



Advanced Manufacturing and High-Precision

# TECHNOLOGY

E · X · P · O

Tool · Die · Mold · Medical · Aerospace · Micromachining

October 12-13, 2011 · 9:00am to 6:30pm

## Agenda

### Wednesday, October 12, 2011

9:00am	Registration & Continental Breakfast	
9:45am	Welcome & Introductions	
10:00am	Profit Mastery: Seven Steps to Fiscal Fitness	Steven LeFever (Guest Speaker)
11:00am	The PS-series: The New Production Standard in Vertical Machining	Bill Howard (Makino)
1:00pm	Micromachining	John Bradford (Makino)
2:00pm	EDM Technologies at Work	Brian Pfluger (Makino)
3:00pm	Metrology Panel Discussion	Moderator: Mark Rentschler (Makino)
4:00pm	Happy Hour & Pig Roast	

### Thursday, October 13, 2011

9:00am	Registration & Continental Breakfast	
9:45am	Welcome & Introductions	
10:00am	Breakeven 360°: The Absolute Best Tool to Identify and Manage the Key Profit Drivers	Steven LeFever (Guest Speaker)
11:00am	The PS-series: The New Production Standard in Vertical Machining	Bill Howard (Makino)
1:00pm	Micromachining	John Bradford (Makino)
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## Guest Speaker



**Steve LeFever**  
Chairman and Founder,  
Business Resource Services

Financial management education is repeatedly cited as the single greatest need for business owners across all industries. Steve LeFever is the acknowledged expert on the subject, as his educational programs take the mystery out of the numbers.

Audience members with differing levels of expertise will gain specific tools that can be applied immediately to improve the financial health of their companies.

With a superior command of his subject material, Steve makes finance compelling, interesting, and funny. His unique ability to take complex topics and translate them into plain English separates him from the crowd. He has a rare skill – being able to motivate business owners and advisors to enthusiastically explore the financial workings of a business and change the areas that need changing. Steve will make you believe that “Finance is fun!”

Steve possesses a breadth of knowledge and experience in banking, finance, and small business management. His work with the Risk Management Association (RMA), the Association of Small Business Development Centers (ASBDC), and financial institutions around the globe help keep his insights sharp and his information relevant to business owners, operators, and managers.

An internationally-recognized author and advocate for independent business, Steve's book, “Profit Mastery: Knowledge-Driven Financial Performance” has sold over one million copies. Steve has traveled widely, and the Profit Mastery program has been presented on three continents in eight languages over two decades to hundreds of thousands of business owners, managers, commercial bankers, accountants, and business coaches.

## Presentations

### Profit Mastery: Seven Steps to Fiscal Fitness

The proprietary Profit Mastery performance system combines three powerful components that — taken together — create a tremendously unique and powerful synergy in any network where they are implemented.

The components include: 1) financial/management education – to provide the foundation, 2) financial benchmarking – to provide the performance yardstick, and 3) performance groups – to provide accountability and discipline. Collectively or individually, these unique Profit Mastery components will deliver unmatched results every time.

### Break-Even 360°: The Absolute Best Tool to Drive Unit Profitability

Participants of this program will leave with the tools and a process to:

- Understand how their business makes a profit
- Identify the cost structure of their business
- Evaluate the impact of cost management strategies
- Compare relative pricing strategies
- Cut with a scalpel, not a hatchet

The fact is this: many companies cannot accurately identify their cost structure. After this program, they will understand why they would want to know their cost structure, how to calculate it, and what to do with the results. This may be the most critical information you receive this year.

### Micromachining/Ultra-Precision Feature Technology

No opportunity is too small. No design goal is too ambitious. Makino provides the ultra-precision micromachining technologies needed for the most demanding parts and features. Learn how Makino is machining parts with micro-scale features to micron tolerances each and every day.



### The New PS-series: The Productivity of a Makino HMC in a Vertical Platform

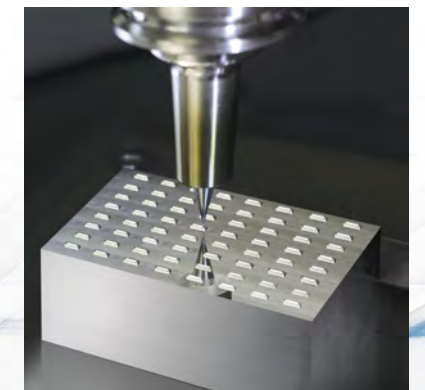
Makino's new PS-series machines will change the standard for vertical machining centers in the production machining arena. In this session, you will learn how to reduce cycle time, increase productivity, improve quality and minimize capital investment through the application of the Makino PS-series VMCs.

### EDM Technologies at Work

Learn about Makino's latest developments in EDM technology, and how they can benefit your shop operations. Items such as the new Sinker EDM “Arc-Free” technology will be discussed, and well as the DUO (dual) Wire EDM technologies. See how these advancements can reduce cycle time, save time, and save money.

### Micromachining Metrology Panel

Metrology in the area of micro machining challenges traditional tactile measurement approaches. Highlighted at this year's Expo will be several unique and highly effective non-contact solutions that have been developed for these specific challenges. OGP's Quest multi-sensor, Alicona's Infinite Focus 3D scanning laser and Zygo's white light interferometry technology will be on display. Technical representatives from each organization will be on hand to provide insights to help you better understand the application targets and strength of each technology.



## Vertical Machining Demonstrations

### D500

Makino's 5-axis machining center is designed to provide superior sustained dynamic accuracy and fine finishes. Demonstrations include an air cleaner mold core with exceptional tool blending when utilizing 2+3 machining techniques.

### F3

The F-series Vertical Machining Center is designed to provide stiffness and rigidity for chatter-free cutting, agility for high-speed/hard-milling, and accuracies for tight tolerance blends and matches typical of complex, 3D contoured geometry associated with die/mold and medical production. Utilizing an optional graphite package to show the superior evacuation while cutting an electrode, the change over time from graphite to steel cutting is minimized with wash gun.

### F5-5XR

This 5 axis machine has the flexibility for 3 axis parts and 5 axis parts. Makino will demonstrate the accuracy of core and cavity machining, as well as a medical part using a tilt-rotary table.

### iQ300

The Makino iQ300 can control the minimum increment of movement to 10nm and provide positioning repeatability less than 100nm and positioning accuracy less than 500nm. This vertical machining center provides unparalleled accuracy and surface finishes as fine as 0.012µm Ra.

### PS95

This is Makino's newest Vertical Machining Center for the production machining arena. This machine offers a unique blend of power, speed, precision, efficiency, flexibility and productivity. Demonstrations include machining of a Cast Iron Fluid Block and an Aluminum Medical tray showing maximum metal removal, high speed finishing and drilling operations.

### V33i

The flagship of Makino's VMC lineup has the ability to practically eliminate thermal growth that is evident in the outstanding surface finishes and micron repeatability. This machine is capable of providing jig bore-like accuracies 24/7 with limited operator interaction. The demonstration performed will be the high accuracy machining of a CPM tab die insert and a superior finish on a mold insert.

### V33i-5XB

The ultimate in 5 axis vertical machining centers capable of 5 micron 5x dynamic accuracy will be displayed. Demonstrations include a bevel gear mold, silicone mold, and accuracy cube.

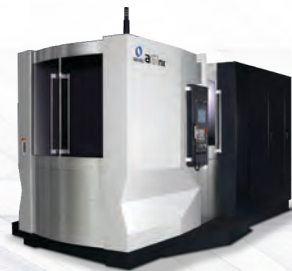
### V99L

With the speed and accuracy of a much smaller machine the V99L is in a class of its own. Large molds can now be cut to a polish free surface finish, but that's not all: it's still more capable of filling a hopper full of blue chips. Demonstrations include a roughing block utilizing maximum horsepower and a test part demonstrating this machine's surface finishing capabilities.

## Horizontal Machining Demonstrations

### a61nx

Makino's next generation of horizontal machining center is redefining the boundaries of 40-taper machining by expanding your capabilities, capacity, productivity and reliability. Demonstrations include machining of a cast iron production part on this 500mm pallet HMC with 14K spindle.



### MCC2013-VG

This 6-axis Horizontal Machining Center is designed to streamline the machining and processing of large plastic injection molds utilizing the unique Variable Geometry (VG) head that is capable of machining from Rough to Finish. Demonstrations include roughing capability, tilting and rotating head for optimal tooling approach, and Makino's new FT Function which is designed to improve surface finish and performance on large mold processing.

## EDM Machining Demonstrations

### Wire EDM

#### DUO43

The DUO43 demonstration centers on Makino's exclusive dual flush design, and the benefits it provides to everyday shop operations. Precise programmable CNC control of each flush pump will be demonstrated in a production application wherein the part slugs will be automatically ejected using programmable flushing. Makino's HEAT (High Energy Applied Technology) technology will also be highlighted, as the dual pump flush design provides more horsepower for difficult poor flush conditions, which translates to less wire breaks and faster machining speeds!

#### DUO64

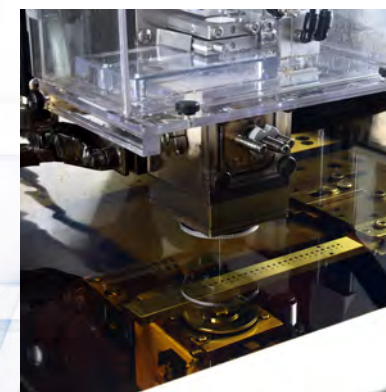
Wire EDM advancements in the DUO Machining Technologies deliver faster machining speeds, improved accuracy, and even lower wire consumption. Demonstration will focus on tall AWT (Automatic Wire Threading) capability using 0.012" diameter wire, and the high accuracy that can be achieved with 1 Pass Machining using BellyWIZARD technology. Further reductions in wire consumption will also be demonstrated.

#### UPV-3

Achieve ultra-fine surface finishes and ultra-high accuracy with Makino's oil-based Wire EDM with dramatically improved metallurgical characteristics. Demonstrations will include the machining of carbide and PCD diamond materials, the benefits to surface finish and material integrity, and how this can improve tool life.

#### UPJ-2

Makino's Horizontal Wire EDM machine excels at the machining of fine/small wires down to a 20 micron (0.0008") diameter. AWT (Automatic Wire Threading) capabilities of under 50 micron (0.002") start holes will be demonstrated, as well as the automated and unattended operations design of this machine in micro-EDM applications.



### Sinker EDM

#### EDAF2

Makino's new AF (Arc-Free) technology will be displayed, which prevents work piece damaging DC-Arc's from occurring. This industry leading adaptive power control function provides maximum safety for the most difficult jobs while maintaining machining speeds. Additional benefits of AF technology also include reduced electrode wear. On display will also be the new on-board MPG (Makino Program Generator) programming system, which provides a powerful, yet user friendly conversational interface.

#### EDAF3/FH

Perform both small precision hole machining and Standard Sinker EDM operations on a single machine platform. Machine demonstration will show high accuracy automated Fine Hole machining with automatic Z-Depth control, and also the quick changeover from Fine Hole machining to Standard EDM operations. The improvements made to the existing SuperSpark technologies, the new MPG system, and AF technology make this the most versatile EDM machine on the shop floor!

#### EDFH-1

Makino's ultra-high accuracy EDAC-1 Sinker EDM platform receives matching small hole machining capability on the EDFH-1 machine. Demonstrations will include electrode discharge dressing and machining of small diameter holes. The machine is also capable of achieving fine surface finishes, and can produce the world's smallest EDM inside corner radius of 5 microns (0.0002").



## Exhibitors



**Alicona**  
Focus variation laser scanning for 3D micro feature form and surface metrology



**Blum**  
Broken tool, ATLM, and AWM systems



**Delcam**  
CAD/CAM software for high-speed milling



**emSolve**  
FF/CAM system for high-performance machining



**Haimer**  
Tooling holders, shrink fit/balance machines, and measuring instruments



**Hirschman Engineering USA**  
NC rotary tables for EDM and work holding tooling



**Inova Tools**  
High-performance solid carbide cutting tools



**KOMA**  
Tsudakoma rotary tables and indexes



**Lyndex Nikken**  
Tool holding systems



**MasterCAM**  
CAM solutions for wire EDM and milling



**MST**  
Toolholders and shrink fit machine supplier



**NS Tool**  
High-performance solid carbide cutting tools



**OGP / Ring Sales**  
Precision measuring equipment supplier



**Pokolm**  
Supplier of high-performance die/mold cutting tools



**PQI**  
Broken tool, ATLM, AWM systems and QC software



**SST Consumables**  
Supplier of milling and EDM consumable products



**Tebis**  
CAD/CAM solutions for HMC, VMC, and EDM



**Union Tool**  
High-performance cutting tools



**Zygo**  
White light interferometry for ultra high resolution form and surface metrology

## Food and Drink

Lunch will be provided from  
**11:30am - 1:00pm**  
each day.

Snacks and drinks will also be available  
throughout each day.



Happy Hour and Pig Roast  
**4:00pm - 6:30pm**  
each day.

## Golf Outing



**October 14, 2011**  
**4 person scramble**  
**Start time: 9:00am**

A light lunch will be served after golf.

On Friday, October 14, 2011, Makino will be hosting a complimentary golf scramble for Expo attendees at Indianwood Country Club. This includes 18 holes of golf (with riding carts), followed by a light lunch.

Attendance at the Expo is required to participate in the golf outing. This golf outing also requires a separate registration.

Visit [www.makino.com/expogolf](http://www.makino.com/expogolf) to register.

**Space is limited. Spots will be reserved on a first-come, first-served basis.**



## Registration

Registration and admission are free.

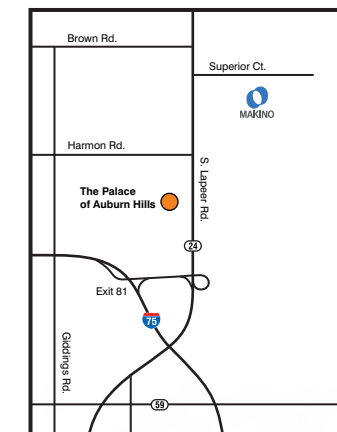
To register, visit  
[www.makino.com/expo](http://www.makino.com/expo)

To register online for the golf outing, visit  
[www.makino.com/expogolf](http://www.makino.com/expogolf)



Your registration will be confirmed via email upon receipt.

## Directions



### From I-75

- Take Exit 81
- Veer toward M-24 (Lapeer Road) North
- Turn right on M-24 (Lapeer Road) North
- Pass The Palace of Auburn Hills on the left
- Turn right on Superior Court (approximately .4 miles after The Palace)
- Makino is the first building on the right (southeast corner of Lapeer Road and Superior Court)



**Makino Die/Mold Technology Center**  
2600 Superior Court . Auburn Hills, MI 48326  
(248) 232-6200 . Fax: (248) 232-6201  
[www.makino.com](http://www.makino.com)