

# BMW Group

## Maximum precision in vehicle assembly thanks to best-fit systems

### INDUSTRY

Automotive industry

### LOCATION

Munich, Leipzig, Regensburg, Oxford, Dingolfing, Spartanburg, Shenyang and Debrecen (starting 2025)

### SOLUTION

Best-fit systems for in-line component alignment and quality control

### CUSTOMER

The BMW Group is a leading automotive manufacturer headquartered in Munich, Germany, with global production facilities located in Munich, Dingolfing, Regensburg, Leipzig, Oxford, Shenyang, Spartanburg, and Debrecen (starting in 2025).



### INITIAL SITUATION

The automotive industry is subject to extremely high standards of quality, and the BMW Group, as a premium manufacturer, places particularly high demands on precision and quality in the assembly of its vehicles. To enable all mounted parts on the various production lines always to fit with maximum precision, the Munich-based company relies on best-fit systems for component alignment and the in-line inspection of joints, gap dimensions, and mounting symmetry, among other measures, in its automated production.

» The reliable combination of maximum precision and short cycle times make the best-fit systems from inos so impressive. «

**Alexander Beck**  
Head of Operations

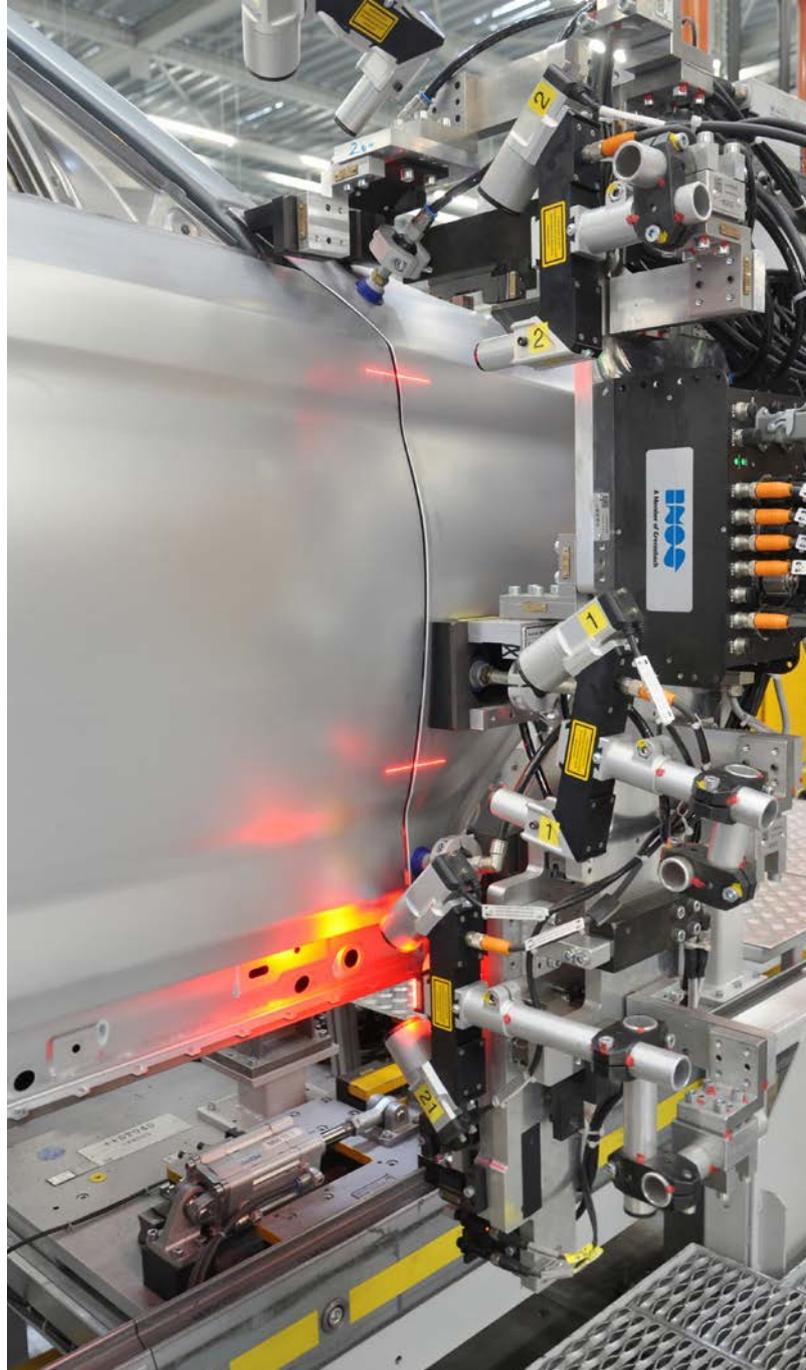
## CHALLENGES

Whether setting up new production lines, changing models, or integrating new models and model versions – due to the BMW Group's high standards of quality, up to 110 different sensors on eleven tools must be integrated or converted per line to implement the best-fit systems. To minimize production interruptions, the amount of time set aside for this purpose must be kept to a minimum. As such, the integration projects must be carried out during short production breaks of only one to three weeks.

## IMPLEMENTATION

By integrating state-of-the-art best-fit systems into the production lines, inos is enabling the BMW Group to achieve maximum precision in component alignment and provide that all parts fit perfectly through reliable in-line quality controls. The vision system, which is based on optical sensors, performs relative measurements between parts in a few fractions of a second, recognizes how the parts should be aligned with each other in real time, and initiates the necessary corrections if required.

At the end of each assembly process, the quality of the subassembly is inspected during a final quality control step. In this context, the installed best-fit systems enable an extremely high level of precision of +/- 0.2 mm, even at maximum production speeds. Thanks to their flexible configuration options, they can also be quickly and easily adapted to modifications to the production processes.



## BENEFITS

### Highly precise

With a level of precision of +/- 0.2 mm, the systems deliver impressive quality, even at high production speeds.

### Flexible

Thanks to the wide range of configuration options, production lines can be upgraded particularly quickly and with minimal time expenditure.

### Reliable

Both hardware and software components stand out for their impressive quality, durability, and unparalleled availability.

## CONCLUSION

The high-precision, fast and reliable best-fit systems from inos help vehicle assembly processes meet stringent standards of quality – due to collision-free robot guidance and machine vision at the highest level of precision. The state-of-the-art systems for best-fit robot control adapt quickly and easily to all production processes, thereby additionally increasing productivity and profitability.

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