

# DELFOI

## Simulering och offlineprogrammering

Ny teknik för beredning – snabb och enkel programmering  
Fogningsdagarna 2021 – Eskilstuna

Heikki Aalto  
Delfoi

**Founded 1990** – spinoff from Technical Research Centre (VTT)

- Focus on Software Development
- Sales via partners, globally

**Two software product segments:**

- Delfoi Robotics – Automated Robot offline Programming
- Delfoi Planner - Advanced Planning & Scheduling (APS) + MES

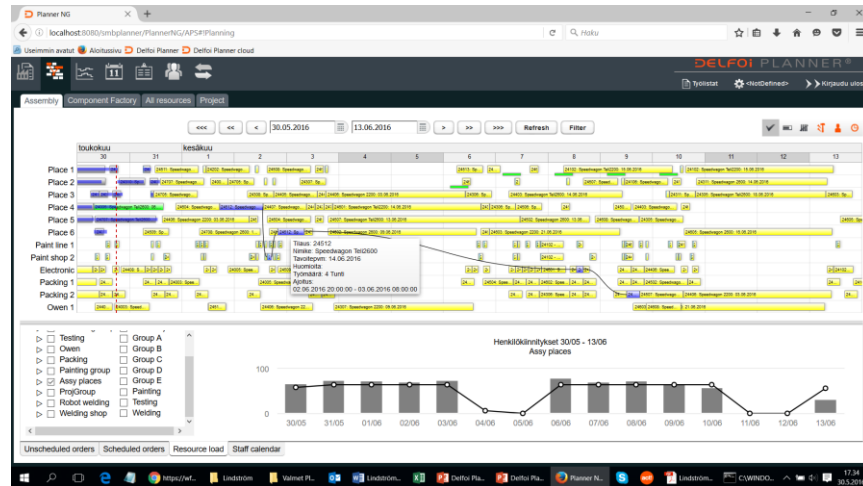
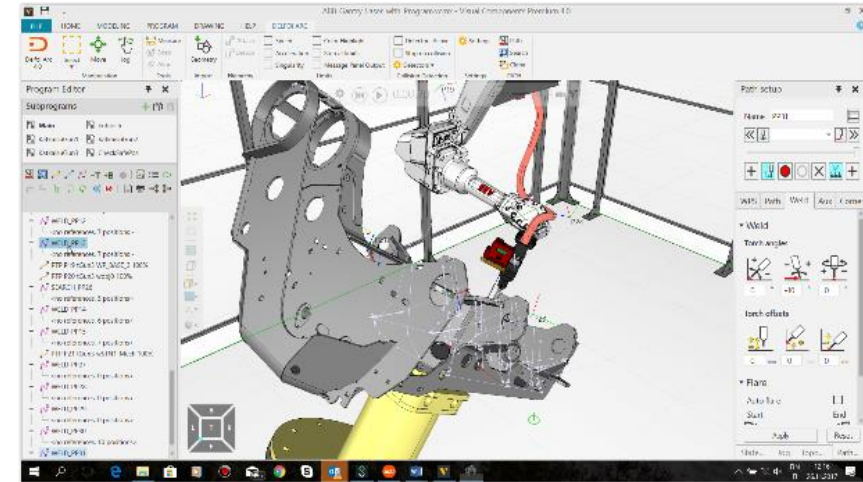
**Global business & technology partners:**



In offline programming (technology)

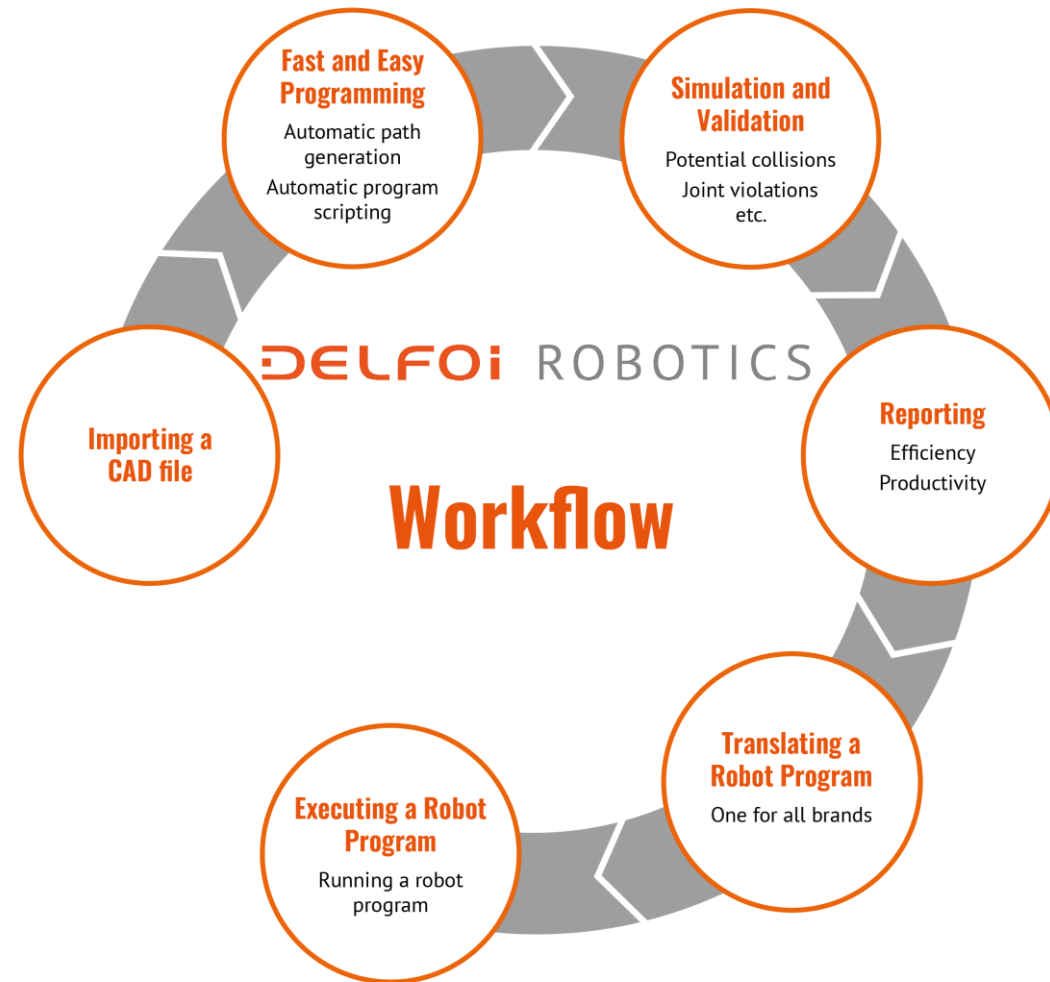
In Advanced Planning & Scheduling (channel)

**Distributors** in Europe, North America, South America, Asia, India



# Delfoi Robotics – Advanced Offline Programming

- Delfoi Robotics Offline Programming(OLP) software represent the most advanced robot offline programming software in the markets today – for all robot brands
- The key for the success is the outstanding programming speed.
- This means added value to our customers by maximising robot working hours even with small batch manufacturing



# Delfoi Robotics Product Portfolio

NEW

NEW

NEW

Delfoi ARC

Delfoi CUT

Delfoi SURF-X

Delfoi PAINT

Delfoi SPOT

Delfoi  
METROLOGY

Delfoi BASIC

Arc welding  
Tig welding  
Laser welding

Deburring  
Trimming  
Plasma cutting  
Laser cutting

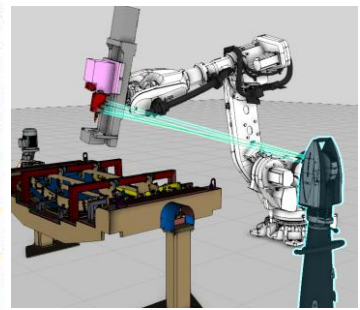
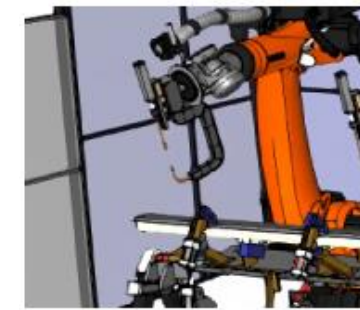
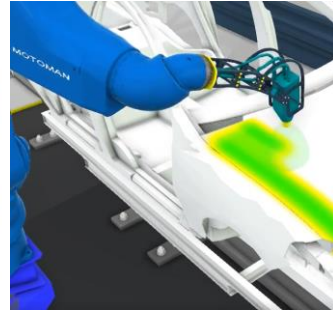
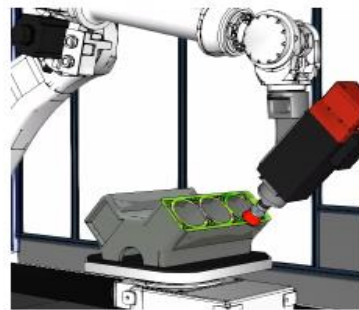
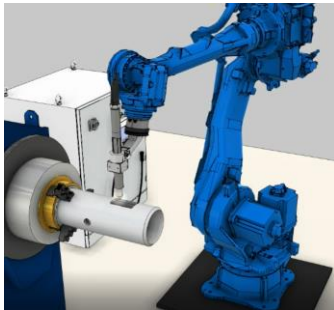
Grinding  
Polishing  
Buffing  
Sanding

Wet painting  
Spray coating  
Thermal spraying

Spot welding

Precision  
Processing  
T-Scan  
T-Mac  
Laser Tracker

Machine tending  
Material handling



# Generic for all robot brands

- Generic offline programming software.
- Robust & tested translators for all major robot brands



HYUNDAI HEAVY INDUSTRIES GROUP

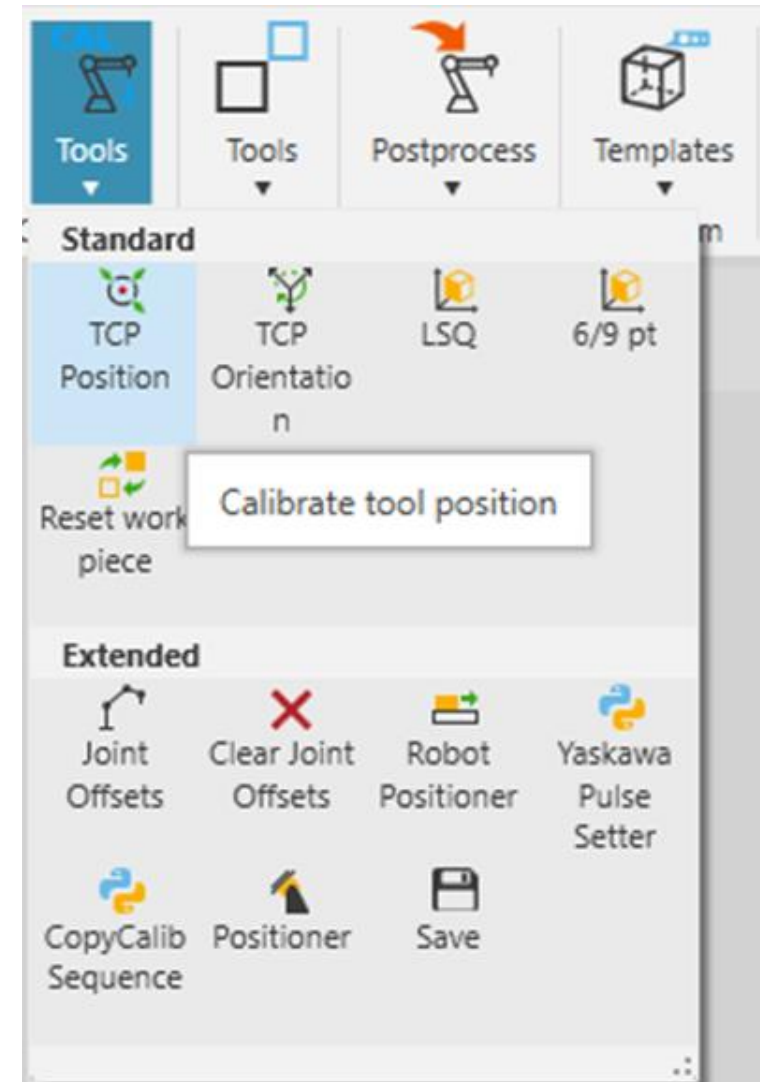
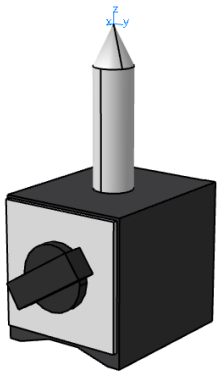


DAIHEN Corporation



# Accurate – without external laser trackers

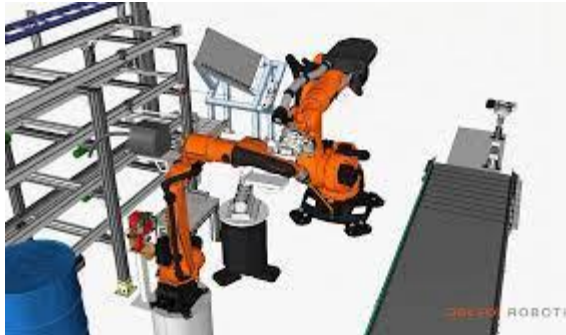
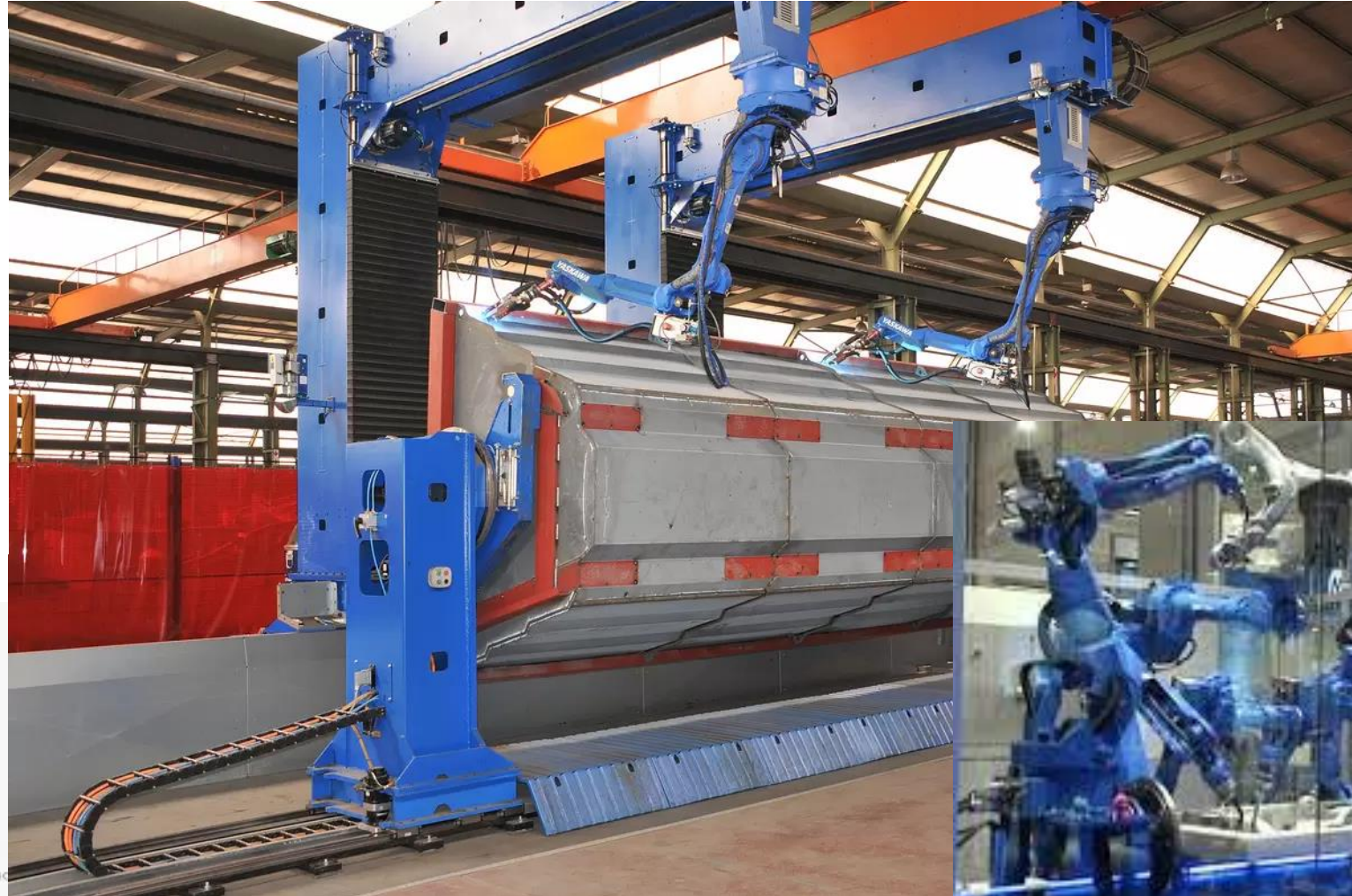
- Robot used as the measuring device
  - Low Cost
  - Calibration algorithms based on 30 years experience



# Delfoi ARC

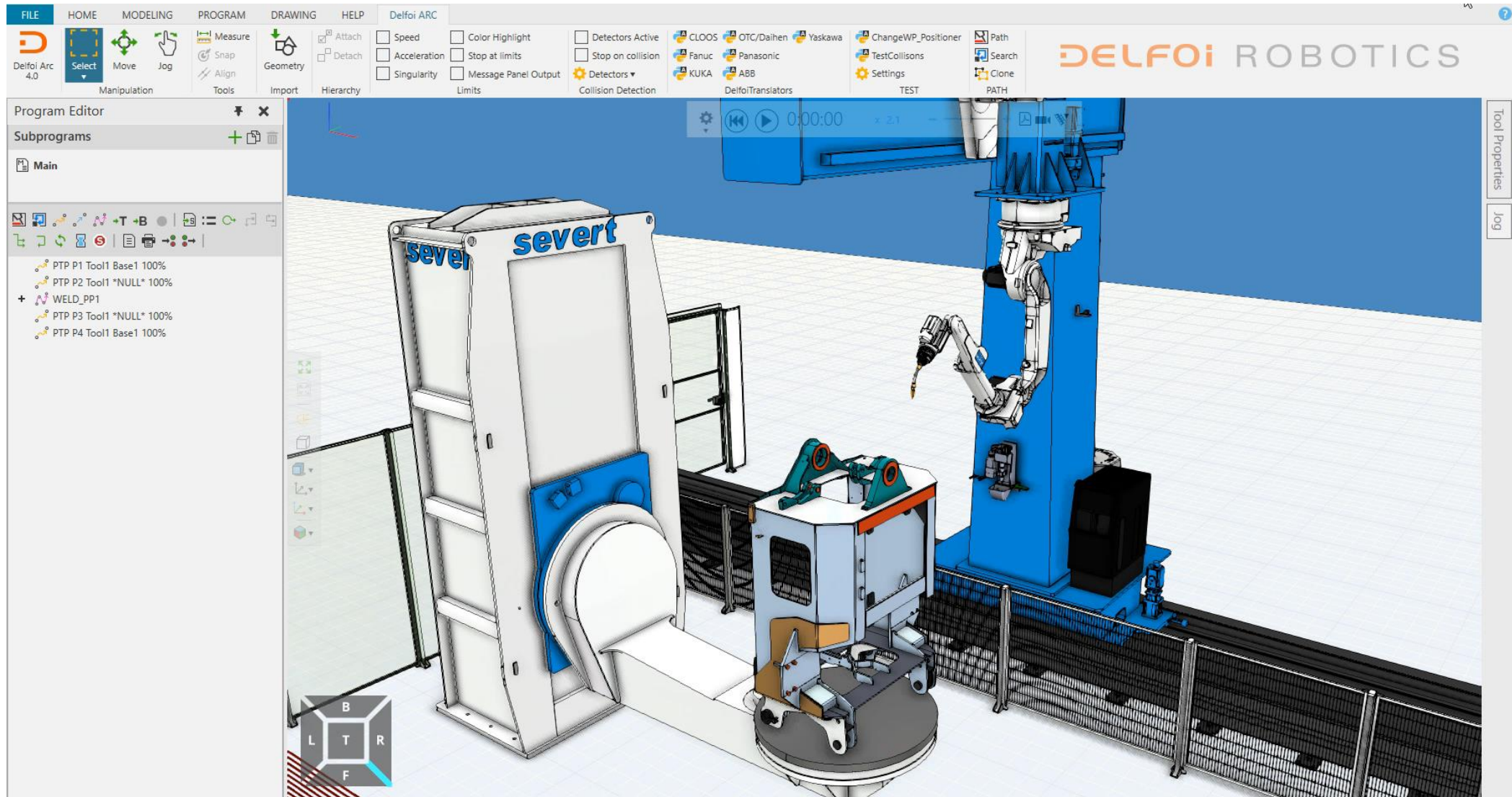
Automated offline programming for  
Arc welding (MIG, MAG, TIG) and laser welding

# Easy programming for complex systems with multiple axis





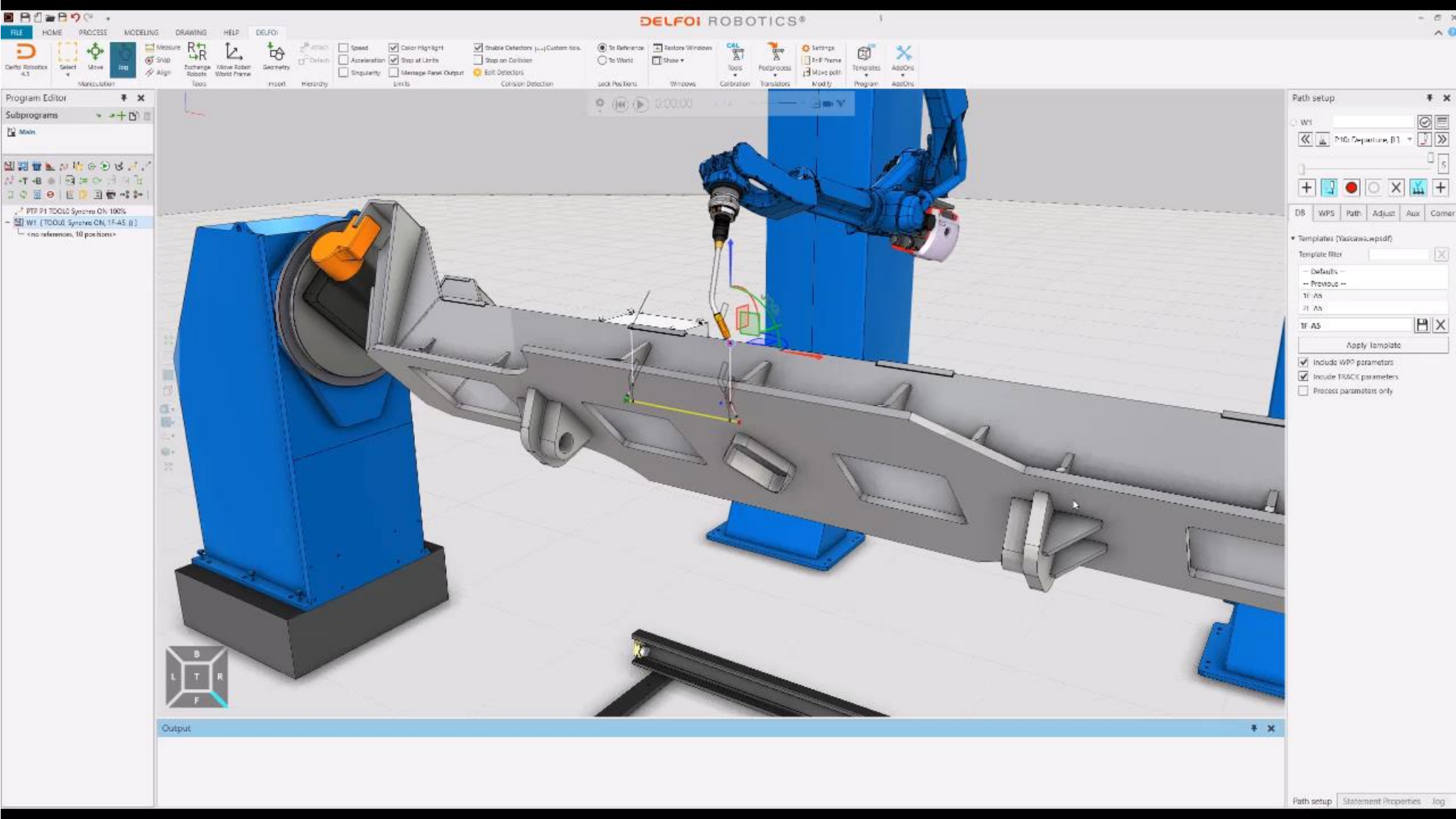
# Automatic calculation of external axis values



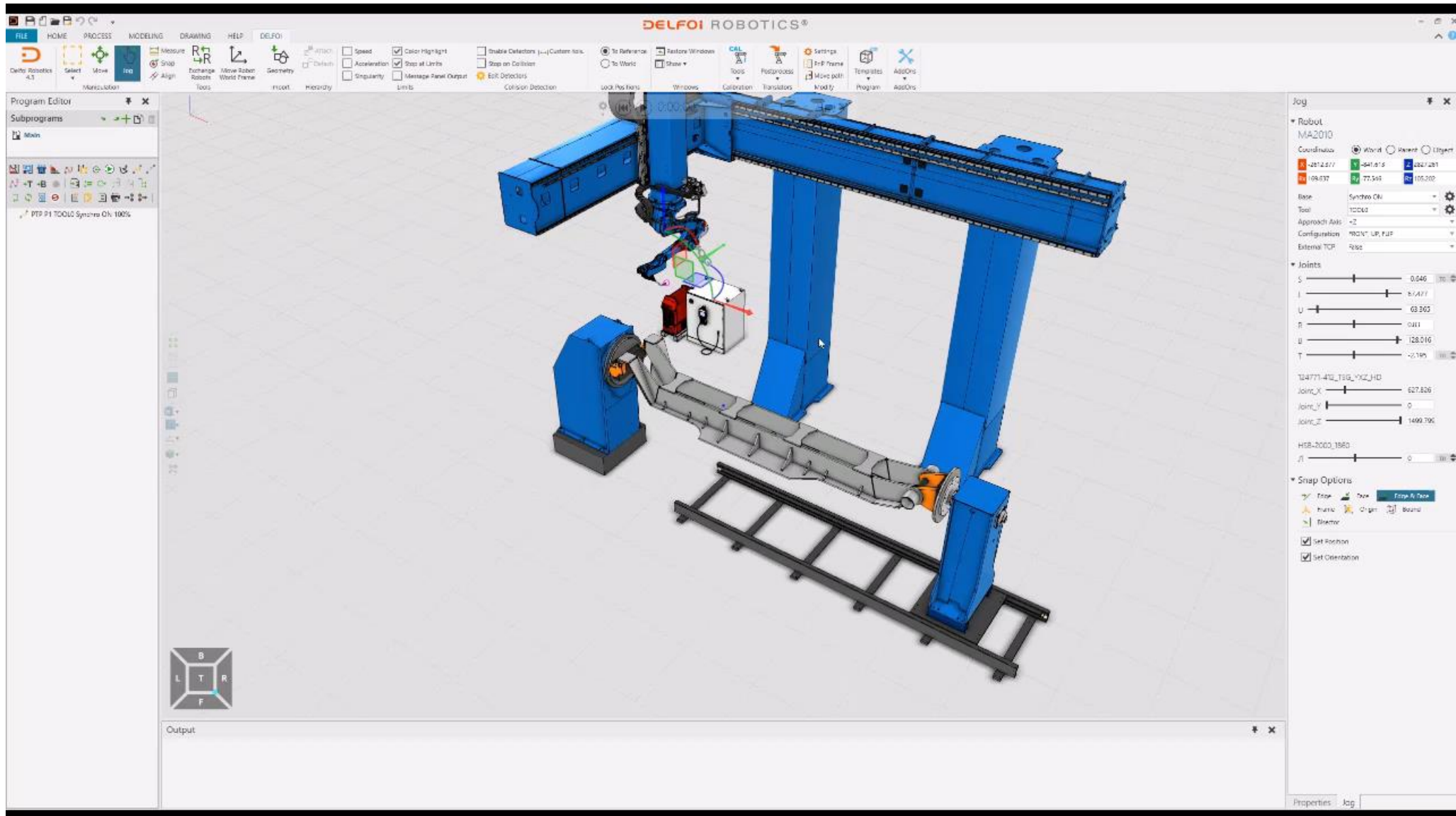
# One-click Programming – 16 teach points only in 2 seconds

The screenshot displays the DELFOI ROBOTICS software interface. The main window shows a 3D CAD model of a robotic cell with a grey frame and a white base. The interface includes a menu bar (FILE, HOME, MODELING, PROGRAM, DRAWING, HELP, Delfoi ARC) and a toolbar with various icons for manipulation and tools. A 'Program Editor' panel on the left shows a subprogram named 'Main' and a 'WELD\_PP1' program with the note '<no references, 0 positions>'. A 'Topology analysis' panel on the right is active, showing a diagram of a path with dimensions (0, 1000, 1520 mm, 10.6) and various analysis options: Constraints (1 mm, 90°, 10 mm), Gaps (20 mm, 20 mm), and Circular (Sensitivity 75%, Chordal angle 1°). The 'Auto' button is highlighted in blue. The bottom right corner of the panel shows 'Topology analysis' and 'Path setup' tabs.

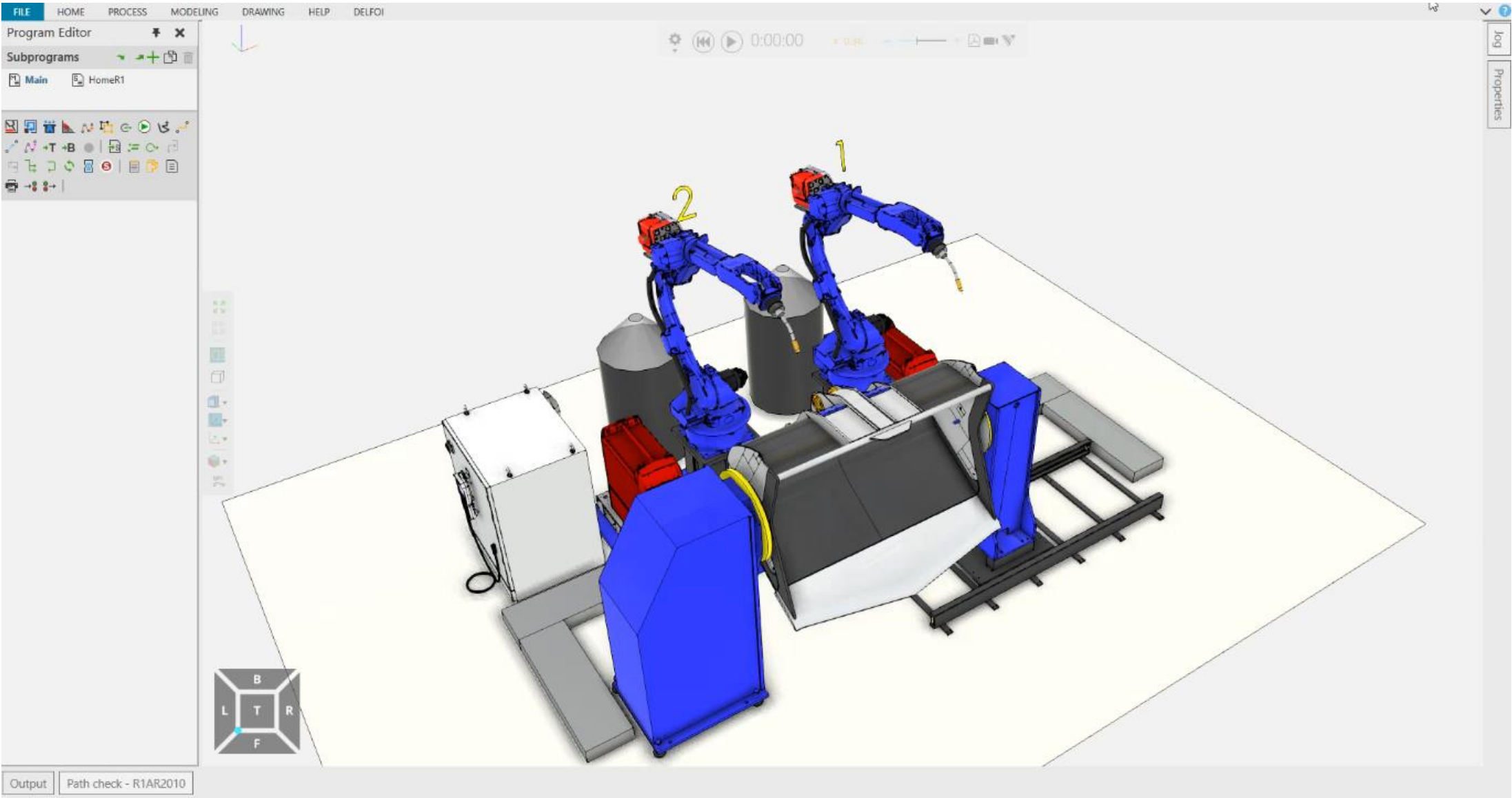
# One-click Programming – 23 teach points only in few seconds



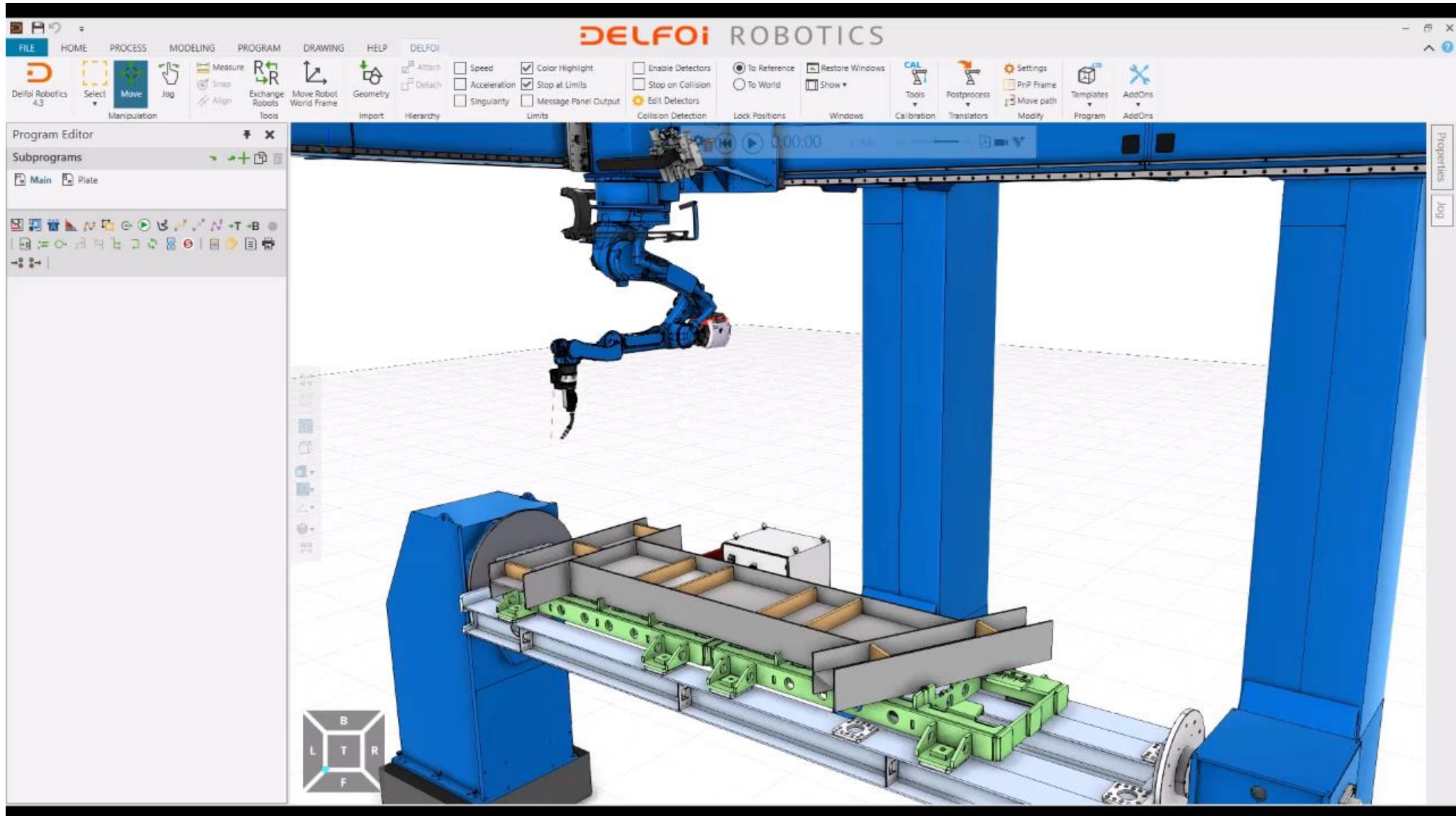
# Fast verifying and downloading



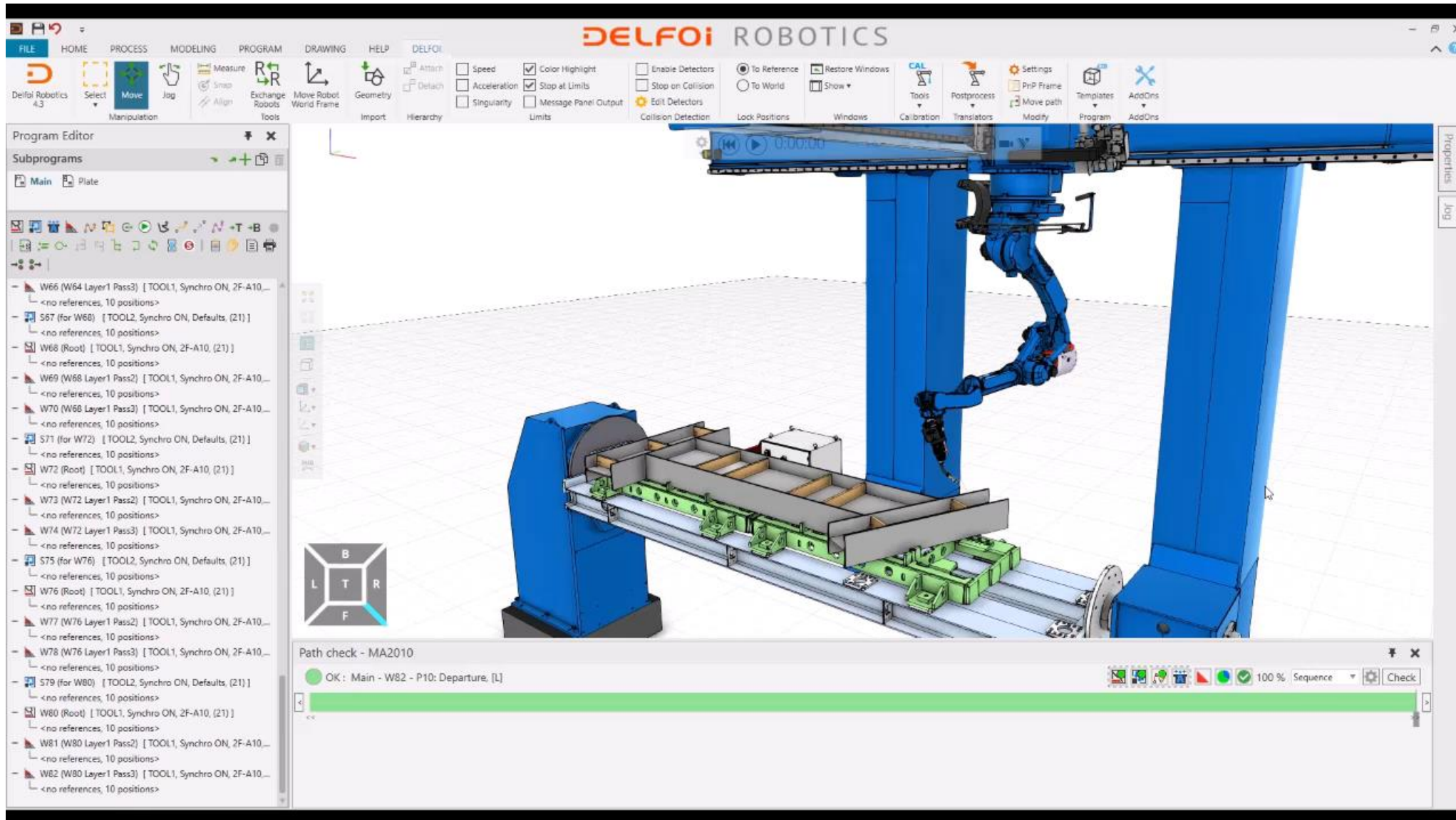
# Dual-robot programming – copying programs from one robot to another



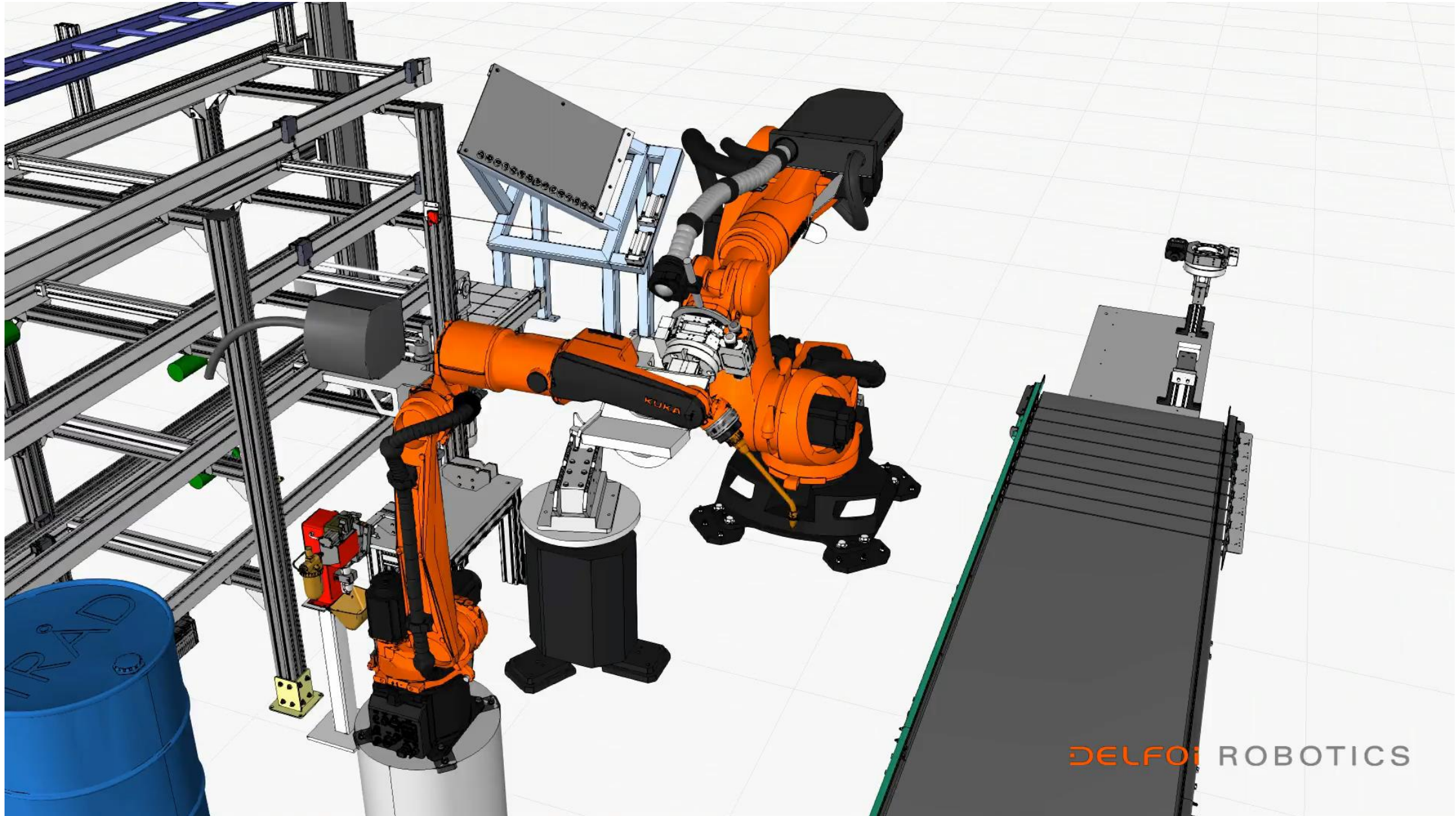
# Automatic programming (feature templates)



# Automatic Sequencing of Welding order



# Jigless welding





# New Developments

New applications and even faster...

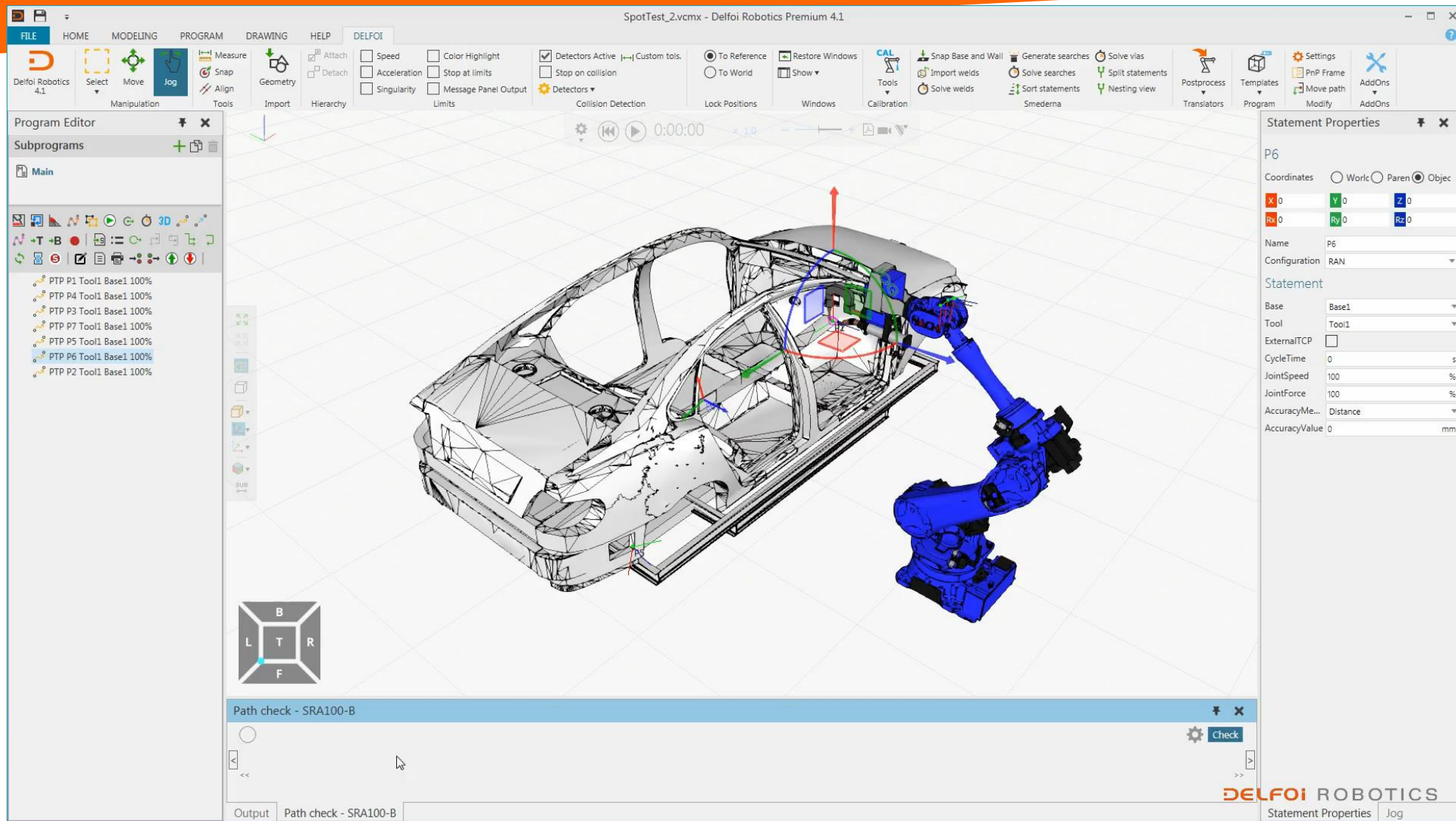
# Automatic Path Solver

The screenshot displays the DELFOI software interface for automatic path solving. The main window shows a 3D simulation of a blue robotic arm in a factory environment, positioned near a red container. The interface includes a menu bar (FILE, HOME, PROCESS, MODELING, DRAWING, HELP, DELFOI) and a Program Editor on the left. The Program Editor shows subprograms: Main, W3 OK [TOOL1, UFRAMED, Default...], and PTP P2 TOOL1 UFRAMED1 100%. The Path setup panel on the right is highlighted with a yellow circle and contains the following settings:

- W3
- P1: Near. [L]
- Angles: -11.1°, 0°, -42.1°, 0°, 0°
- Offsets: 0 mm, 0 mm, 0 mm, 0 mm, 0 mm, 0 mm
- Start offset: 0 mm
- End offset: 0 mm
- Max point distance: 0 mm
- Flare: Auto flare, Start, End

The status bar at the bottom indicates 'Path check - AR1730' and 'OK: Main - W3 - P4: Process, [L]'. A green progress bar is visible at the bottom of the main window.

# NEW - Automatic Path Planning to be released in December



# Customers

Flag ship customers

# Customer Industries



**VOLVO**



**PONSSE**



**BAE SYSTEMS**



**DELFOI** ROBOTICS

# Delfoi customer examples...

**POLARIS**

**STANLEY**

**scheuch**  
TECHNOLOGY FOR CLEAN AIR

**Fronius**

**CNH**  
INDUSTRIAL

**CATERPILLAR**



**JOHN DEERE**

**LIEBHERR**

**VOLVO**



**Bobcat**

**ABB**

**fiil**

**HORSCH**  
Farming with passion

**KRONES**

**Putzmeister**

**BAE SYSTEMS**

**GUNNEBO**

**JUNGHEINRICH**

**KUHN**

**PONSSE**

DELFOI

We make *complex* easy and efficient