

# PRESS RELEASE

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## Welding with robots: Systematically determining automation potential

**Fraunhofer IPA has been using its Automation Potential Analysis for assembly automation worldwide for several years already. This technology is now also available for welding processes. It provides companies with a sound basis for deciding if and where previously manual welding processes could potentially be automated.**

The results speak for themselves: More than 500 companies around the world have already used the Automation Potential Analysis (APA) developed by Fraunhofer IPA to obtain a structured, neutral assessment of the automation potential of their assembly lines. In recent months, experts from the institute have been fielding an increasing number of inquiries as to whether such an analysis is also available for other applications, such as welding processes. Certainly, companies need to avoid risks and bad investments when it comes to changing established processes. In this context, APA is a simple and low-threshold entry into the world of automation.

Based on this need, the team has now further developed the APA. From now on, companies that are still carrying out the bulk of their welding processes manually can have these systematically analyzed in terms of their automation potential from both an economic viability and technical perspective.

### **APA: The response to high-level automation interest**

“Could I use a robot to weld this component?” – this is a question that more and more companies, especially SMEs, are asking themselves. While robot welding has long been used for large-scale production or production of large quantities of one and the same component, it is still in its infancy for smaller series. The demand for increased automation is extremely high, for example, due to the lack of experienced skilled workers, but also due to the pressure to implement cost-effective production processes in a high-wage country like, for instance, Germany. In addition, the large market segment of what are known as “cobots” (a portmanteau of collaborative robots), which are smaller, compact robot arms, is also making it easier to implement new applications for welding.

### Analyzing the welding process

The welding APA can be carried out in the form of a small project as a consulting service directly on site at the company in question. For this, the team analyzes and documents the actual state of the welding application. Some steps of the process, such as feeding, handling and positioning of the component, are treated in the same way as the assembly APA if a fully automated cell is planned. This is followed by analysis of welding-related criteria, which includes questions such as:

- Which base materials are being welded?
- How is the condition of the given seam preparation?
- Does the slag need to be removed?

### Assessment of the “Fitness for Automation”

The result of the welding APA is an assessment of the “Fitness for Automation” status of the welding process. If this gets the green light, the scientists from Fraunhofer IPA can take further steps with the company in the direction of implementing an appropriate automation solution. In contrast, if the process is deemed less suitable for automation, it can often be improved with targeted measures. However, the findings may also confirm that manual welding is still more advantageous, for which a sound analysis is also available.

In addition to expanding the APA for welding processes, the team is also working on developing its capability for use in the future to determine automation potential in logistics and for machine loading.

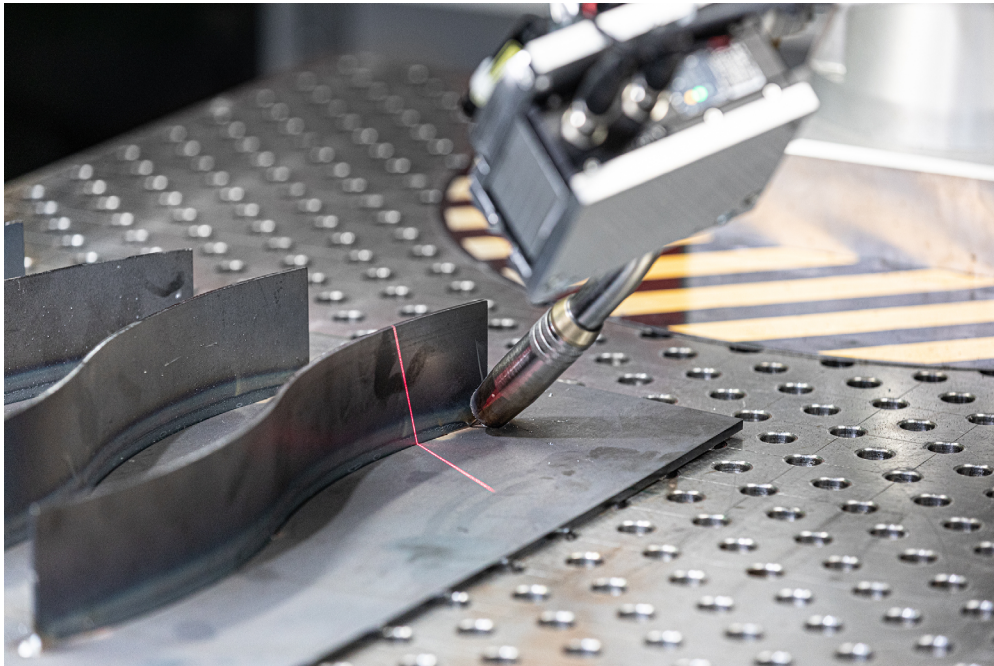
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### Further information on the APA for welding processes:

- To watch a video on the APA for welding processes, please click here:  
<https://www.youtube.com/watch?v=HK80uq5FUv0>
  - In addition, interested parties can discover more about APA at this year’s automatica trade fair taking place in Munich. Meet the APA experts at the Fraunhofer-Gesellschaft joint stand at:  
Messe München, June 27-30, 2023, hall 4, stand 321.
  - Additional information can also be found on the website:  
[http://www.ipa.fraunhofer.de/apa\\_en](http://www.ipa.fraunhofer.de/apa_en)
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**Caption: The Automation Potential Analysis (APA) can now also be used to systematically determine the logical use of robots for welding tasks.** Source: Fraunhofer IPA/Photograph: Rainer Bez

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With nearly 1200 employees, the **Fraunhofer Institute for Manufacturing Engineering and Automation**, Fraunhofer IPA, is one of the largest institutes in the Fraunhofer-Gesellschaft. The total budget amounts to € 82 million. The institute's research focus is on organizational and technological aspects of production. We develop, test and implement not only components, devices and methods, but also entire machines and manufacturing plants. Our 19 departments are coordinated via six business units, which together conduct interdisciplinary work with the following industries: automotive, machinery and equipment industry, electronics and microsystems, energy, medical engineering and biotechnology as well as process industry. The research activities of Fraunhofer IPA aim at the economic production of sustainable and personalized products.