

# METALMAX™

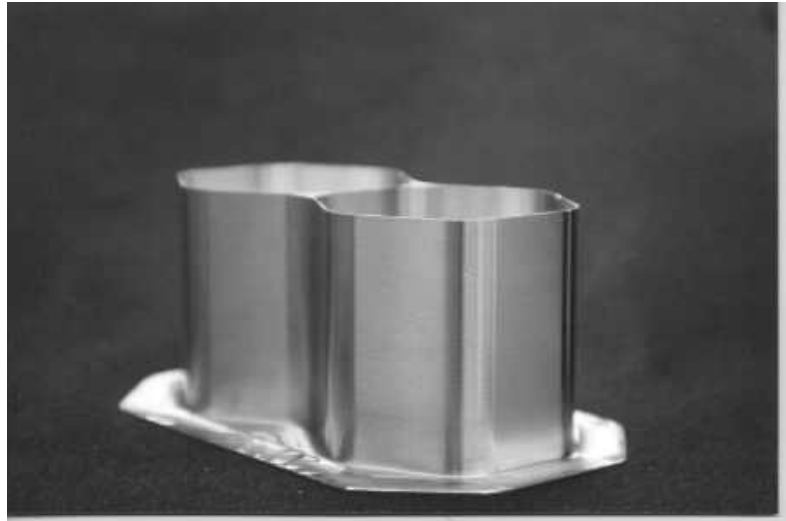
*The Complete Package for Machine-Tool Dynamic Characterization*

*From*

**Manufacturing  
Laboratories,  
Inc.**

**([www.mfg-labs.com](http://www.mfg-labs.com))**

**MetalMAX™** optimizes machine tools with diagnostic tools that make fast accurate cutting performance predictions. Optimal spindle speeds are determined without test cutting. Maximum permissible depths/widths of cut and dynamic cutting forces are quickly obtained. The **MetalMAX™** system provides a systematic and objective means to compare tool stack-ups, match the best machine with the best tool. It performs the highest level of preventive maintenance on spindles and machine tools. **MetalMAX™** is the most complete, lowest cost dynamic characterization package for machine tools.



Aircraft-Coupon using **MetalMAX™** system for milling cutter set up. This 4"x6"x4" solid aluminum block is machined to 0.020" thick walls and floor in less than 30 minutes, using a single cutting tool, with near RMS 32 surface finish.

## **FEATURES:**

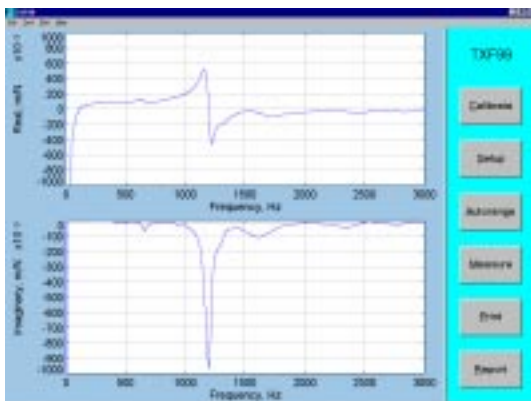
- Predicts best spindle speeds and depths of cut.
- Objective analysis of dynamic condition and vibrations.
- Cost effective: Savings from one production run can cover investment.
- Eliminates finger pointing, objectively determines the weak link (tool, holder, spindle, fixture, etc.).
- Available in a portable package or can be dedicated with NC system on the machine tool.
- Lowest cost, most complete system available.
- Fast, Easy to Use, User Friendly
- Utilizes leading edge techniques, software and hardware.

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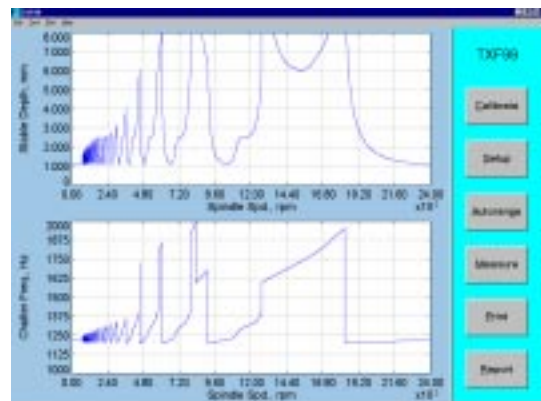
## What is METALMAX™?

[MetalMAX™](#) includes all the necessary hardware for performing what is known as “tap” testing (Frequency Analysis) and data acquisition. The hardware is specially configured for each customer’s needs. [MetalMAX™](#) contains dynamic measurement and simulation software for dynamic cutting performance prediction (e.g. chatter limits). High-performance data acquisition systems verify predictions and fine tune chatter free spindle speeds. Specifically, [MetalMAX™](#) includes TXF, PCScope, MilSim, PROACC, and the Harmonizer. These software applications are specifically tailored to measurement of machine tools. [MetalMAX™](#) is Pentium level Windows9X/NT based.

[TXF99](#) is a very easy to use two-channel frequency analysis program that immediately computes cutting performance estimations. It provides dynamic data to [MetalMAX™](#) and comparison of dynamic parameters of various tool stack-ups. Output from [TXF99](#) is shown below: On the left is a frequency response function; on the right is a lobing-diagram predicting depths of cut and chatter frequency as a function of spindle speed.

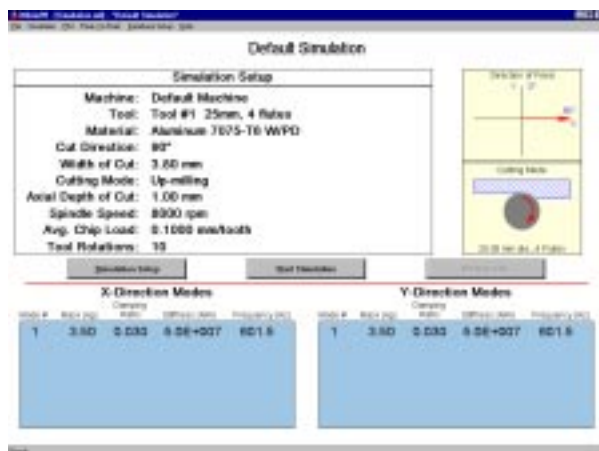


**FRF: Frequency Response Function**

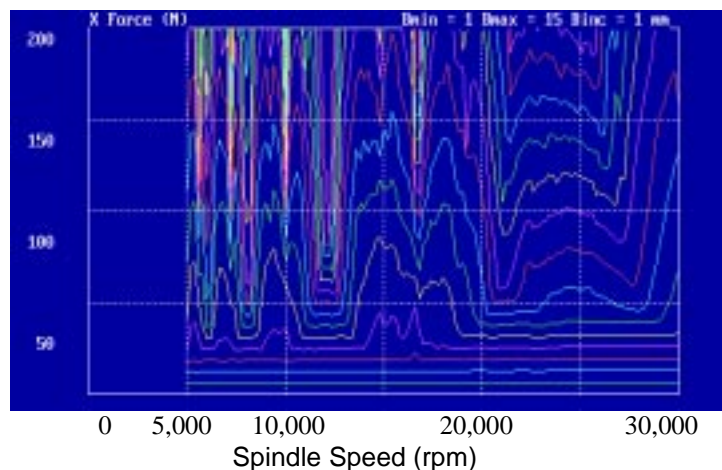


**Lobing Diagram**

## [MILSIM99](#)



**MilSim99’s fast, user-friendly and easy to use interface.**



**PTP Output of cutting forces as a function of spindle speed shows where to optimize cutting performance.**



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Other **MetalMAX™** options not included in the base package are the following:

**SPA99:** The spindle analysis package utilizes Finite Element Analysis. It is extremely easy to use and quickly evaluates spindle designs and predicts performance of modeled tool, holder and spindle stack-ups.

**Predictive Simulation Packages:** Available for special order: Drilling, Reaming, Boring, Turning, Grinding, Hobbing, broaching or Threading. Packages for almost any metal cutting operation can be directly linked to the TXF MetalMAX™ application. Combined with TXF's estimations all MetalMAX™ applications are user friendly, fast and maximize machine performance in the shortest possible time for the user's currently available setup.

## Included MetalMAX™ Hardware:

- High-speed Analog to Digital computer hardware for installation on any Windows based PC.
- Signal processing Module for precise measurements.
- Excitation kit consisting of PCB Piezotronics Impact Hammers and accelerometers specifically selected for each customer's application.
- Microphone and necessary cabling and accessories.
- Carrying case.
- \*Computer (optional)



**MetalMAX™ Hardware**

**MetalMAX™** system is adaptable to any Windows based computer allowing the user to decide their platform of choice(e.g. laptop or desktop applications).

**For pricing information or additional information please contact MLI at:**

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