# CLAMPING TECHNOLOGY

## Our automation solutions for greater productivity with workpiece clamping

CERATIZIT is a high-technology engineering group specialised in cutting tools and hard material solutions.

**Tooling a Sustainable Future**

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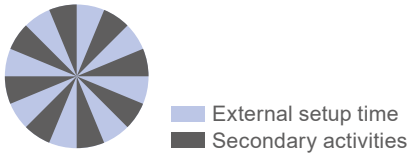
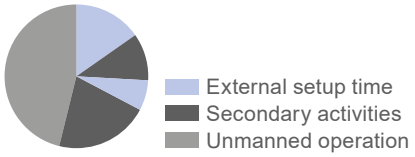
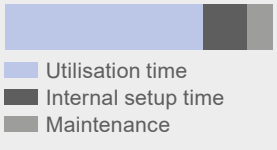
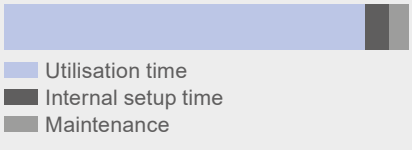
## The comparison

| | Five-axis universal machine without automation | Five-axis universal machine with automation |
|---|---|---|
| Machine uptime [hrs/day] | 15 (2 shifts) | 22.5 (3 shifts) |
| Internal setup time [hrs/year] with same output | 930 | 720 |
| Machine uptime [hrs/year] | 2130 | 3870 |
| Parts per year | 2840 | 5160 |
| Staff availability |  |  |
| Machine availability |  |  |

Basis for calculating the estimated machining time ~45 min/part; 240 days/year; 85% degree of utilisation

Source: GROB-WERKE GmbH & Co. KG, Mindelheim, Germany

# Why should I automate my processes?

### Automation – customised to your workpieces

Automation solutions increase output while simultaneously reducing your unit costs per workpiece. With our expert advice, you will find the perfect solution to your requirements and ensure your production line is fully equipped for future challenges.

# Advantages/benefits

- **Greater productivity**
  More machine spindle hours
- **Higher turnover**
  More parts at lower production costs
- **Shorter product lead times**
  Orders can be delivered more quickly
- **Unmanned production**
  Additional machine spindle runtimes

# Which automation solution is the right one for me?

## Pallet automation and MES

With pallet automation, the batch size is restricted to the number of pallets, however almost everything can be manually clamped on the pallets, including larger workpieces.

It is a similar story with manufacturing execution systems (MES) or pallet handling systems, however as more pallets are available here, more parts can be produced.

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Investment costs: | 1 | ■ | ■ | ■ | ■ | ■ | ■ | | | 10 |
| Required floorspace: | 1 | ■ | ■ | ■ | ■ | ■ | | | | 10 |
| Complexity: | 1 | ■ | ■ | | | | | | | 10 |
| Reliability: | 1 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 10 |
| Output: | 1 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | 10 |
| Chaotic manufacturing: | 1 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 10 |
| Person hours spent on the automation: | 1 | ■ | ■ | ■ | ■ | ■ | | | | 10 |

## Advantages – The Top 3:

- **Perfectly suited to chaotic manufacturing**
- **Very reliable**
- **Easy handling**


# Which automation solution is the right one for me?

## Robotic direct workpiece loading

Robotic direct loading allows extremely large batch sizes to be produced, however these systems are fitted with a component-specific gripper with a customised jaw for each blank and finished part. Converting to a different workpiece is therefore a lengthy and complicated process.

| | 1 | | | | | | | | | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Investment costs: | 1 | ■ | ■ | ■ | | | | | | 10 |
| Required floorspace: | 1 | ■ | ■ | | | | | | | 10 |
| Complexity: | 1 | ■ | ■ | ■ | ■ | ■ | | | | 10 |
| Reliability: | 1 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | | 10 |
| Output: | 1 | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | 10 |
| Chaotic manufacturing: | 1 | | | | | | | | | 10 |
| Person hours spent on the automation: | 1 | ■ | ■ | | | | | | | 10 |

## Advantages – The Top 3:

- ▲ **Low investment costs**
- ▲ **Low floorspace requirement**
- ▲ **Particularly suited to series production**

# Which automation solution is the right one for me?

## Workpiece automation R-C2

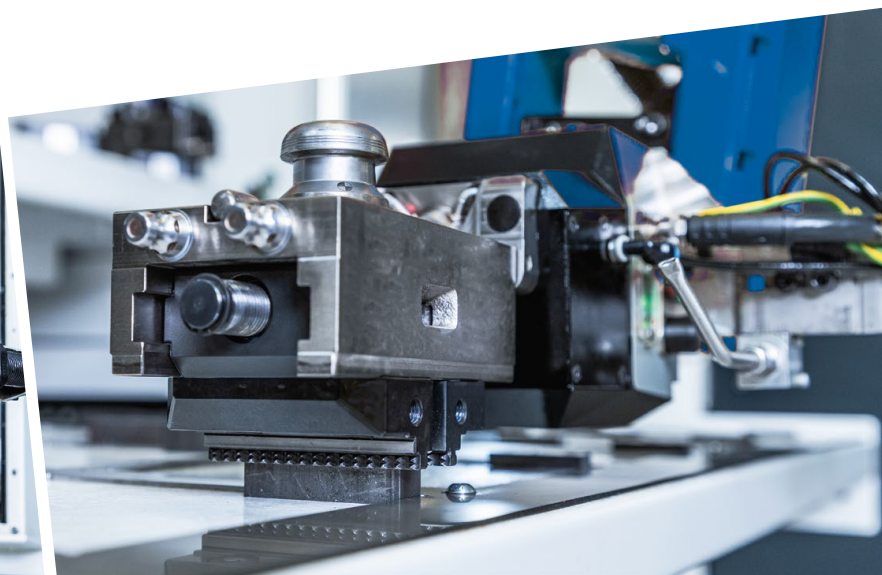
**"Fully machine workpieces on all 6 sides – completely automatically and unmanned"**

The R-C2 workpiece automation solution from our partner offers new possibilities. It falls between pallet automation and robotic direct workpiece loading, as the clamping device and pallet are merged in the form of the gripping vice. As a result, setup times are reduced and flexibility is increased.

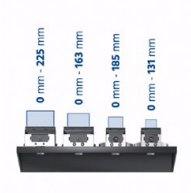
| | 1 | | | | | | | | | 10 |
|---|---|---|---|---|---|---|---|---|---|---|
| Investment costs: | ■ | ■ | ■ | ■ | ■ | □ | □ | □ | □ | |
| Required floorspace: | ■ | ■ | ■ | □ | □ | □ | □ | □ | □ | |
| Complexity: | ■ | ■ | ■ | □ | □ | □ | □ | □ | □ | |
| Reliability: | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | |
| Output: | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | |
| Chaotic manufacturing: | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | ■ | |
| Person hours spent on the automation: | ■ | □ | □ | □ | □ | □ | □ | □ | □ | |

## Advantages – The Top 3:

- ▲ **Low labour requirement**
- ▲ **Perfectly suited to chaotic manufacturing**
- ▲ **Particularly suited to series production**



# Machining workflow with the R-C2 workpiece automation (example of 5-axis machine):

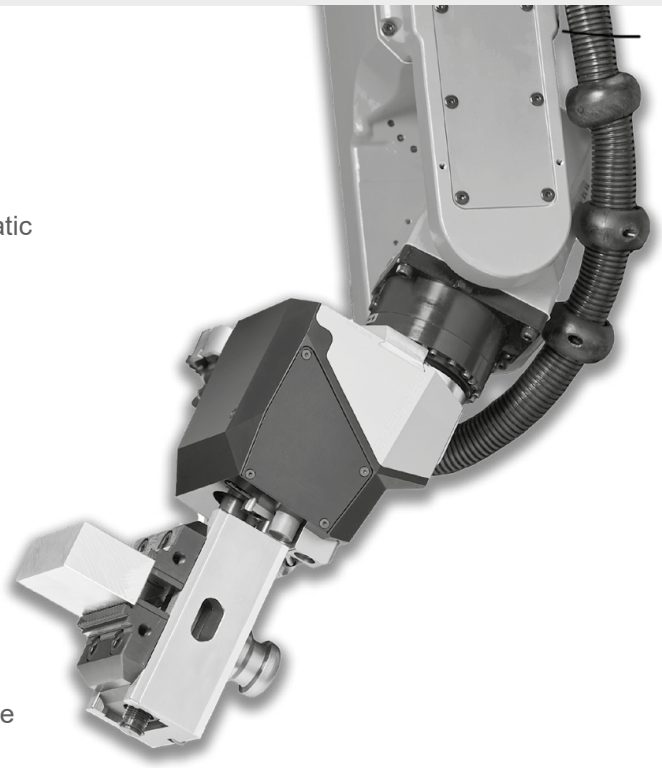



**1. Different workpiece sizes**

> Vice clamping range 0-225 mm. Fully automatic

**2. Grip and clamp workpiece**

R-C2 takes the workpiece from the shelf and clamps it fully automatically in a vice



**3. Workpiece machining of 5 sides**

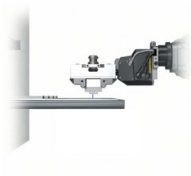
Vice containing the clamped workpiece is clamped in the machine so that the workpiece can be machined on 5 sides

**4. 6-sides station**

> Automated reclamping of the 6th side, unmanned

**5. Workpiece machining of 6th side**

Vice containing the clamped workpiece is clamped in the machine again so that the workpiece can be machined on the 6th side



**6. Deposit the machined workpiece in the magazine and start working on a new workpiece**

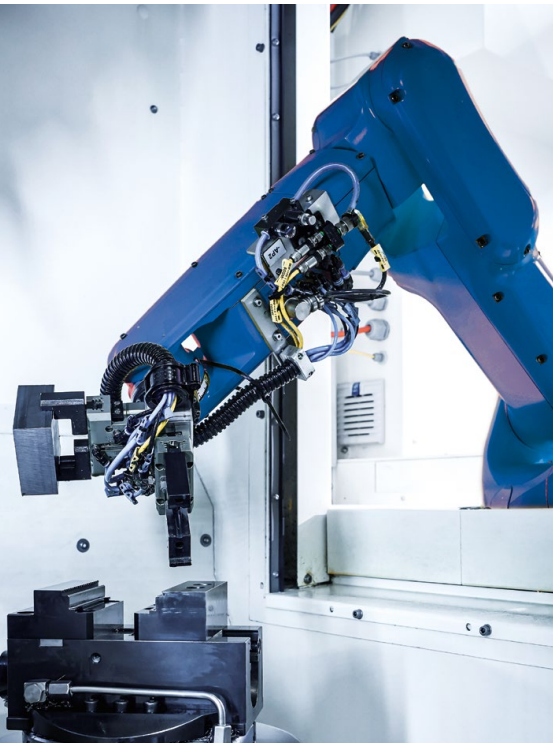
> Simple loading and unloading of the magazine, requiring only minimal person hours

cutting.tools/gb/en/automation-clamping-technology


# Clamping technology for all types of automation

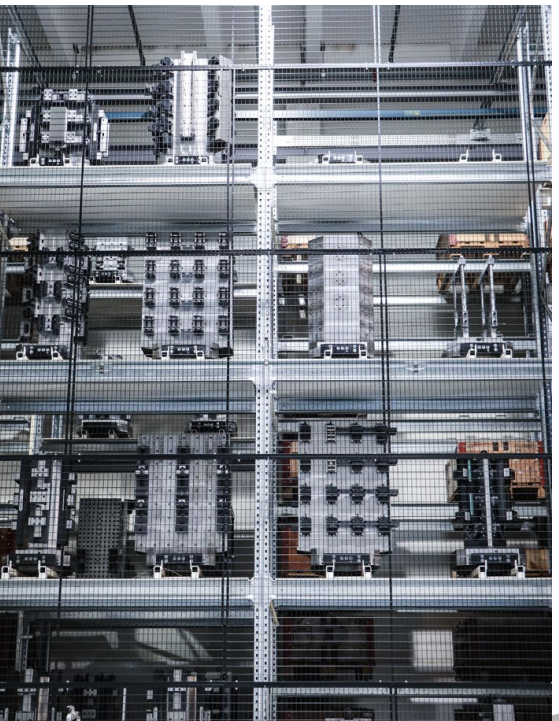
## Pallet automation with ZSG 4 / ESG 4 / DSG 4 / ESG 5

Suitable for all types of workpiece clamping
> Single vice, centric vice, multiple vice



## Robotic direct loading with ESG mini and NCG hydraulic

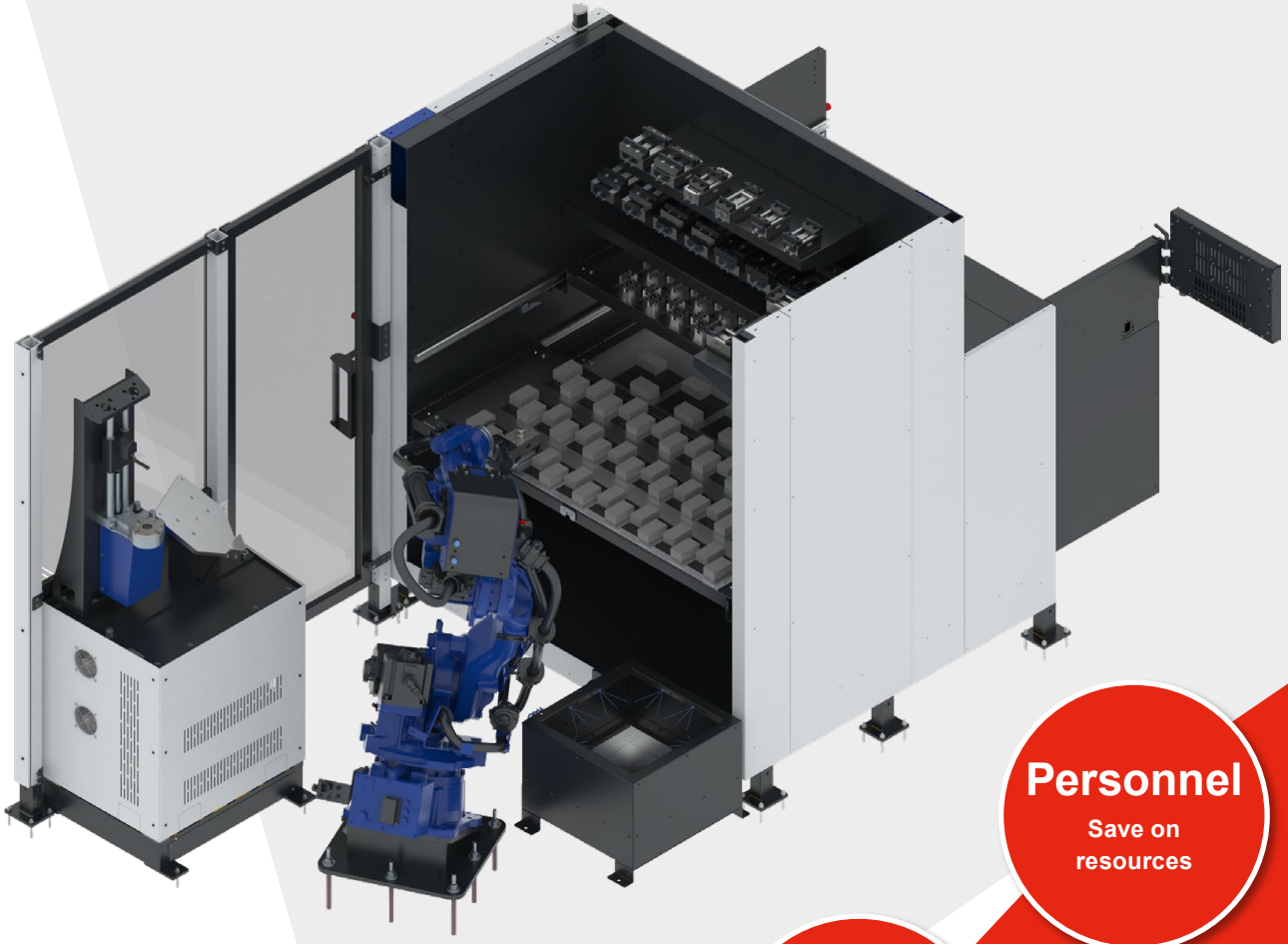
Focus on the hydraulic vice



## Flexible manufacturing system with ZSG 4, ZSG mini, DSG 4, MSG 2, ESG mini, NCG, MNG, etc.

Suitable for all types of workpiece clamping
> Single vice, centric vice, multiple vice and other clamping variants

**Discover our entire workpiece clamping portfolio:**
cutting.tools/gb/en/shop/workpiececlamping



**Personnel**
Save on resources

**Costs**
More reasonable workpiece production costs

**Time**
More machine spindle runtimes

## Have we aroused your interest?

Then please get in touch!

We would be happy to advise you on the R-C2 automation solution for milling machines and clamping technology for automated workflows!


## Automation – customised to your workpieces

# We will find the right solution for you.

Just put us to the test!

# + ToolScope + Cockpit

**The economical automation of CNC machining centres for small and medium batch sizes is an exciting yet challenging task.**

We'd like to work together with you to find your perfect solution and offer the perfect companion to your automated setup with our ToolScope process monitoring and control system, and our Cockpit so you can make the best use of your digital production data.

ToolScope provides all the required data from your machine, including detailed production data and the current condition of the tool, while Cockpit combines all aspects of digital machining.

In conjunction with ToolScope, Cockpit delivers a combination of evaluated data – from production data and machine data to tool data and even quality management data. This ensures that you have an optimum overview of your production processes at all times.

## ToolScope

cutting.tools/en/toolscope

## Cockpit

cutting.tools/en/cockpit

We reserve the right to make technical changes and product improvements.

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