Optimize Machining Processes with AI

**Mitsubishi Electric Presents NC MachiningAID**

*Digital transformation is a key theme in metalworking, essential for maintaining competitiveness. Mitsubishi Electric, an innovative technology leader in the field of CNC technology, is introducing NC MachiningAID, an AI-based solution, at AMB 2024 in Stuttgart. This solution significantly improves machining processes, incurs low costs, and leads to higher efficiency.*

There is often potential for cost savings in operating machine tools. These savings arise from avoiding production interruptions caused by tool breakage, dimensional deviations, surface quality defects, premature tool changes, and extended machining times. This is where Mitsubishi Electric’s NC MachiningAID comes in. The newly developed solution focuses on optimizing tool use. The system uses machine learning to predict tool wear, analyzing data such as spindle loads, motor loads, feed rate, position, and other relevant parameters to determine the optimal time for a tool change. This maximizes tool life and minimizes production interruptions. NC MachiningAID diagnoses the ideal time for a tool change and suggests corrective actions when deviations are detected, such as changing a specific tool or adjusting machining parameters to achieve optimal results. The timing of a worn tool change no longer depends on standard values, the operator’s experience, human judgment, or external sensors. The recommendations of NC MachiningAID are based on insights from a machine learning model that considers both historical and real-time data.

**The Key to the Future of Metalworking**

NC MachiningAID is based on Mitsubishi Electric’s Maisart. Maisart stands for "Mitsubishi Electric’s AI creates the State-of-the-ART in technology." It is an AI platform that integrates various machine learning and artificial intelligence technologies. It offers advanced machine learning algorithms specifically developed for industrial applications. NC MachiningAID uses these algorithms to learn from the data collected during machining. This allows the system to recognize normal machining conditions and identify deviations that could indicate potential problems. Maisart enables real-time monitoring of production processes and immediate detection of anomalies through advanced pattern recognition and predictive analysis. NC MachiningAID uses these anomaly detection capabilities to respond early to errors or unexpected events in machining processes. It leverages Maisart technology’s predictive models to forecast tool wear, thus providing recommendations on when to change a tool to maximize production efficiency and minimize downtime.

**Fully Integrated into Mitsubishi Electric’s Digitization Portfolio**

To utilize NC Machining Aid for your CNC machine, you only need the Windows-based version of our CNC control or an externally connected PC with LAN. It does not require complex or lengthy configurations, regular adjustments, NC program changes, or expensive employee training as it does not rely on external sensors. Existing machining processes and applications can be optimized without significant interruption. The system largely configures itself and can thus be easily integrated into existing CNC machines. By optimizing and monitoring machining in real time, users can immediately increase productivity without having to change their NC programs and machining processes. Setting up NC MachiningAID is very simple. A normal machining process is carried out, followed by an air cut and the normal machining process with five tool changes. This data is used to train the machine learning model, which is then continuously refined with real-time data from the ongoing machining process. The system automatically begins monitoring and diagnosing machining processes.

**Higher Machine Throughput for All Industries**

The system can be easily integrated into existing CNC machines and used with various materials and machining operations, ensuring high flexibility and scalability. NC MachiningAID optimizes the performance of CNC machines so that materials, machines, and labor can be used more efficiently. This is especially interesting for users who produce large quantities and have high demands for quality, precision, and efficiency. Tool wear affects machining quality and is a significant cost factor. NC MachiningAID monitors the condition of tools and provides recommendations for the optimal time to change tools, extending tool life and reducing production costs. Significant savings can be achieved by simply recognizing the actual life of a tool. Early detection of machining anomalies ensures high quality of parts and production. More efficient tool use lowers costs and enables production without unnecessary interruptions. These are essential factors for remaining competitive. NC MachiningAID helps optimize production processes and meet quality standards. The new system will be presented for the first time in Europe at AMB 2024 in Stuttgart at Mitsubishi Electric's booth in Hall 7, Stand C 71.

**About Mitsubishi Electric**

With more than 100 years of experience in providing reliable, high-quality products, Mitsubishi Electric Corporation is a recognized world leader in the manufacture, marketing and sales of electrical and electronic equipment used in information processing and communications, space development and satellite communications, consumer electronics, industrial technology, energy, mobility and building technology, as well as heating, cooling and air-conditioning technology. Embracing the spirit of its “Changes for the Better” Mitsubishi Electric endeavours to be a global, leading green company, enriching society with technology. The company recorded a consolidated group sales of 36.7 billion US Dollar\* in the fiscal year ended March 31, 2022.

\* At an exchange rate of 122 yen to the US dollar, the rate given by the Tokyo Foreign Exchange   
Market on March 31, 2022.

Since 1978, Mitsubishi Electric is represented in Germany as a branch of Mitsubishi Electric Europe. Mitsubishi Electric Europe is a wholly owned subsidiary of Mitsubishi Electric Corporation in Tokyo.

Further information:

<http://www.MitsubishiElectric.de>

<http://global.mitsubishielectric.com>

Ein Bild, das Menschliches Gesicht, Person, Kleidung, Porträt enthält.

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