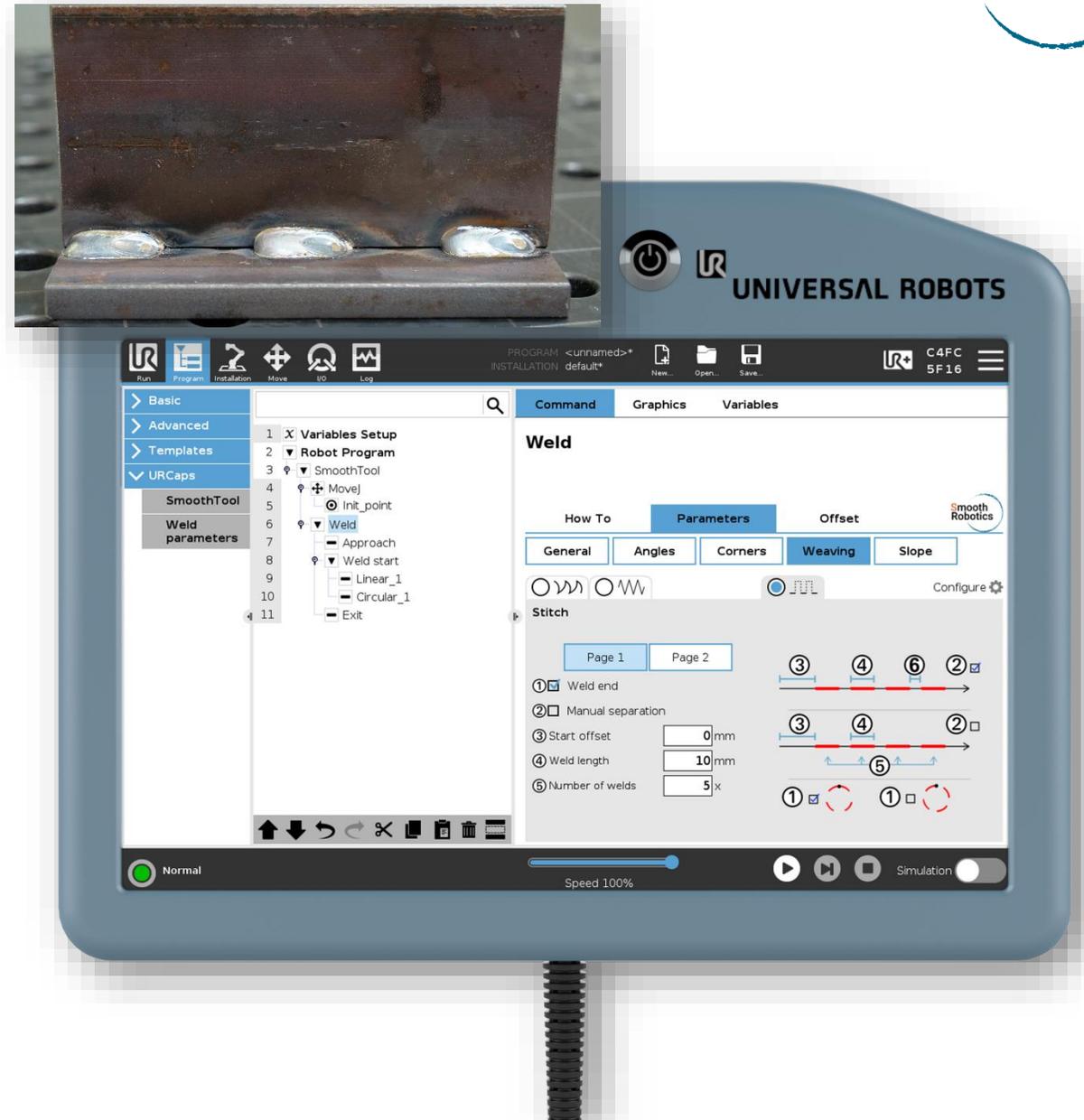
# Cobot welding made easy

## Touch Sense
Automatically locate and adjust your welding path

### Feature benefits:

- Streamline setup with a user-friendly search routine, enabling the robot to effortlessly locate the exact position of your welding piece

- Eliminate the need for precise positioning, as the robot autonomously corrects the welding path for enhanced efficiency

- Harness the power of Touch Sense paired with Offset for a dynamic and productivity-boosting workflow in robotic welding

# Cobot welding made easy

## Tacking

For precise and consistent tacking

**Feature benefits:**

- Alleviate the dependency on manual tacking in your welding process and make your workflow more efficient and less reliant on manual intervention

- Ensure heightened precision and consistency in your tacking process

- Easily teach the tacking path using the flange buttons: blue for air points and red for tacking points
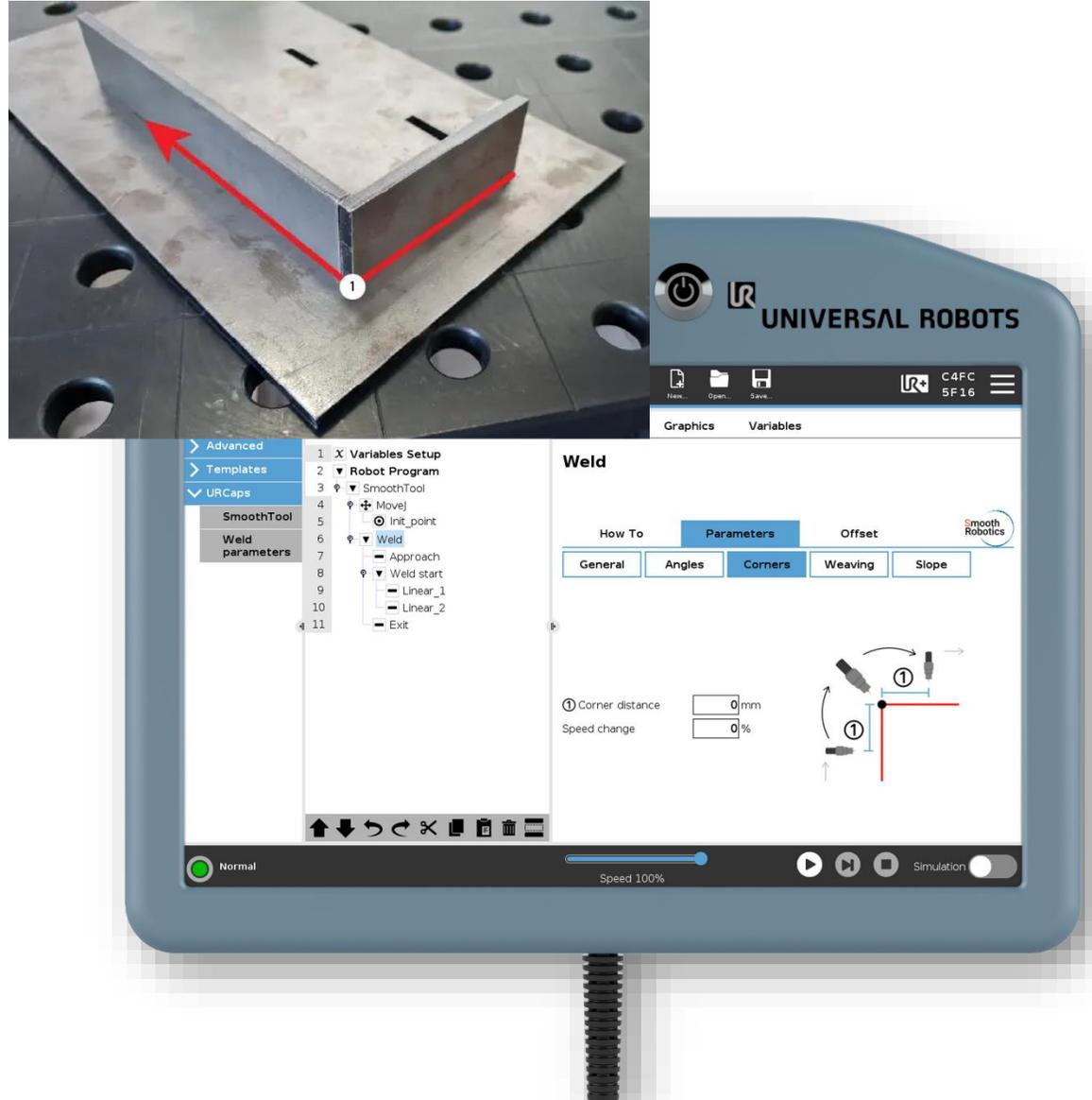
# Cobot welding made easy
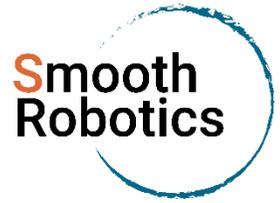
## Improved Corner Handling
Teach corners with only 1 point

**Feature benefits:**

- Requires significantly fewer points, minimizing programming time and enhancing overall efficiency.

- Creates consistent corner welds so each corner in your weld can be identical

- Travel speed applied at the corner and reorientation distance can be adjusted for optimal results
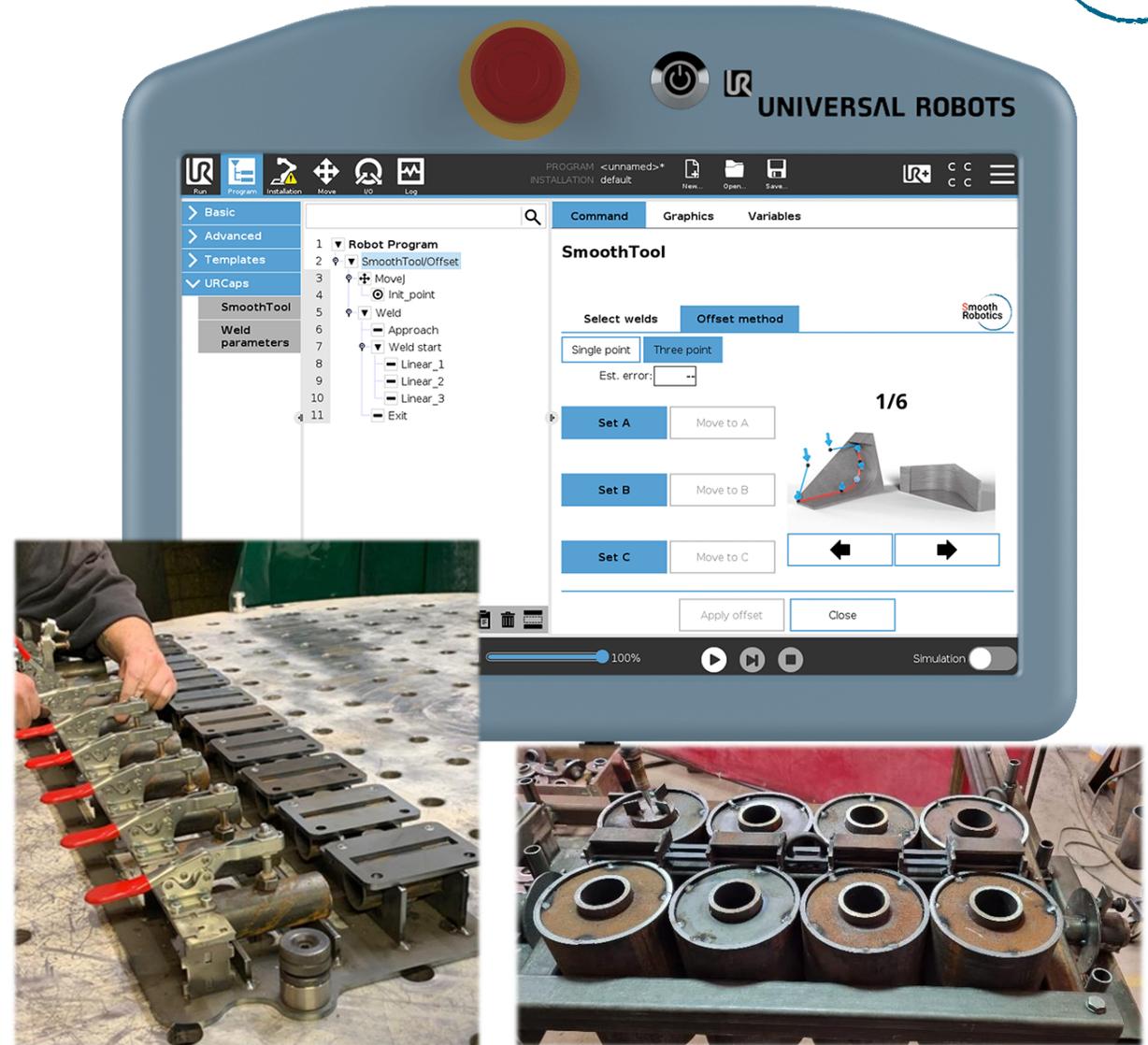
# Cobot welding made easy

## Offset
Simply copy and paste your welding

Feature benefits:

- Relocate a welding program to a new location by copying your existing program and placing it elsewhere

- Precise control over offset adjustments in the X, Y, Z dimensions and orientation

- Choose between single-point offset and three-point offset method

# Cobot welding made easy

## Stickout Offset

Easily offset your path in the stickout direction

**Feature benefits:**

- Simply move the torch closer or further away from the object you are welding

- Useful when having taught your welding path with a stickout that is not optimal for the actual weld

- Ideal for dry-running to avoid contact between the teaching tip/wire and the surface of the object

# Cobot welding made easy

## Support features

Example:

- Slope down
- Multipass Crop & Extend
- Weld profiles and more

We are constantly developing new support features.

**Smooth Robotics**

SmoothTool software package offers the following integration types:

## 1. I/O

Simple wiring for the start and stop of welding

Arc feedback signal

## 2. I/O power source

Pin connector with the possibility to start welding, choose a few jobs
Occasionally possible to make small adjustments to parameters

No feedback signal

## 3. Pre-integrated

Full integration using either Ethernet IP or Modbus

You can choose jobs and adjust parameters. Built-in feedback signal in the power source for arc acknowledgment
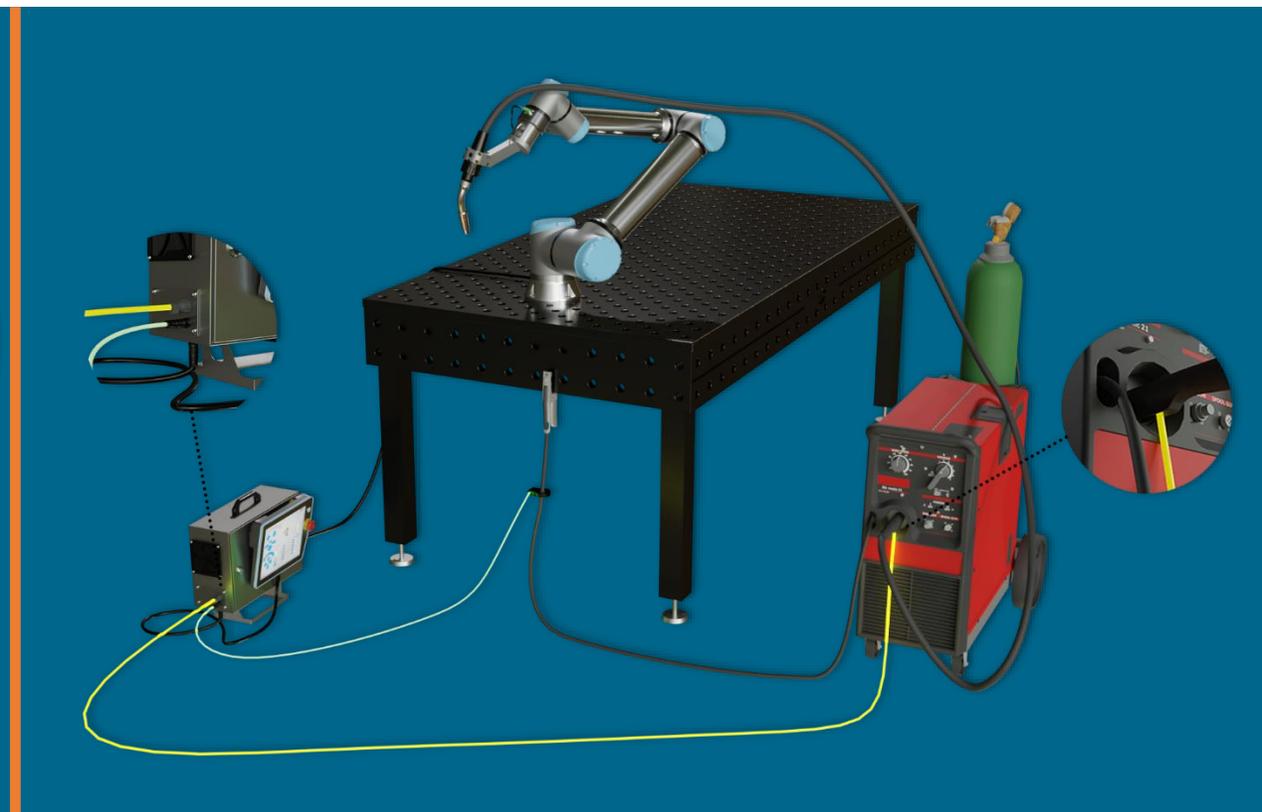
# Ethernet/IP vs I/O integration

Full integration with Ethernet/IP connection

I/O integration with manual power source

## Plug & Weld solution from Smooth Robotics

- Turns any existing power source with Euroconnector / US connector into a robotic welder unit

- Easy and quick to install

- Reduces financial barrier to entry into cobot welding for manual welding productions

# The RetroFit Kit components



1. **Connector plate** – A plate that fits the UR control box with connections and sockets for digital inputs & outputs

2. **Adaptor** – Fits in the Euroconnector or US connector between the hose and the power source and provides input signal from the robot

3. **Feedback shunt** – Clamp that goes on the ground cable and provides feedback signal to the robot

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# Cobot welding solution with SmoothTool

- ✓ SmoothTool offers full flexibility when setting up your complete cobot welding solution

- ✓ Our software is easily integratable with various types of power sources

- ✓ Cobot with SmoothTool can be fixed on a standard welding table or installed on a mobile cobot mount

- ✓ All standard welding torches can be utilized

- ✓ Documentation according to the local market requirements

- ✓ A number of externals can be added

# Cobot welding solution with SmoothTool

**Smooth Robotics**

## Example of a complete setup

1. Are you struggling to find welders? ✓

2. Do you want to increase your productivity? ✓

3. Do you have weld parts that can fit on a 1x2m table? ✓

← **The right answer for you is cobot welding**

## A game changer

Wenteq was surprised by the quality of welds produced with the cobot.
They currently have highly skilled fabricators who weld excellently, but they are difficult to come by. Now, *even someone with no welding knowledge* can weld better than most of the highly skilled fabricators with the use of a welding robot.

This development enables Wenteq to accomplish more, as they can now use their fabricators to prepare and tack the parts for complex jobs while the robot takes over the welding.



*The Smooth Robotics software has hands down been epic in quick programming. I have found that if we have to weld more than 12" in length, it's more effective to use the robot. Even for just 1 part.
This is a game changer.*

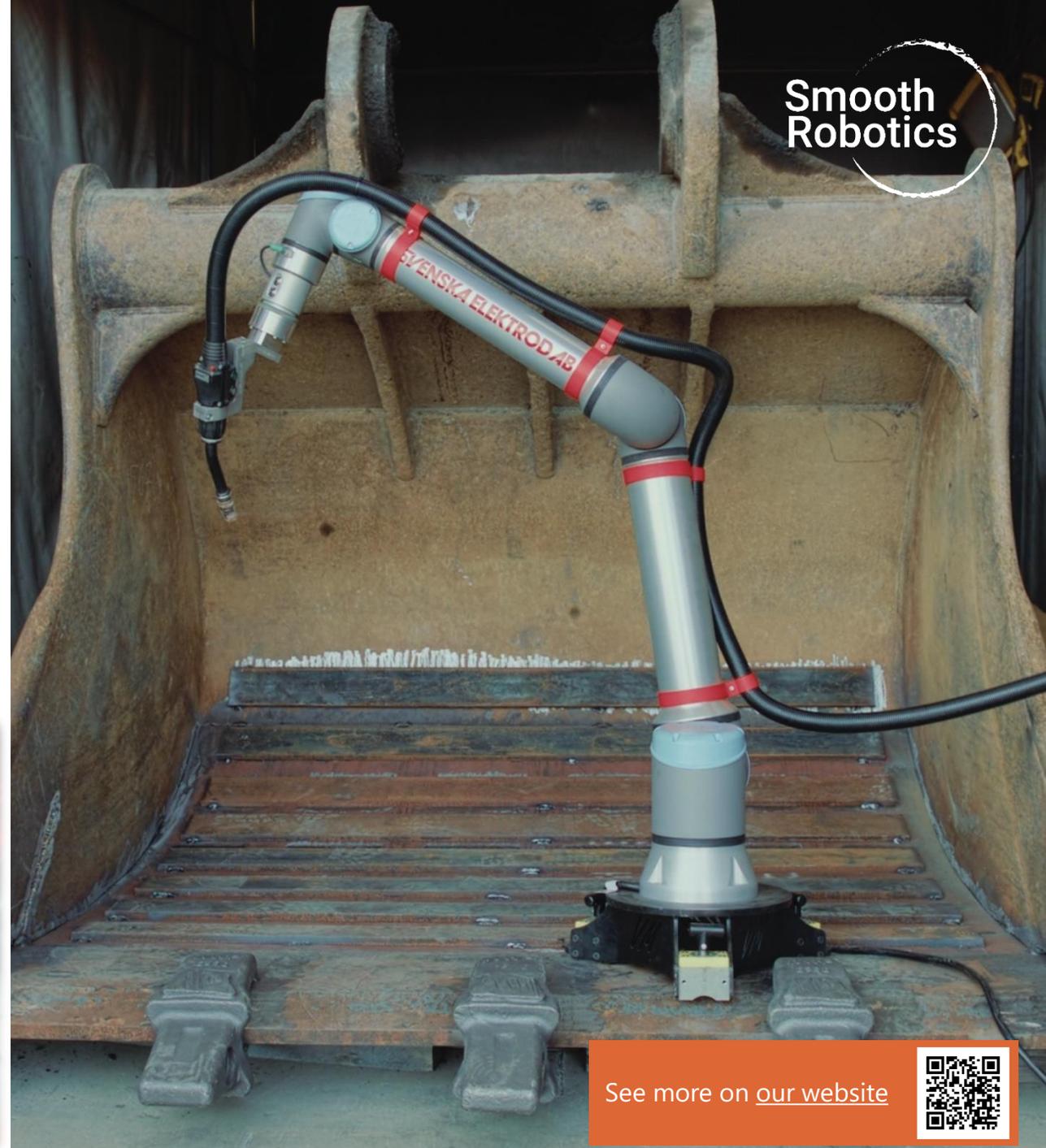– Shawn Wentzel, Owner of Wenteq Inc.

See more on our website

# Case: Vattholma Mekano

**Vattholma Mekano**

- Welding on large objects, such as repair work on excavator buckets

- Piece production to order (high mix, low volume)

- Increased their profitability

- 20-30% in time savings on the welds

See more on our website

# Case: Alusteel



- Batches of 30-50 pieces to weld

- Managed to **double** their productivity with SmoothTool

- Radically improved working conditions of the welder

- Alusteel has now invested in another cobot welding solution after the initial success

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See more on our website