



## WKPT Update

### Enhance Customer Experience with Smart Manufacturing

WKPT recently showcased the results of the Ministry of Economic Affairs' "Intelligent Machinery Industry Intelligent Upgrading and International Linkage Project." Through digital upgrades such as optimized carbon-reducing manufacturing processes, automated order management system, and AI-powered image detection systems, WKPT has improved its production quality and efficiency, enhancing its competitiveness in the global market.

Leveraging cutting mechanics principles, WKPT has adjusted the parameters

that influence the cutting process to optimize the manufacturing workflow while simultaneously reducing carbon emissions. The automated order system's comprehensive framework enables order preview analysis, accelerating the efficiency of order processing. The AI image inspection system utilizes data collection and deep learning to automate the defect inspection process, improving product quality and inspection efficiency. By implementing these smart manufacturing applications, WKPT has integrated and automated its internal

resources, enhancing production efficiency, energy efficiency, and its ability to serve the global market.



Through the "Intelligent Machinery Industry Intelligent Upgrading and International Linkage Program," WKPT has strengthened its capacity to serve international customers by implementing low-carbon manufacturing processes and intelligent production lines.

## Information Express

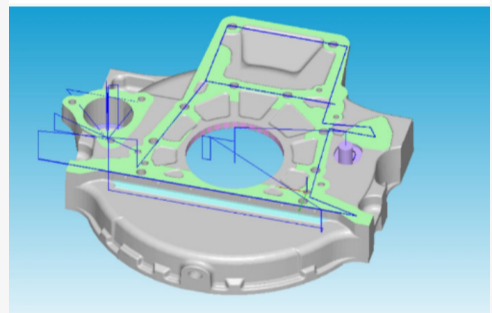
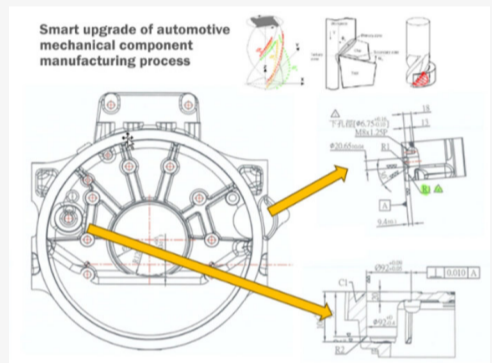
### Optimizing Process Parameters Boosts Machining Efficiency

Process Parameter Optimization refers to the systematic adjustment of production process parameters to achieve the best results in terms of efficiency, quality, and cost-effectiveness. With the trend toward net-zero emissions, process parameter optimization enables energy savings, serving as a stepping stone for the manufacturing industry to transform into a more sustainable, green supply chain.

In 2023, WKPT optimized the manufacturing process of automotive machinery components, with the goal of improving production efficiency and reducing carbon emissions. In metal component machining, for example, efficiency is influenced by factors such as the characteristics of the tooling machine, the machining method, the process

parameters, and the structural properties of the workpiece. Under limited cutting conditions, WKPT adjusted five key parameters affecting cutting efficiency - maximum chip thickness, lateral cutting force, axial cutting force, spindle torque, and air cutting optimization - to produce an optimized machining program. This optimization process resulted in a 19.52% increase in productivity and a 6.78% reduction in carbon emissions compared to previous methods, realizing a net-zero-emission manufacturing solution through intelligent production. [Know more about process parameter optimization by WKPT.](#)

WKPT has optimized its manufacturing process parameters to achieve a net-zero emission solution through smart production.



## Industry News

### Tighter Emission Regulations Challenge Diesel Engine Manufacturers

CARB's proposed emission limits for criteria pollutants are even more onerous than the European Union's (EU) Stage V requirements. As compared to Tier 4 Final and EU Stage V, CARB wants to see NOx emissions reduced by another 90% in the 56-560 kW power category, and PM reduced by another 50 to 75% in all power categories except for engines greater than 560 kW used in mobile machinery. ([What The Looming Carb Regulations Mean For Equipment Manufacturers](#))

The California Air Resources Board (CARB) is proposing new Tier 5 emission standards, which would require most engines to reduce nitrogen oxide (NOx) emissions by 90% and particulate matter by 50-75% compared to the current Tier 4 Final standards. Additionally, the new regulations would mandate 6% to 20% reductions in greenhouse gas emissions, depending on engine power. These more stringent emission requirements are expected to significantly impact diesel engine manufacturers.

In response to the trend of lower emissions for both on-road vehicles and off-road equipment, WKPT closely

monitors industry changes and collaborates with global brands to help them meet emission reduction goals. Through digital transformation initiatives such as equipment networking, automated machining lines, and AI-assisted defect detection, WKPT is improving production efficiency and reducing carbon emissions in its manufacturing processes. Alongside these intelligent process upgrades, WKPT continues to develop advanced metal materials for high-temperature exhaust gas recirculation (EGR) components used in the automotive and off-road machinery sectors. As vehicle emission regulations become increasingly strict in the future, WKPT is committed to working

with customers to achieve their carbon reduction targets through continued process optimization and material innovation.



Stringent emission standards expected to impact engine manufacturers in the future.

