

# ROBOBEND OPTION



# ROBOBEND OPTION

**R**oboBend system is a flexible system which enables the Press Brake to work as a Robotic cell only when it is needed. The rest of the time the Press Brake can be operated by an operator as a manual press brake !!!

RoboBending or Manual Bending

ALL IN ONCE



# ROBOBEND OPTION

- ◆ The RoboBend option is a system which can be mounted in any of our hydraulic Press Brakes
- ◆ With the RoboBend option the Press Brake is capable to operate as a Robotic Bending cell when it is needed or as a manual Press Brake with an operator with all safety systems integrated.



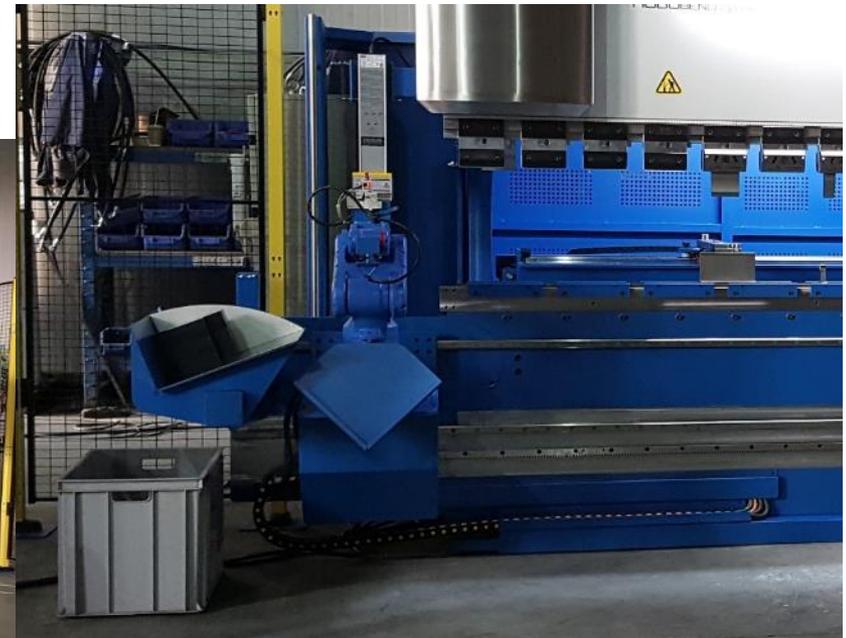
Enable manual or robot bending



Robobend System  
Robot Bending and manual bending on the Same machine

# ROBOBEND OPTION *MANUAL BENDING*

- ◆ When the quantity of the parts is not so big in order to operate with the Robot:
  - Robot is parked on the left side of the machine, outside of bending length



# ROBOBEND OPTION

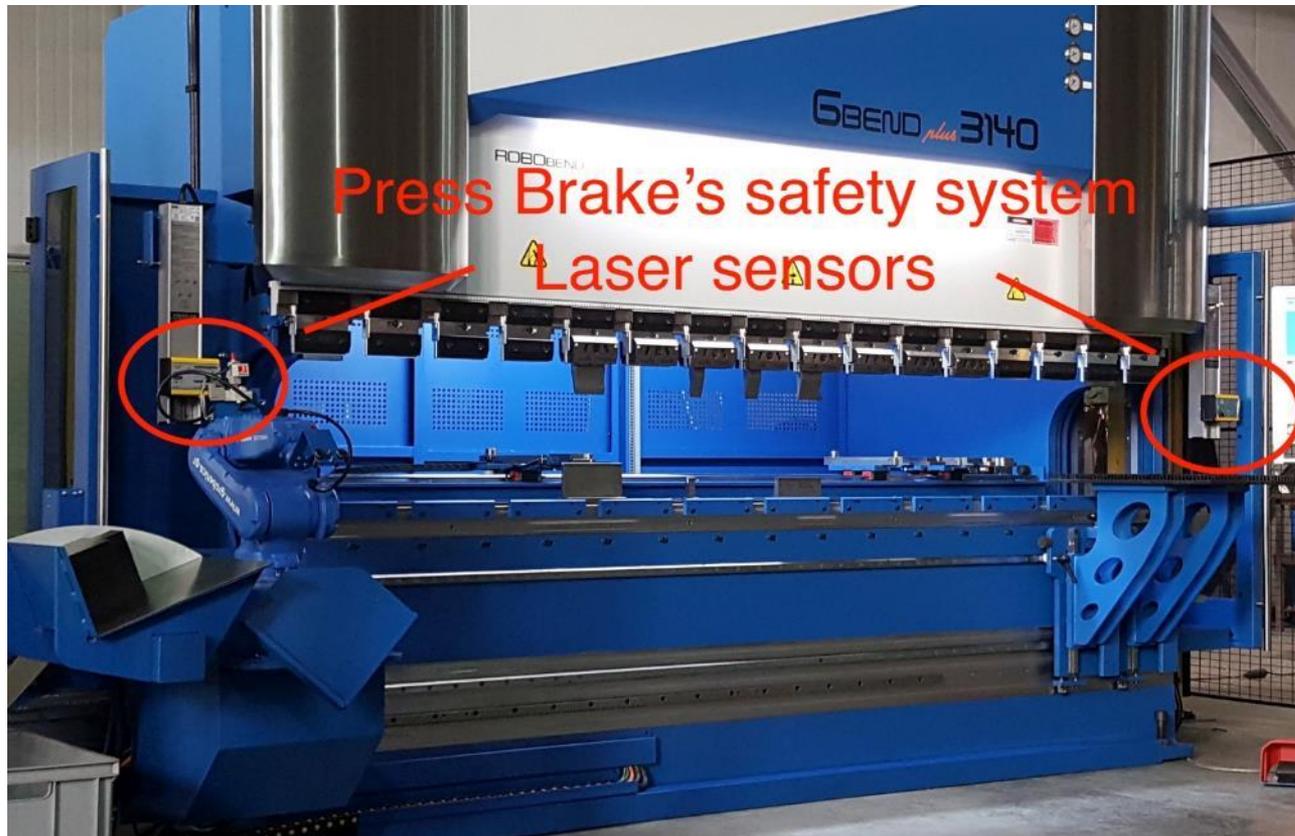
## MANUAL BENDING

- safety system of the Robot, consisted of two laser sensors in front of the cell, is turned off



# ROBOBEND OPTION MANUAL BENDING

- Press Brake's safety system is activated



And the Press Brake works with an operator with safety systems according to CE rules.

# ROBOBEND OPTION

## ROBOT BENDING



- ◆ When the quantity of parts is big, the Press Brake can be transformed into a robotic cell:
  - The machine's safety is turning into a Robotic Cell Safety and the machine can work two or three shifts accordingly without an operator.

The machine with the Robot can work with bending speed higher than 10 mm/sec, which is the limit according to CE Rules.

# ROBOBEND OPTION

## *ADVANTAGES*

- Fully automated bending process with the robot
- Manual bending when needed for small quantities
- Robot in parking position when manual bending is in progress. Free space along all the working length.
- All safety systems are integrated on the system also for manual bending
- Extreme compactness
- Linear track installed directly on the press brake (no obstacles on the ground)
- Small footprint of the system
- Number of stations - tool changer – regrip station
- Programming can be made also through Offline Software

# ROBOT

## *Yaskawa Motoman* GP7

- Payload (including gripper): 7 kg
- Axes: 6
- Working Range: 927 mm
- Repeatability:  $\pm 0.03$  mm
- Weight: 34 kg





ROBOBEND OPTION  
WITH **TURBOBEND** PRESS BRAKE



ROBOBEND OPTION  
WITH **2080** PRESS BRAKE



ROBOBEND OPTION  
WITH **3140** PRESS BRAKE

## **ROBOBEND OPTION**

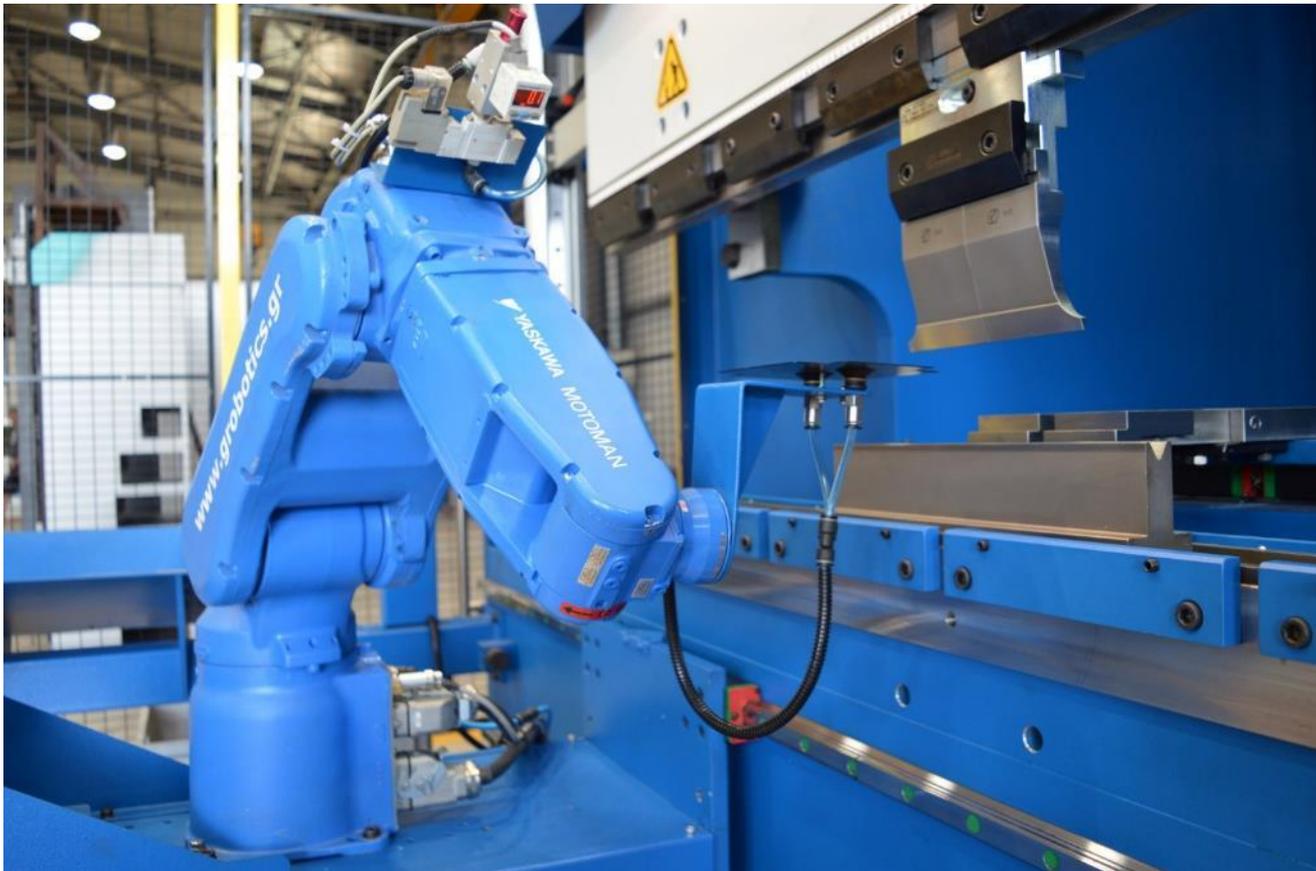
***ROBOBEND can be equipped with  
bigger robot and bigger Press Brake  
upon request !***

*(Bigger Robots must be mounted on the ground)*

**ROBOBEND OPTION**  
*STANDARD EQUIPMENT*

# ROBOBEND OPTION

## Gripper



The gripper can be either pneumatic or mechanical and is designed according to the products

When multiple grippers are used an automatic tool changer can be used

# ROBOBEND OPTION

## Thickness Measurement



Thickness measurement ensures that the robot holds only one sheet metal during the bending phases

# ROBOBEND OPTION

## Reference Table



Process of reference of the sheet metal before the bending sequence

# ROBOBEND OPTION

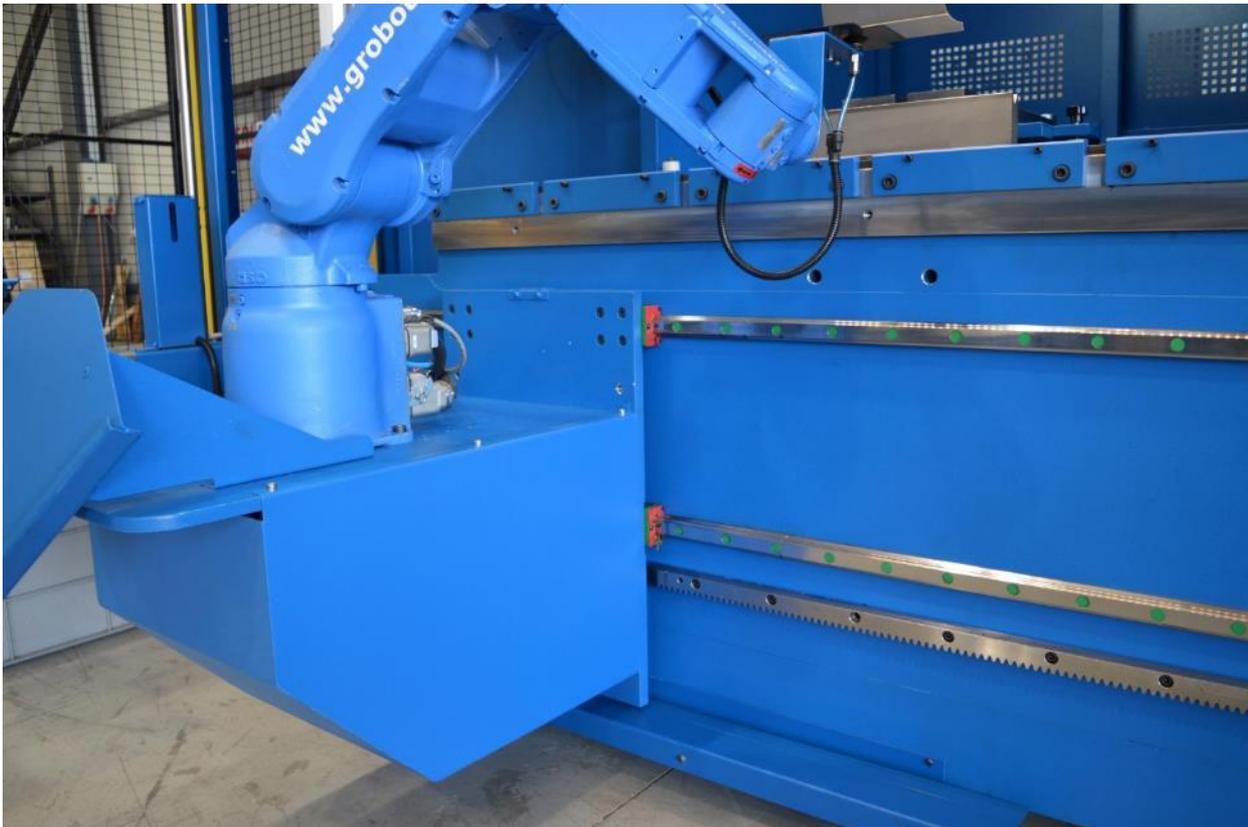
## Special back-gauge fingers



The utility of the Robot back-gauge stop fingers is to ensure maximum accuracy

# ROBOBEND OPTION

## Movable on linear guiding system



No obstacles on the ground for the operator during manual bending

# ROBOBEND OPTION

## Parking Position



When operations are performed in manual bending the robot is on parking position so that the operator can use the complete length of the press brake

# ROBOBEND OPTION

## Safety Fence



The aim of the safety fence is to ensure the safe working of the system and is certified with CE

# ROBOBEND OPTION

## *OPTIONAL EQUIPMENT:* Multiple Picking Stations



Any Press Brake with RoboBend option can be equipped with Multiple Picking Stations upon request.

The cell has the ability to bend multiple parts depending on the dimensions.

# ROBOBEND OPTION VIDEO



# **ROBOWAVE**

*Offline Programming Software*



# Overview

**The complete solution, dedicated to robotized bending process:**

**Verify cell layout feasibility**

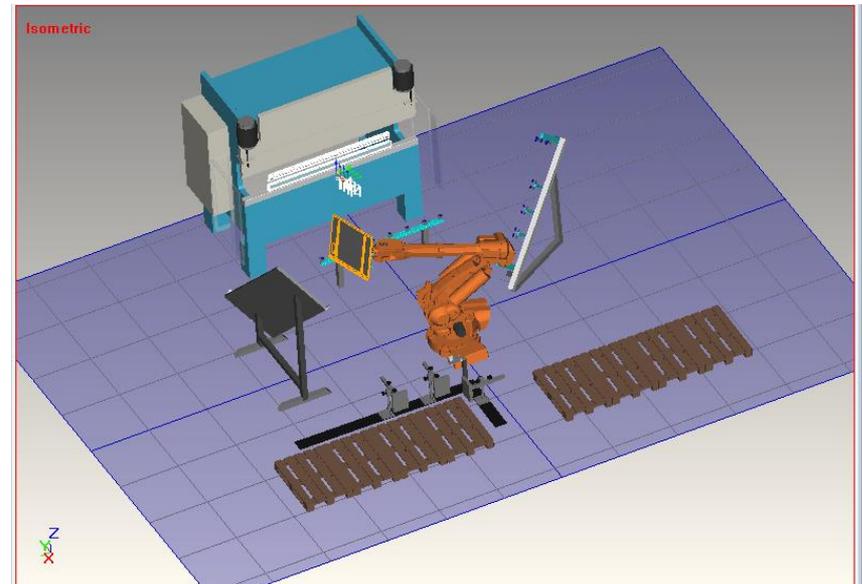
**3D realistic simulation**

**Off-line program without teach-in**

**Generate robot and press brake part program**

**Manage cell elements and bending parameters libraries**

**Manage any type of layout, including 7th axes, gantry, multi load and unload stations**



# Main advantages using robotized press-brake system

- **Increase efficiency:** press-brake running all day long
- **Increase safety** of the operation: manual bending is potentially dangerous in repeat or “dirty” jobs,
- **Decrease expert operators** for bending production,
- **Maintain standard quality**, avoiding human errors.

# Main advantages for End User

- **Programming** at the same time robot and press-brake, without having to learn or manage multiple Numerical Control.
- **Reduced time** and no production stops during programming and cell configuration.
- **Increase and maintaining quality** and performance standard.
- **Make profitable production of small batches.**
- **Optimal Bending Sequence:** bend order and press-brake tooling more suitable for robot, minimizing movement and the number of re-grip.
- The suggested bending process data can be modified and tested using complete 3D simulation, drastically reducing bending-cell downtime.

# **ROBOWAVE**

## *Offline Programming Process*

# ROBOWAVE

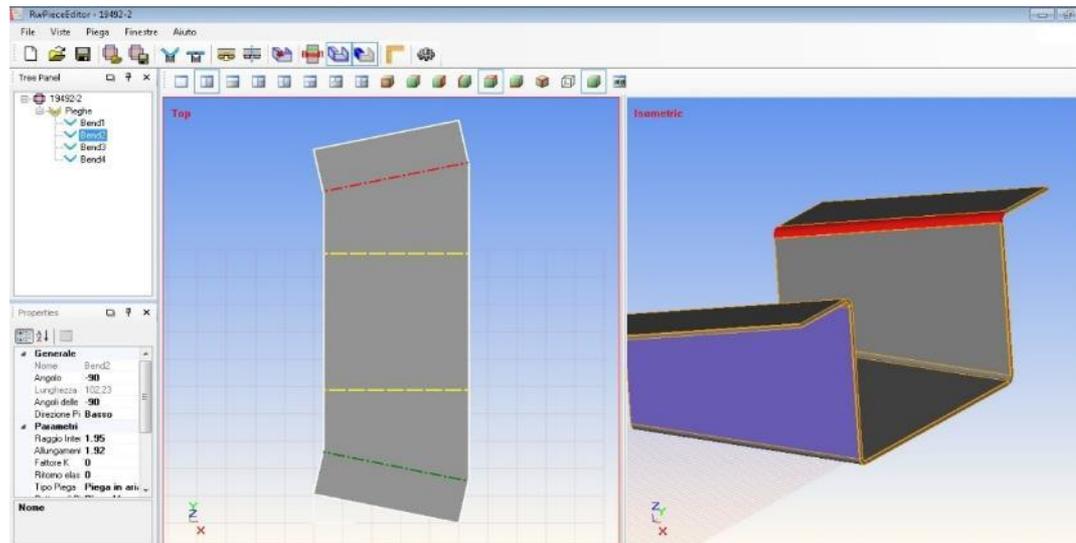
## *Offline Programming Process:*

- *Import drawing piece*
- *Select Press Brake tool*
- *Program suggest a solution*
- *Operator can approve or edit the solution*
- *RoboWave Program creates all trajectories*
- *Select palletize pattern*

**After programming process, RoboWave generates both Robot and Press Brake codes**

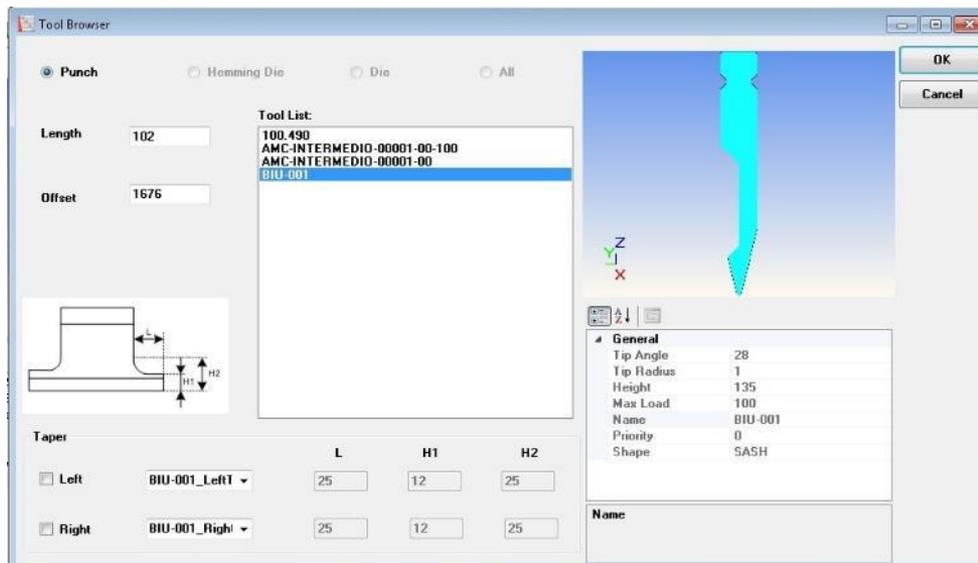
# Piece

- Import 2D (flat pattern) using colored DXF (CyCAD) or GEO or other
- Visualization/Modification of bending data
- Bending parameters management (**K-value, metal sheet elongation, internal radius...**)
- Realistic 3D representation of facets and fillets



# Press-brake tools

- Tools profiles import from 2D DXF
- Creation and modification of tool profile
- Edit of tool parameters and TCPs
- Tools Libraries Management



# Bending process

*RoboWave bending* proposes an automatic solution, but any step could be changed manually by the operator.

- **AUTO-SEQ – AUTO TOOL**

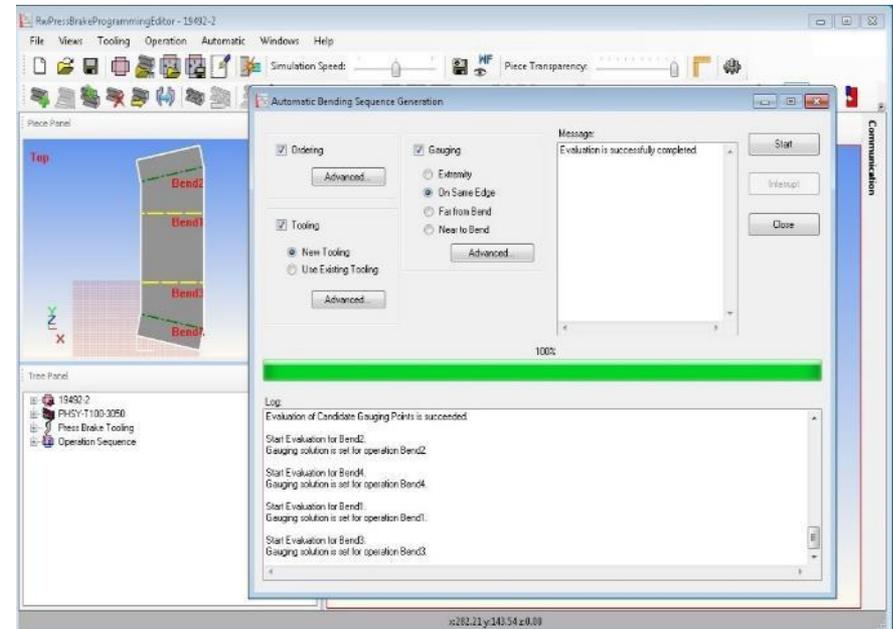
Automatic Bending sequence &  
Automatic Tool set-up

- **AUTO-GAUGE**

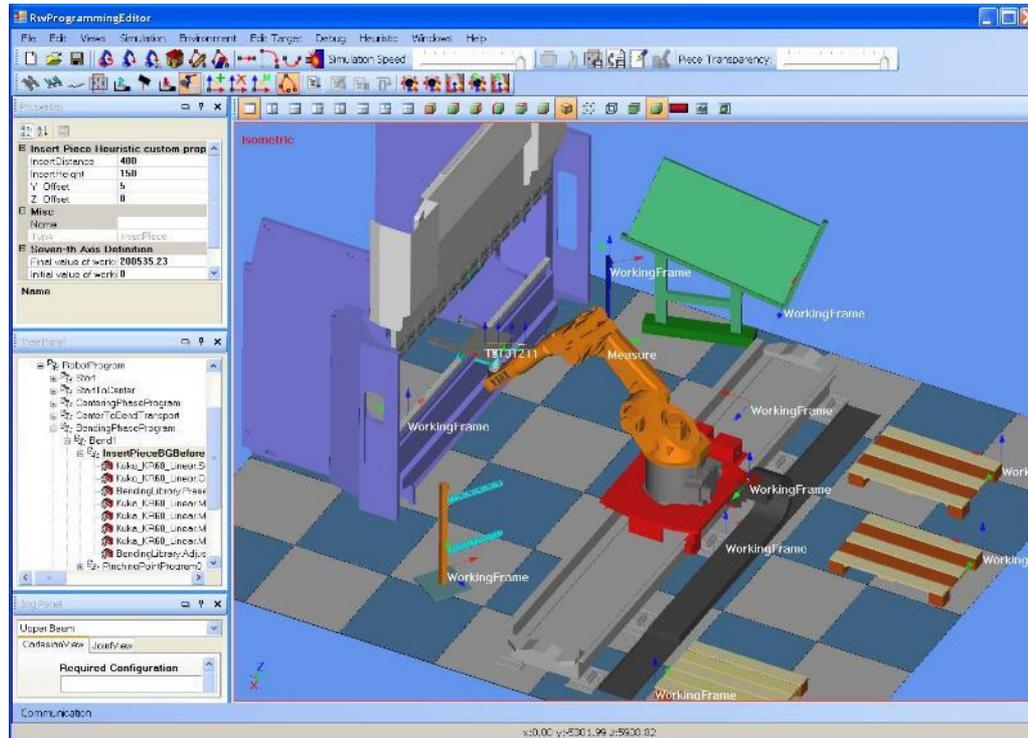
Automatic gauging positioning

- **AUTO-GRIP**

Automatic gripper positioning

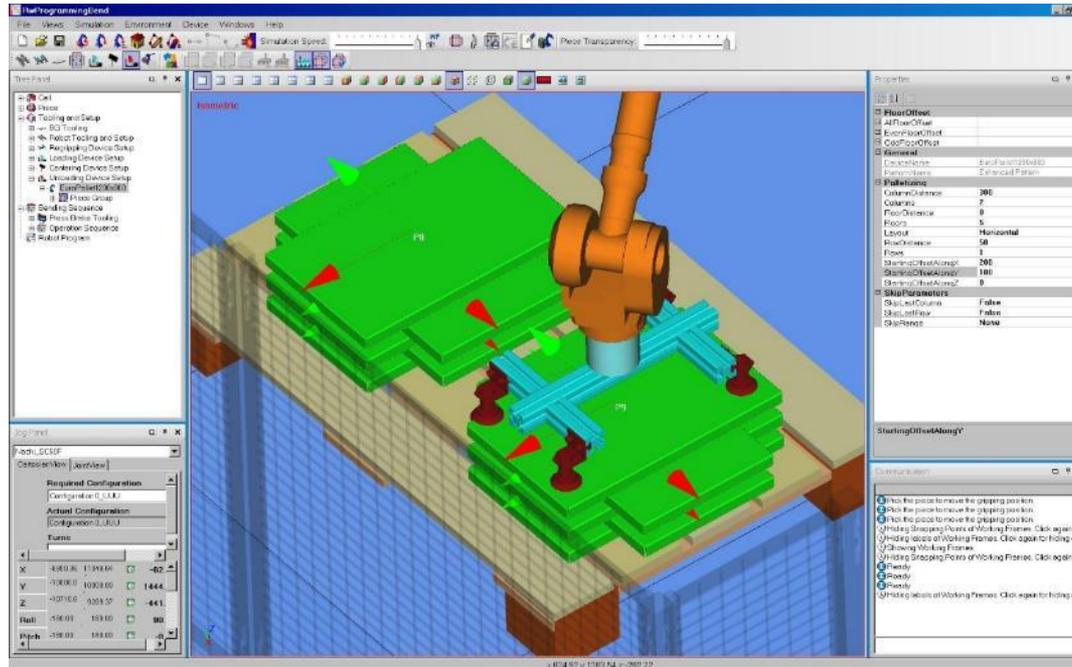


# Robot trajectories



Robot trajectories, including 7° axis, are evaluated automatically, using special bending process heuristics, that could be modified manually changing parameters or using the virtual assisted teaching.

# Palletizing



***RoboWave bending*** manages multiple unloading station. For each station a specific palletizing strategy could be set, including groups creation. The strategies could be customized to satisfy specific user needs.



***VIDEO***

