Quarterly 2013 VOLUME 5 ISSUE 20

The CHALLENGER

Global quality and service system of metal working industry

Newsroom
EMO Hannover 2013 Overview
Distributor
BPK Grand Opening
R&D Zone
Discussion of Box-Way and Linear Guide-Way Applications
Product
MICROCUT HBM-140RT
RAM-Type Horizontal Boring & Milling Center
Application
Technology Trends in Mold Industries

MICRO CUT
THE CHALLENGER

HBM-140RT

RAM Type Horizontal Boring & Milling Center

- X travel from 4,500mm up to 6,500mm (opt)
- Y travel from 3,200mm up to 4,500mm
- Z travel 2000mm
- Table size and loading capacity:
  Table size: 3,200 x 3,200 mm (std); 3,500 x 3,500 mm (opt)
  Table loading capacity—20 tonnes (std); 30/40 tonnes (opt)
- W1 & W2 travels (RAM & Quill movement) up to 1,500mm for deep hole machining.
- 140mm quill dia. ISO50 spindle taper with 3000rpm spindle speed, auto two steps speed changer for high torque throughout speed range by automatic control.
- The X & Z axes provide four rigid linear guideways with 12 pieces blocks for X axis and 16 pieces blocks for Z axis for heavy duty loading requirement and fast movement.
- On Y axis, box way design fabricated from a robust cast provides maximum rigidity and strength of the slide/column structure.
- The construction of high rigidity and stability offers customers maximum productivity and best profit.

POSA®

Spin The World

POSA Machinery Company Always on your side

Precision Spindle Builder

POSA MACHINERY CO., LTD.

No. 379, Yi Sin Street, Eastern, Taichung City, 40153 Taiwan
TEL:886-4-22135988 / FAX:886-4-22135996
E-mail:posa.posa@msa.hinet.net
www.posa-spindle.com

Publisher: Paul Chang
E-mail:
info@mail.buffalo.com.tw
Editor: Iris Chen
a15@mail.buffalo.com.tw
Editorial board: Paul Chang
Iris Chen
Doreen Wang
Nina Hsieh
Alexandre Didelon
Kelly Chuang

Layout and Typesetting :
Treasure Map Advertising Corp.
E-mail: apchen.ap@msa.hinet.net

Subscription:
Buffalo Machinery Co., Ltd.
56, Lane 318, Der Sheng Road, Ta Ya District,
Taichung City 428-46, Taiwan
TEL: +886-4-25 60 37 59
FAX: +886-4-25 60 37 69
www.buffalo.com.tw

Copyright © 2013 Buffalo Machinery Co.,Ltd.
All right reserved. No portion of this publication covered by the copyright herein may be reproduced in any form- graphic, electronic, mechanical, photocopying without the written permission of the publisher.

The opinions expressed by contributors and advertisers do not represent those of the publisher and editor, and both take no responsibilities for any false claims or erroneous information.

Contents

From the Publisher 2

Newsroom 3
- EMO Hannover 2013 Overview

Global Outlook 7
- France

Distributor 9
- BPK Grand Opening

Product 12
- MICROCUT HBM-140RT
RAM-Type Horizontal Boring & Milling Center

R&D Zone 14
- Discussion of Box Way and Linear Guide-Way Applications

Application 19
- Technology Trends in Mold Industries

Key Component 22
- The Guide-Way Protector for High Speed Machining Center--Telescopic Cover with CSPM

Event 24
- 2013 MICROCUT-Innovation Technology Seminar-Part II

People 27
- My Life & My World Trip-Part III

Contents

Article contribution is welcome!

The Challenger welcome submission from all fields of machine tool industry related. The Challenger is committed to prompt evaluation and publication of submitted articles. Company profiles, production experience, feedback of using Microcut's products are the most valuable article to share with "The Challenger" readers. Please send the article and pictures (if any, images resolution in 300 dpi or above) to the local Challenger Factory Outlet or email to info@mail.buffalo.com.tw

From the Publisher

It is clear that Taiwan metal working machine tool production is again facing to a high amount of production and export dropping in year 2013. Many people may say that it is happened due to the strong currency of New Taiwan Dollar and the poor confidence of global investors. The writer believes strongly that it is mainly because of the quality, features and reliability are not improved since the last decade. In the other words, the products are not upgraded to meet the requirement of the higher end market which then has no possibility to take some of the share from this area. As the total sells of global metal working machine market is not reduced so much as Taiwanese.

Taking the European machine tool production as an example, the production grew 6% in year 2012, increased to the amount of Euro 22.2 billion, CECIMO gave their forecast that even considered the low global economic development, and the growth of production was still estimated to be 15% and could reach an amount of EUR 22.5 billion in year 2013. It is then very easy to understand, "Taking the lead in intelligent and resource-efficient production, European's machine tool industry paves the way for an industrial future which is in line with the EU's 2020 objective of achieving a competitive resource-efficient, low-carbon economy" said Mr. Carl-Martin Welcker, the general commissioner of EMO Hannover 2013.

Moreover, in America, the Gardner Research gives a high percentage growth of CNC metal working machine sales from 19%, which is a value of USD 6.263 billion up to USD 7.442 billion. It is under the condition of the country's polity goes smoothly. However, why Gardner believes strongly the growth in 2014, it is understandable that the capacity utilization, historical perspective, the restoring and quality standard and cost benefit.

Buffalo Machinery takes a lot of effort in the last decade, to update production technology and research, improving the product quality and reliability. Also, Buffalo Machinery spent a lot of investment in finding the improvement of the production equipment, testing instrument and sales material. During the recent EMO show 2013, most of the distributors appreciate the improvement of quality products and variety of product ranges which ensure the whole distribution becomes possible to reach the top level of products field. The smart machining technology has been built in all the high speed, hi-tech product which is going to form a mighty body of power in supporting the distributors gaining a reasonable share of high end market products. (Please see the page of Newsroom: EMO Hannover 2013 Overview)

September 10th was another big day that the Grand Opening of the distributor in Russia, who announced the update service and knowledge capability. 22 sets of Microcut products displayed in their capacity of 28 sets new showroom. It is not only a great number of machines displayed, but also the great outcome from a lot of discussion and improvement of design and quality, as well as the great cooperation for both companies. BPK Company puts a lot of effort in building good name and reliability of every machine service in the field. This should be the way how the cooperation and partnership grow. Market is always available, only people stay in conservative concept and non-progressive technology cry for the recession. We wish all have a great success in year 2014.

Dr. Paul Chang
Oct. 2013

EMO Hannover 2013 Overview

EMO Hannover 16-21 • 9 • 2013

Corresponding to the motto "Intelligence in Production" of EMO Hannover 2013, Buffalo Machinery showcased the intelligent solutions by the efficiency- and quality-oriented products.

EMO Hannover 2013 Overview

The premier international trade fair for the metalworking industry has come to a triumphant closure on Saturday, 21 September. Over 2,100 exhibitors from 43 different countries gathered at EMO to showcase the leading edge products and the updating technology to the worldwide visitors. According to the official report, over the six days of EMO, has attracted a total of 145,000 visitors from over 100 different nations. Apart from local Germany visitors, there were over 50,000 visitors from outside the country. Italy, Switzerland, Sweden, the Netherlands and Russia assumed the five most visitors from Europe and China was the largest number of visitors from Asia, followed by Japan, Taiwan, and India.

In accordance with the visitor survey, 50 percent of attendees were from the management fields that were searching for renovating production machinery for their organizations. The survey report also indicated that 20 percent of visitors placed an order at the show and a similar number at 20 percent with the intention to finalize the orders after the show. Overall, these figures are better than the previous event two years ago. "This is where manufacturing experts come to explore ways of improving operations," remarked EMO General Commissioner Carl Martin Welcker. The visitors were interested in solutions for boosting energy and resource efficiency, user-friendly equipment, the intelligent integration of machines, cutting manufacturing costs and increasing flexibility. There was also an announcement for the next EMO, which will be staged from 5 to 10 October 2015 in Milan, under the motto "Let's build the future."

MICROCUT - The Challenger at EMO Hannover 2013

Buffalo Machinery has participated in EMO since 2005. To support the distributors in building the close relation with the market and discovering new potential customers as well as displaying the most updated products to the market, attending the EMO fair becomes a must event for Buffalo Machinery due to its high international attendees and great participation of leading international machine tool manufacturers. This year, Buffalo Machinery engaged 447m^2 booth with the theme of high speed machining technology and demonstrated six updated MICROCUT machines attracting the most attention from the visitors. Hundreds of worldwide visitors visited the MICROCUT booth including 36 distributors and lots of end users as well as around 18 potential distributors.

Corresponding to the motto “Intelligence in Production” of this globally prestigious trade fair, BUFFALO MACHINERY showcased the intelligent solutions by the efficiency- and quality-oriented products. MICROCUT - The Challenger displayed six models, including floor type horizontal boring center **HBM-140F**, gantry type 5-axis simultaneous machining center **MCG-5X**, flat-bed CNC lathe **BNC-2680XL**, high-speed vertical machining center **V-22** and **V-30**, and newly developed slant-bed heavy-duty CNC lathe **117HT**.

MICROCUT Showcases

Over a decade of experience in production of horizontal boring machine, MICROCUT now offers the full range of horizontal boring and milling machines, including Table type, T-type (moving column), RAM type and the newly developed floor type HBM. Due to the space limitation, the exhibit HBM-140F only displayed the column with 140mm linear guideway RAM type spindle. The X-axis travel of the HBM-140F is from 6 meters with 2 meter increments. The complete range covers basic rotary table loading capacity from 5 tonnes to 40 tonnes. There are several selections for the RAM, the smaller quill diameter, 130mm or 140mm, and linear or hydrostatic guideway are available with RAM traveling stroke at 800mm and quill 700mm movement. The bigger RAM spindles 160mm or 180mm with hydrostatic system provides a longer RAM travel of 1,200mm and quill 1,000mm movement. And with consideration of the deformation problem when using long stroke machining, the straightness compensation is applied to ensure the RAM straightness when ram and quill are fully out of the headstock. Besides this, the adapting interface is prepared on the RAM for accessory head with auto head change system as well; second counter-weight balance compensation is also provided to support precision cutting performance.

The linear guideway for RAM movement

The BNC flat-bed lathe series is one of the most popular products in MICROCUT. Since it has been announced for more than 15 years, many distributors contributed a lot of feedback which facilitated MICROCUT for better machine development and upgrading. Two newly developed features are available for BNC series this year. One is the rear-mounted ballscrew device; when the rear mounted ball-screw is equipped with the rear turret which can support the carriage, creating great precision machining, especially when undertaking the heavy duty cutting. The other one is the Y-axis capability. With the Y-axis, the machine can do drilling, grooming, milling and tapping, which enable the CNC lathe to perform multiple operations. At this EMO show, MICROCUT presented the model BNC-2680XL, of which swing over bed capacity is 650mm and the maximum turning length capacity is 2M with C-axis and TBMA-200/VDI50/8 tools power turret provided. The spindle dia. is 106mm and the max. spindle speed is 2,400rpm. On BNC-26 series, the turning length is offered from 1M to 4M. There are three sizes of spindle hole are available, 82mm, 106mm, and 153mm. The machine can reach a spindle speed of up to 3,500rpm if the spindle hole is 82mm. On BNC series the tailstock can be engaged with the carriage by hooker for the bed length longer than 3M which makes the tailstock to be motorized. The tailstock end side cover is also available for the full protection.

*The model **BNC-2680XL***

*The visitors had a discussion in front of **BNC-2680XL**.*

MICROCUT started to develop the model V series high speed machining centers since 10 years ago. A complete V series machines including **V-20**, **V-22**, **V-26**, and **V-30** can provide X travel from 800mm to 1.2 M, Y travel from 500mm to 730mm which cover a wide range of market demands. For the best performance of high speed machining and high removable rate, MICROCUT - The Challenger successfully developed the Smart Machining Technology to apply on the V series. With the Smart Machining Technology the machines can operate with high spindle speed, faster feed rate and faster chip removal rate to have better tolerance performance. The V-30 at the show is an update vision. Its chip conveyor has been moved from the middle to the rear of the machine and the electric cabinet has also been moved to inside of the housing which make the V-30 more compact in size. This is absolutely the best solution for customers looking for good productivity with space limitation. The machine's construction is analyzed by Auto CAD ANSYS system, which ensures the reliability of performance. The wider guideways' distance on Y axis provides perfect support for saddle and ensures the table is traveling under full support in X direction which ensures a maximum cutting force can be applied and a great tolerance can be performed. In addition, MICROCUT provides wide selections for the spindle including 12K/15Krpm in-line spindle and 18K/24K built-in spindle. Considering the high speed cutting especially when users are doing 3D work, pneumatic counter balance weight or enlarged Z-motor is provided to ensure less vibration. Apart from the spindle, the optional oil cooler system for high-speed cutting is also available to fit in the feed system. The ballscrew cooling system can ensure stable performance at high speed cutting so it can achieve faster rapid feed 42 M/min with very low thermal growth.

*High-speed vertical machining center **V-30***

*Slant-bed heavy-duty CNC lathe **117HT***

117HT was first launched at TIMTOS 2013 in Taipei. The new slant bed CNC lathe **117HT** is defined by its bar capacity 117.5mm, and it is constructed with 45 degrees one piece bed which provides turning capacity 700mm and turning length capacity is available from 1.5M to 4M. **117HT** is provided with a lot of standard equipment like hydraulic turret with 12 tools, programmable tailstock device, and 18" hydraulic chuck, also more options like C axis, power turret,

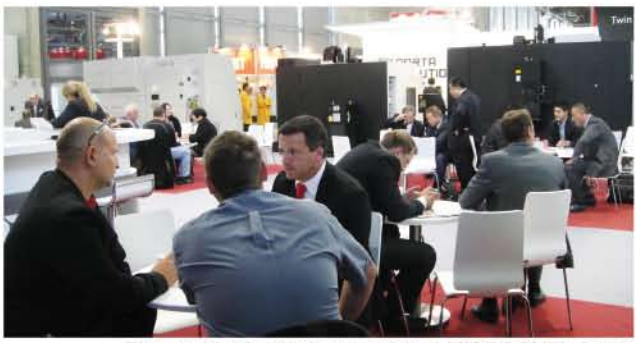
even Y axis on the turret, touch probe, bar feeder device and chip conveyor are available for all customers' selections. This is definitely the best and ideal machine for the oil and gas industries as well as suitable for heavy-duty performance. MICROCUT is always looking for improvement and the best; a larger spindle bar capacity model 230HT with 24" hydraulic chuck and 900mm turning capacity is under developing and will soon be ready for the commercial production in 2014.

*The model **MCG-5X***

Among MICROCUT's products, there is a full range of 5-axis machining centers. The gantry type 5-axis simultaneous machining center **MCG-5X** was presented at this show. The machine construction is an advanced design which can achieve best working condition. Even to work with the most complex workpiece, it also offers reliable, precision and better performance. The model **MCG-5X** is equipped with 18,000rpm spindle speed, 800mm dia. table with one tonne loading, both C and A axes of the table are driven by torque motor, also, on the table center, there are hydraulic and pneumatic joint prepared. All 3 axes of the machine are equipped with roller type linear guideways, and on Z axis is equipped with 3 linear guideways to ensure Z axis rigidity (this design has received the patent). Besides this, various selections of spindle speed are provided, such as 12,000/15,000rpm in-line spindle and 18,000/24,000rpm built-in spindle. The selections of ATC system from 32 to 120 tools are also available. Furthermore, the automatic roof device, wide window, and smart tool load station are provided for customer's easy operation. Most importantly, **MCG-5X** is designed not only for 5-axis simultaneous machining but also for high-speed cutting, and the MICROCUT's Smart Machining Technology is applied to provide stable quality, high removable rate, improving the high-speed cutting performance and increase productivity.

Prospection

At the EMO show, lots of distributors visited Buffalo Machinery's booth and had a discussion meeting. It was delighted to be able to discuss the newest technical issues and to understand the market demands with the field professionals from worldwide. Buffalo Machinery is devoted to promote its brand MICROCUT - The Challenger globally. Every year, Buffalo Machinery participates in the international trade fair providing the best opportunity to showcase its innovative machines and closely cooperate with the distributors to provide efficienct and quality-oriented products. The combination of high-end technology and powerful sales network as well as outstanding service capability contributes to the industry advantages for Buffalo Machinery customers. The availability of more high end products and turn-key technology development are definitely Buffalo Machinery's major objectives to accomplish.

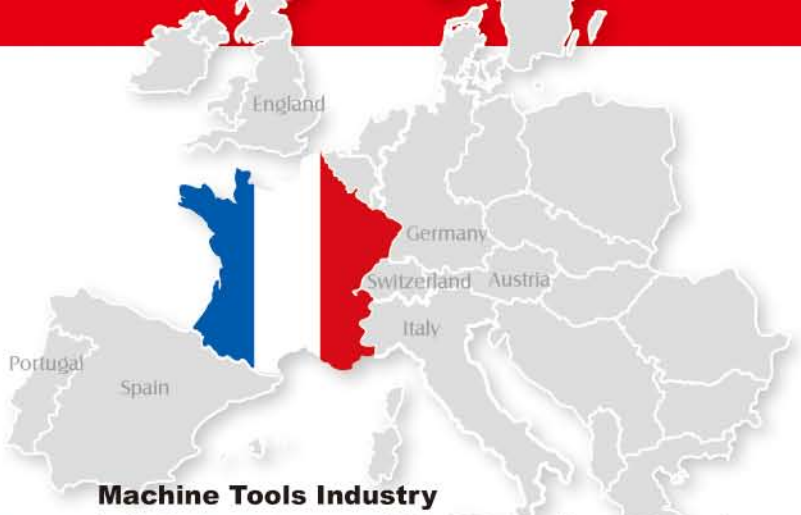


The worldwide distributors visited MICROCUT's booth.

Reference: http://www.emo-hannover.de/

Global Outlook

FRANCE



LOCATION

France is located in Western Europe with several overseas regions and territories. Metropolitan France extends from the Mediterranean Sea to the English Channel and the North Sea, and from the Rhine to the Atlantic Ocean. From its shape, it is often referred to l'Hexagone in French (The Hexagon). France is the largest country in Western Europe and the third largest in Europe as a whole. France is an old country, formed in the High Middle Ages. From 1950, it is one of the actors in the construction of the European Union. Also, it is one of the five permanent members of the Security Council of the UN. France intends to contribute internationally by the influence of its culture and its democratic values, secular and republican.

Economy

A member of the G8 group of leading industrialized countries, it is ranked as the world's fifth largest and Europe's second largest economy by nominal GDP with 39 of the 500 biggest companies of the world in 2010. France has a mixed economy, which combines extensive private enterprise (nearly 2.5 million companies registered), state enterprise and government intervention. The government retains considerable influence over key segments of infrastructure sectors, with majority ownership of railway, electricity, aircraft (Airbus), nuclear power and telecommunications.

According to the World Trade Organization (WTO), in 2009 France was the world's sixth-largest exporter and the fourth-largest importer of manufactured goods. France is the smallest emitter of carbon dioxide among the seven most industrialized countries in the world, due to its heavy investment in nuclear power. As a result of the electricity produced in the country is generated by 59 nuclear power plants (79% the highest percentage in the world.)

Machine Tools Industry

In 2010, the sector grouped 655 companies for a turnover of 1,698.3 million euros. The majority of operators are small businesses and act as an intermediary between suppliers and end users. Generally the activity is not limited to the sale of machine tools, but comes in a set of services (maintenance training). With some 290 companies in 2009, the industry of machine tools specialized for metal removal is more fragmented and among the most exporters in the sector of machine tools. The main actors are commonly mainly German and Japanese subsidiaries of major commercial manufacturers. Several specialists trading, smaller evolve around them. The few French major stakeholders, like GravoTech of Realmeca, PCI or even Dufieux Industries occupy strong positions in niche markets. From 2010 to 2011, importers of machine tools continued to increase (+42.4%) to £1,207.9 million. The importers from Asia have also increased significantly (62.3%). Exports have increased by 19.1% between 2010 and 2011 to reach £821.5 million.

Gostronomy

Everyone knows French cooking is one of the best in the world if not the best. That might be because the diversity of the good products and related recipes available all over France. With more than 365 cheeses, thousands different wine producers, bread and viennese pastries, "foie gras", sea food, fishes and good meat, France is the paradise for those who like quality and innovative cooking. The most famous French specialties are well-known all over the world.

Global Outlook

According to the global cliché: The French love wine and cheese often eat snails and frog legs, wearing a beret and a sailor t-shirt and always walk with a baguette under his arm. Speaking of the famous baguette, its crust is appetizingly golden and crunchy, and the bread inside is light and fluffy.... The baguette is a mainstay at French tables. It accompanies every meal and represents around 80% of all bread bought in France. Also, the star of French pastries is uncovered—the croissant—it is the pleasure of our taste buds, and an emblem that will never flake.

Luxury

The world luxury market is worth more than $130 billion and France is the country which owns the largest number of companies in the luxury and historically always been trend setter in the luxury market. Some of the world's best symbols of lavish lifestyle are essentially French (Don Perignon champagne, Louis Vitton handbags or white truffles as a culinary ingredient). The French luxury industry is based on prestige brands which dominate luxury market with products such as perfumes, fashion design called "Haute Couture", jewelry, leather, shoes and accessories.

History

This country has a long fascinating history. History is marked by the construction of true piece of architectural art, which are like windows on the past. Paris groups many, the Eiffel Tower, l'Arc de Triomphe, le Chateau de Versailles, le Louvre. But the whole area is also dotted with many other masterpieces (Castles of Loire, the Millau Viaduct, the arenas of Nimes, Carcassonne, etc.)

References:
http://www.insee.fr/
http://netreferendum.pagesperso-orange.fr/la-france-en-chiffre.htm
http://bourse.lesechos.fr https://en.wikipedia.org/wiki/France
https://www.france.fr http://www.cometofrance.com
Xerfi Studies: Machines Outils a Metaux (Avril 2012)
Haute-couture et prêt à porter de luxe

Distributor

BPK Grand Opening

BALTIYSKAYA PROMYSHLENNAYA KOMPANIYA (The Company BPK) in Russia grandly held a ceremony for the opening of new showroom in St. Petersburg on 10 September 2013.

Three hundred worldwide guests from assorted enterprises were invited to join this opening, including the customers of BPK and the word-wide suppliers from Buffalo Machinery, Siemens, Vision Wide Tech, Proth, Yu Shine Precision Machine, Kehueng, Techni Water Jet and Nodvic EDM. Diana E. Kaledina as the General Manager of BPK, personally came to greet each guest at the entrance and express the sincere welcome from BPK.

Diana, as the representative of BPK, gave a speech to emphasize the competitive advantage and firm performance that BPK has created and reached. She also claimed that with a professional team, powerful supports from suppliers and determined efforts, BPK ensures to provide the best services for customers from aspects of sales, after-sales-service and application. In addition, good news was revealed that one new site in south Russia will be established in the near future to extend more services.

Best performance distributor presentation to BPK

Distributor

Dr. Chang gave opening speech.

Dr. Chang was opening a celebration cake.

Being the main supplier of BPK, Dr. Paul Chang, on behalf of Buffalo Machinery, was the first to have an opening remark to express congratulations towards this grand occasion. Dr. Paul Chang praised and proclaimed that BPK has been a young, active, experienced and powerful company. Buffalo Machinery appreciates the successful leadership and teamwork from the marketing, sales and after-sales-service departments that provide up-to-date technology and the best service quality to the customers. Dr. Paul Chang also shared the success in working together with BPK which is always a pleasure when quarterly BPK specialists and engineers pay a visit to Taiwan to have discussion in details of design, quality control and modification. Without all this cooperation and decision-making, this success could never be achieved. It is often difficult to find an innovative and improved way to offer quality products to the market, but it is great to see the improvement of quality and the growth in business. The warm and positive feedback is continuously well received with specific confirmation from all of the great clients in Russia.

The successful working model between BPK and Buffalo Machinery, such as the collaboration in regular discussion on professional techniques and the feedback from user experiences, has benefited Buffalo Machinery to aspire in developing even better products and to provide more powerful solutions to BPK who may then serve the customer.

With the meticulous arrangement, BPK introduced the new site and well prepared activities to present its marvelous showroom, engineering center, training center, as well as the tour of BPK's spectacular warehouse.

The new showroom is with more than 2000 square meters of foundation and enables BPK to demonstrate the most popular machine tools. It was a great pleasure to find that 85% of the showroom (around 28 units) was provided by Buffalo Machinery which included Horizontal Boring Machines, CNC Lathes and Vertical Machining Centers. Furthermore, 80% of these units will be directly shipped out to customers after the demonstration.

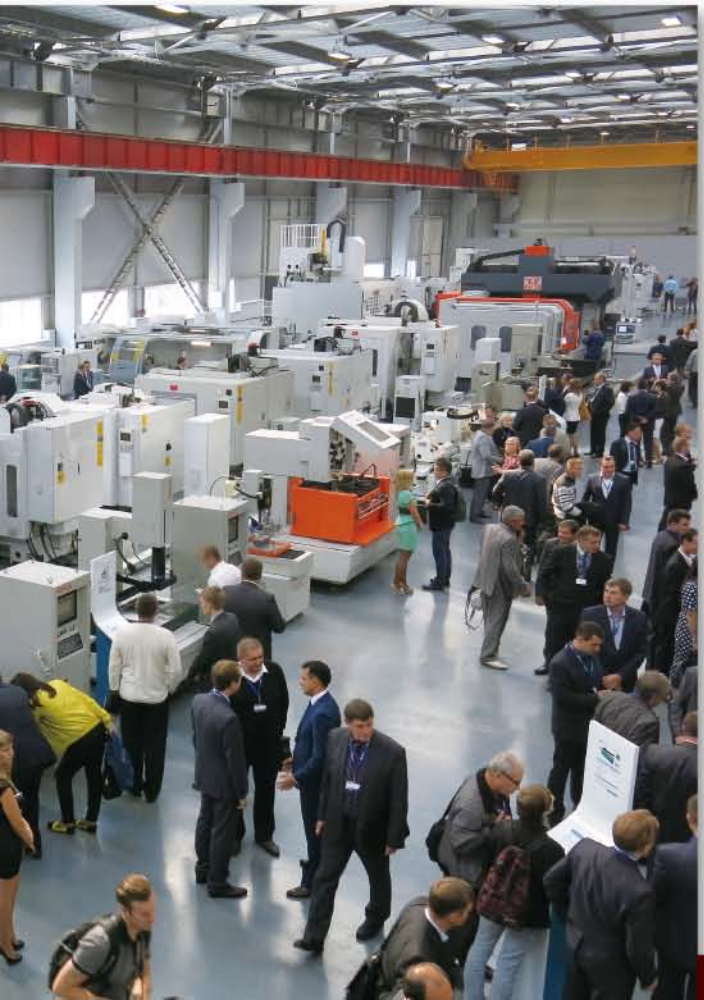
Microcut machines in the showroom

What's more notable was that BPK invested on the Fanuc robotics technology for enhancement of its services. Connected with the Microcut Lathes 76HTL and 52HT for live demonstration of automatic processing, Mr. Alexandra, the application engineer leading the program had spent 2 weeks for engineering preparation.

In the other breakthrough news, three new training centers were established at the same time. The facilities will be dedicated on providing training and operation programs for customer's needs. Now the training programs specialized on Siemens controller are also available in the training center.

Through browsing the whole site and the informative display rooms, all guests had an overall understanding of the services that BPK serves, and should be all praised for their professional approach. On the tour to the adjacent factory next to BPK, footprints of machine tools, VMC and HBM-4 were found, and Buffalo Machinery regarded this as the best confirmation for the customer.

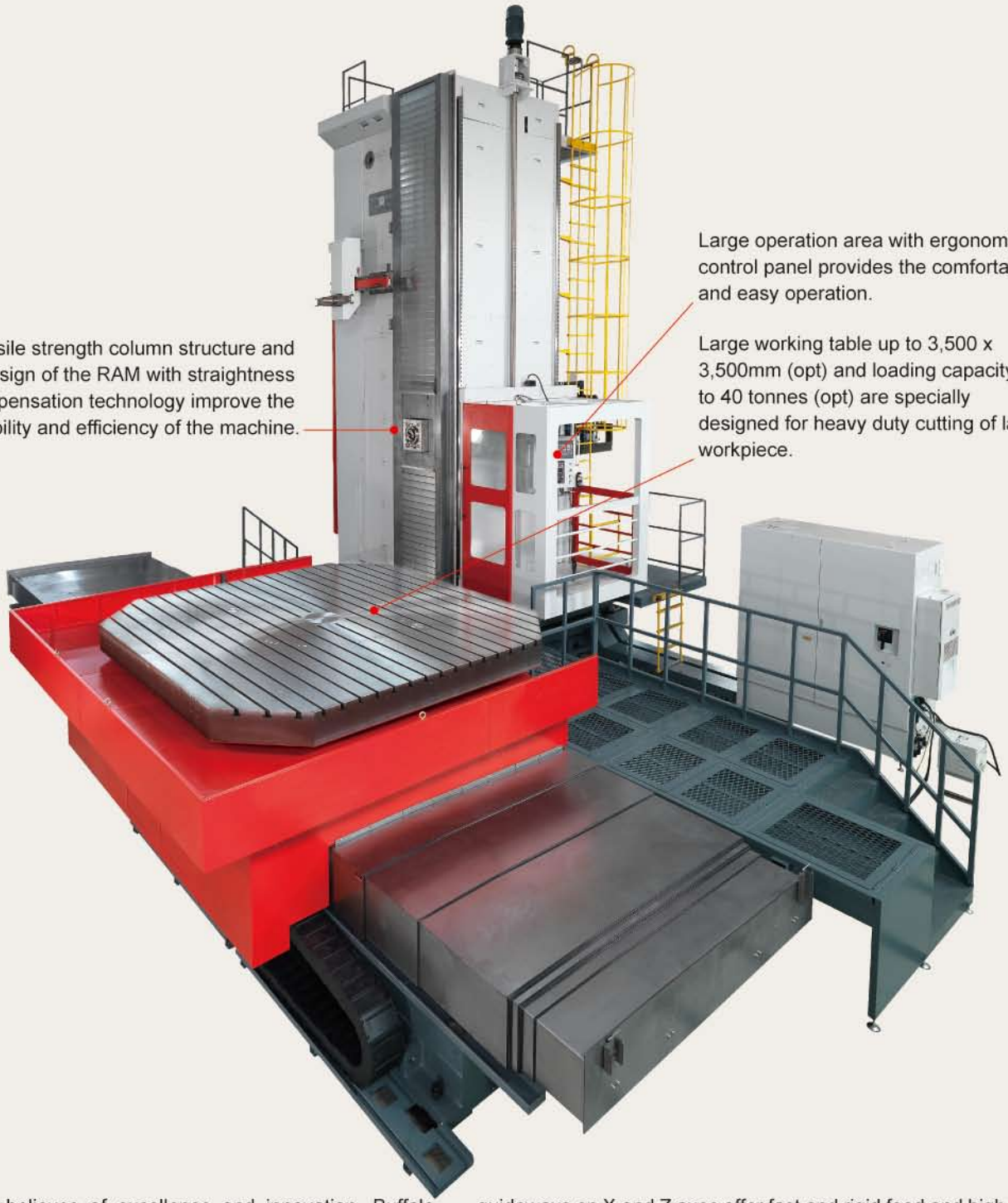
As the main supplier, Buffalo Machinery genuinely congratulates BPK's grand opening in St. Petersburg this year and wishes BPK every success in the future.



Live demo Fanuc robot automation

Product

MICROCUT HBM-140RT RAM-Type



Based on believes of excellence and innovation, Buffalo Machinery has built the HBM series since 2003. In 2013, the newly developed CNC RAM-type Boring and Milling Center, MICROCUT HBM-140RT is now under the commercial production and ready to the market. The T-type (moving column type) horizontal boring and milling center is equipped with RAM movement on the spindle; four-roller type linear guideways on X and Z axes offer fast and rigid feed and high speed machining capability; on Y axis, box way design fabricated from a robust cast provides maximum rigidity and strength of the slide/column structure. Also, 0.001 degree high indexing accuracy rotary table, 20 tonnes (std), 30 tonnes and 40 tonnes (opt), are selectable according to your need. Therefore, it is perfect for applications in various industries.

Horizontal Boring & Milling Center

Spindle

- Hydrostatic and linear guideways are available for selection.
- Equipped with RAM movement on the spindle, with RAM travel 800mm and quill travel 700mm, quill diameter 140 mm.
- Two roller bearings fit in front of the spindle and ball/angular contact bearings at rear, providing oil mist and oil spray device, with suction system in returning oil for lubrication.
- Head clamping while machining is applied.
- Mechanical counter weight with holding device to ensure a smooth Y-movement and multi axes simultaneous movement.

Rotary Table

- Table size and loading capacity:
  Table size: 3,200 x 3,200 mm (std); 3,500 x 3,500 mm (opt)
  Table loading capacity—20 tonnes (std); 30/40 tonnes (opt)
- Both the table slide and clamping plates are made of a robust cross-ribbed casting which is treated by thermal stabilization.
- Centrally integrated rotary encoder guarantees precision positioning and easy maintenance.
- 0.001 degree variable positioning in any angular position and available for rotary milling.
- Dual planetary gear reducer ensures backlash free.
- Three rings of bearing surface coated and hand-scrap treated for stability and longevity.
- Reinforced with integrated hydraulic clamping force and four points lock pins, the rotary table provides heavy loading capacity and large clamping force.

Y-axis Column Structure

- The column guide utilizes box way design.
- The guide surface has been processed with induction hardened and ground procedure.
- The box ways are convenient for manufacturing tall work pieces.
- The high tensile strength design can prevent any vibration at the end of column during the manufacturing process.
- The precise C3 class ball-screws can guarantee the axial and radial cutting strength.
- Mechanical counter weight with holding device to ensure a smooth Y-movement and multi axes simultaneous movement.

X & Z Axes Structure

- The X & Z axes provide four rigid linear guideways with 12 pieces blocks for X axis and 16 pieces blocks for Z axis for heavy duty loading requirement and fast movement.
- The main frames are made of high grade Meehanite licenced steel to ensure the rigidity of the structure.
- The axial position utilizes absolute encoder to increase the precision of each manufacturing point, and the home position step can be removed and shorten cycle time.

Discussion of Box Way and Linear Guide-Way

Thorsten Habelitz & Paul Chang

Abstract

Traditionally, most of the metal working machines are built with box guide way which has been considered to be a solid and rigid structure, the operator believes that the device provides a better cutting force and reliability of the structure; in the last decade, linear guide-way has been applied on many kinds of device. Either ball support or roller guide turn out to become one of the major develop direction for high speed movement products. However, it has been some argument that large device, such as Vertical Turret Lathes and Horizontal Boring Milling Machine, many still consider it is not such a rigid design. An open discussion of its design, assemble, rigidity and application has been discovered in this paper.

Discussion

Box way guide-way has been applied on most of the metal working machines, especially large size device. The machine has been built as this way, simply because of the long history of machine development and tradition. Designer enlarge the bearing surface or longer the contact length which has been working acceptably. As there is a long period of time, operator has been considered to have big cutting tools which make a deep removable thickness and width. Some even place the cutting condition which makes the cutting tools nearly burn, especially a dry cutting is applied. Such a machining concept has been accepted since beginning in this field.

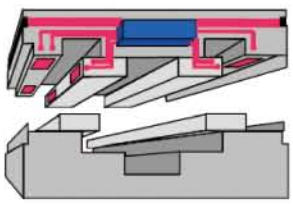
But under such a machining process, it always needs the second or third machining process; the fact is that the machined surface can no longer be a good geometrical tolerance as it has been machined under high temperature. Unfortunately if it is a large working piece, it costs a lot for transportation and leveling while second of third machining process is applied. At the end, it turns to be a high production cost and long lead time which is usually hard to be accepted, especially while the machine tools maker facing to the needs of short delivery time requirement.

Moreover, while the material of casting can be produced to be much higher of its tensile, and the updated foundry technique can promise a much better rigidity and straightness of ram casting, it is a waste of money while the main casting remain a large number of thickness for machining requirement. As well as the rapid speed and feed speed of machines are becoming higher and higher all the time, as the cutting tools will be able to reach a much higher cutting speed (Vc value). The finish surface under high speed cutting can produce a much higher grade of its tolerance, and the cutting tools also become harder which will be able to machine the harder material. A linear way guide structure is becoming needed as the traditional box way can bring always thermal problem which performs a worse geometrical tolerance of the machined surface.

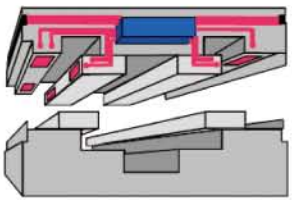
A comparison table is developed as shown below; a wide area of criteria is considered and discussed, and it covers the area of production, maintenance, and cost. The table brings even a linear guide way providing hydrostatic features. It can be applied as a damping unit which is a great benefit for high column moving machine, such as horizontal boring milling machine.

Application

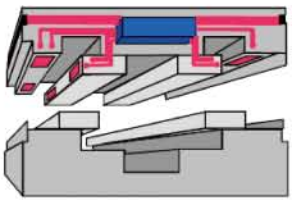
General Comparison of Different Linear Guidance Systems Table 1

Criteria	*Roller Guided Linear Guide*	*Hydrostatic*	*Hydrostatic Compact Guidance*
Illustration			
Development / constructive effort for machine	Ready to fit--Standardized unit can be selected; no development necessary. Properties like load capacity and rigidity are defined and known. Constructive effort only for adjacent construction of rail and carriages.	New design has to be developped. Specific *Know-How* required. Tests for verification necessary. Difficult customizing. Low flexibility.	Ready to fit--Standardized unit can be selected; no development necessary. Properties like laod capacity and rigidity are defined and known. Constructive effort only for adjacent construction of rail and carriages.
Design space	Linear roller guidances take loads and moments in all directions. No tensioning of different bearings required. High performance in small design space (high load capacities, high stiffness). Only a few bearings required. Small effort to machine the adjacent construction. Compact design space--weight can be reduced. Same machine size--bigger components can be machined.	Constructional hydrostatic solutions. Several pressure pockets have to be tensed. Essential to take loads and moments in all directions. Several pressure pockets in different orientation required. More design space necessary. Because of oil leakage, a sump pan has to be integrated.	Linear roller guidances take loads and moments in all directions. No tensioning of different bearings. High performance in small design space (high load capacities, high stiffness). Only a few bearings required. Small effort to machine the adjacent construction. Compact design space--weight can be reduced. Same machine size--bigger components can be machined. Regarding dimensions exchangeable to linear roller guidances in size 45.

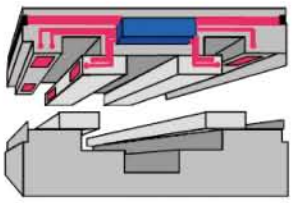
General Comparison of Different Linear Guidance Systems Table 2

Criteria	*Roller Guided Linear Guide*	*Hydrostatic*	*Hydrostatic Compact Guidance*
Illustration			
Machining of the adjacent construction	Milled surfaces for rails and carriages (ground preferred) easy and cost-effective.	Surfaces are grinded respectively and scraped. Very complex large. Number of different pressure pockets, and large plains have to be generated.	Milled surfaces for rails and carriages (ground prefered) easy and cost-effective.
Assembling	Systems are ready to fit; preload is already adjusted; easy alignment with the help of locating faces.	Hydraulic pressure has to be applied within the assembling process. Time- and cost-intensive. Adjustment of stress in pressure pockets.	Systems are ready to fit. Easy alignement with the help of locating faces. Hydraulic pressure has to be applied within the assembling process. Integrated pressure valves already adjusted. No further adjustment necessary.
Oil-lubricant consumption	Lubricant is supplied by cost-effective central lubrication systems; piping with low priced and flexible 4mm plastic pipes possible; minimal lubricant consumption.	Hydraulic power pack including oil filter and compressor cooler necessary (depending on size, about 8,000 - 15,000£). High oil consumption. Big pipe diameter (L16-L18); difficult to integrate into the machine; design space affected.	Hydraulic power pack including oil filter and compressor cooler necessary (depending on size, about 8,000 - 15,000£--standardized solution developed with HYDAC). Due to sealing oil consumption reduced to 2.4g / km per carriage, pipe diameter (L10-L12) a bit smaller than conventional hydrostatic guidance; integration might affect design space.

General Comparison of Different Linear Guidance Systems Table 3

Criteria	*Roller Guided Linear Guide*	*Hydrostatic*	*Hydrostatic Compact Guidance*
Illustration			
Running characteristics	Roller guided guidances don't show a stick slip effect; roller guided guides achieve a max. velocity of 4m/s (sufficient for machining centers); veriation resp. pulsation of the friction reduced to a minimum by optimized raceway geometry; due to rollers entering and leaving the loaded zone, a stroke pulsation of a fraction of µm occurs.	No stroke pulsation; very small and smooth friction.	The hydrostatic compact guidance achieve a max. velocity of 4 m/s (sufficient for machining centers); no stroke pulsation; one carriage has a friction of 20N – caused by integrated sealings; friction is very smooth.
Accuracy	Running accuracy of the different concepts is on the same level.		
Damping and influence to the machining accuracy	Due to the rolling contact (steel - steel) vibrations are transferred without damping: if critical vibrations show up in the application, this can lead to an unstable machining process; surface quality is affected. Damping can only be realized by additional components (RUDS for example).	The large contact areas of the hydrostatic guidance high damping constant can be generated; vibrations are damped efficiently; improved surface quality; cutting depths can be increased as well. Damping has only a positive effect if critical vibrations show up in the application. Influence of damping can precisely be simulated.	HLE 45 has a damping constant of 470,000 kg/s: vibrations are damped efficiently; improved surface quality; cutting depths can be increased as well. Damping has only a positive effect if critical vibrations show up in the application. Influence of damping can precisely be simulated.

General Comparison of Different Linear Guidance Systems Table 4

Criteria	*Roller Guided Linear Guide*	*Hydrostatic*	*Hydrostatic Compact Guidance*
Illustration			
Robustness – maintenance	Robust. Accoring to the dimensioning, a correspond-ing safety vs. damages by unexpected loads can be achieved (for ex. loading / unloading). In the machine tool sector, the nomal life time is quite long. Carriages and rails relative easy to change.	Very robust. Very long life time. In the case of a damage, the exchange is very complex. Time- and cost-intensive.	Very robust. Very long life time. Carriages and rails relative easy to change.
Heat development	Friction of the preloaded rolling contact leads to heat development of the guidance. Heat development depends on load and duration of the movement. Moving permanently with a load of C/P4, the guidance achieves a temperature of about 50°C. In applications like portal machines or horizontal milling machines, the heat development of a linear roller guideway can be disregarded.	Heat development of a hydrostatic guidance is caused by the oil temperature. Oil has a temp. of about 50°C.	Heat development of a hydrostatic guidance is caused by the oil temperature. The HLE is adjusted for an oil temp. of about 30°C.

APPLICATION

Technology Trends in Mold Industries

As one of the most important manufacturing method for modern industry, mold is profoundly used to achieve fast production of various industrial products for the high-efficient and cost-effective requirements. The booming industries on 3C, optoelectronics, communications and automotive directly impacted technology integration, thus enabled the mold to be widely adopted in various industrial mass productions. Mold Industries such as automotive panel die, automotive electronic parts, home appliances, consumer electronics, mobile communication products, OA molds, medical supply, instrumentation, plastic daily necessities and toys, aerospace components, rail transportation related products, molding, and other related types of machinery and mold products.

However, due to the global status of increasing cost of raw materials and labors, coupled with the impact of the global financial crisis and shrinking market, the world's mold industry is therefore subject to different degrees of impact, so profits of it encountered declination. Additionally, as information technology and networking evolves, mold manufacturing inevitably entered into a new era of globalization, which brought increasing competition, formed much higher demand on product quality and made strict schedule requirements. Given that, to be the master of market, one must be well-organized the cost control, production efficiency and technical factors, all of which naturally make obvious differences among other competitors. Viewing from the aspect of development trend, the contemporary mold industry goes towards a common goal as follows:

(1) Reduce production costs and shorten delivery time to maintain profits
(2) Accelerate the test time of prototype to meet production requirement
(3) Improve the overall quality of dimensional accuracy, and
(4) Apply the design of new processing techniques, such as the use of advanced manufacturing technology, computer process simulation technology, and unmanned automated processing, etc.

As the integration of global market gradually shapes up, the entire manufacturing industry is characterized by the development of fast production on a variety of products and the increasingly intense market competition. Reducing production costs and shortening delivery time are emphasized as important by manufacturing industries. Mold design and manufacturing process both matter and impact on the quality of the mold. In order to make improvement on the mold accuracy and mold quality, it is crucial for mold Industry to continuously develop new applications and to integrate various production technologies in order to enhance the core competitiveness.

Furthermore, the rationalization of production cost has become the primary basis prior to operation, as well as the development of new production techniques which become an inevitable and beneficial trend. The optimization resource is made of innovative engineering technology (high-speed milling, hard machining, automation, process simulation, etc.), and management techniques (cost estimation and control, file handling, personnel training and operational management capabilities).

In order to adapt to above requirements, the mold industry will be on the way of following technical trends.

Application of CAD/CAM/CAE

Conventionally, the mold was mostly designed with experience principles during the design phase, and now is gradually oriented toward the theoretical calculations and computer-aided design. CAD / CAM / CAE technology has been widely used in mold manufacturing to ensure that the mold structures are well designed as reasonable scientific models. The technology not only greatly improves the mold accuracy but also reduces the cycle of mold processing, which enhance product development time.

APPLICATION

Ultra Precision Machining

High precision molds are requested in terms of extreme dimension of extra-large and ultra-compact ones. About a decade ago, the accuracy of precision molds of generally 5um, has now reached 2 to 3um, soon upcoming with 1um precision molds. With the miniaturization of components and precision requirements increase, some precision will be within 1μm.

Multi-Purpose Compound Mold

Multi-purpose compound mold will be further expanded. Multicolor and multi-material plastic mold will also be having rapid development. This kind of mold can shorten the production cycle and assembly time, which in the future will be developed in different areas with various applications.

Hot Runner Technology

The advance of Hot Runner technology in the past decades improves the production yield of finished products and quality, and the waste of raw materials is dropped. Up to date, hot runner technology is already quite a prevailing technology, which for the foreseeable future will be taking over higher proportion of plastic mold.

Gas-Assisted Injection Mold & High-Pressure Injection Mold

With the plastic molding process of continuous improvement and development, gas -assisted Injection mold and adaptation of high-pressure injection molding process will follow up dramatically. Precision plastic parts are generally categorized into three types - dimensional accuracy, geometric precision and appearance precision. Mold manufacturer will continue to focus on the craft development in order to achieve the precision requirements for market.

In injection molding, the molding shrinkage affects the most for molding accuracy. High-Pressure Injection molding can reduce the shrinkage of Resin, increasing the dimensional stability of plastics. Gas-assisted Injection molding technology is now more mature to improve the internal structure and appearance of plastic parts, and brings advantages with a low injection pressure and decreased deformation. Fewer raw materials are used but with higher productivity generated, thus greatly reducing costs.

Mold Standardization

The application can significantly reduce the manufacturing time and costs through shortening manufacturing cycle, and in the meantime improve the quality and precision of mold products. It can foresee that standardized molds will be comprehensively used in various types of applications, such as plastic, stamping mold base, thimble, ejector sleeve, screws and springs, which are all related to the formation of standard parts.

Rapid Economic Mold

In today's technology, the multi-specification and small batch manufacturing become more and more popular. Because the product life cycle is short and patterns change frequently, the cycle requirement of mold production is requested as short as possible. This trend results in that the development of rapid economic mold has drawn increasing attention with broader prospects.

A. The development of various super-plastic materials to make molds is considered. The main characteristics of this mold are with advantages like simple manufacturing engineering, easy to control accuracy, small shrinkage rate, cheap, and higher life expectancy.

B. The adoption of alternative material is considered, such as cement and plastic materials used for producing vehicle cover molds. The application is already applied in the United States, Japan and other countries. These techniques require further improvement to expanding for wider applications.

C. Rapid economic mold, such as the middle and lowmelting-point alloy molds, spray-formed mold, electrimolds, precision molds, stack mold, ceramic plastic mold, epoxy molds and optical modeling, will be further developed.

D. Quick-changing mold and quick-changing punch, etc. will grow over time. In addition,

E. The use of computer-aided robotic operation, quick die-change equipment and quick tryout device technology will continue to evolve.

Die-Casting Mold & Plastic Mold

The light-weighting demand and design makes die-casting mold extensively used in production, along with the requirement of its growing complexity and long life expectancy. Similar trend is also applied to plastic mold due to material substitution for steel and wood, now plastic mold is gaining more values and marketability. Die casting mold and plastic mold will be further developed for sure.

High Efficiency Machining & Tool Adoption

Due to the ascending complexity of product contouring structure and prevailing adoption of high-rigidity material, the precision metal mold machining will keep on sustainable development. Though electric discharge machining was used conventionally to reach requirement but also encountered the situation common in slow processing and high production cost. Presently, the 5-axis machine tool is more and more used to machine the complex parts and to provide better surface finish plus with short machining time, and is getting higher attention gradually.

For decades of development effort, MICROCUT supplies with latest innovative technology on high-end machine tool. The 5-axis VMC series provide reliable precision and mill-cutting capability, and are capable of machining the complex workpiece in terms of any contour or material.

Innovation Capability

In order to meet the changing needs of users, more firms nowadays even started to receive small quantities of single-piece production orders. How one can do without increasing production costs while increasing speed of development become the brunt of the current every business problem to be solved.

As for the evolution of manufacturing technology, mold industry is keeping on original innovation, integration and introduction of absorption and re-innovation, three of which show the major trends. As types of mold show up more and more items, and as the increasingly wide application of a broad range, the mold has gradually become a set of mechanical, electrical, optical, and chemical of high-tech products, combined with CAD / CAM / CAE, high-speed machining, rapid prototyping, precision molding, super finishing, and other technology. The future development will be more emphasized on the technical-side integration of innovation than the other two, so whether the mold industry enhances innovation capability independently will be the key to global competition. In the foreseeable future, the demand for the mold industry is still increasing, and its growth rate will maintain a rapid momentum.

Moldmaking by MICROCUT MCG-5X

Reference

1. *Trend for mold design and manufacturing http://www.chinairn.com/news/20130312/17024173.html*
2. *Innovation and development of mold industry http://www.tmdia.org.tw/industry_detail.asp?sn=5853*
3. *MA, N.Y., CHUANG, T.L., LI, H.C., CHO, T.P. (2013) Research for techniques of mold machining and manufacturing, Machinery Monthly, Vol.451*

The Guide-Way Protector for High Speed Mac
Telescopic Cover with CSPM

MICROCUT V-26 equipped with shear-type telescopic cover with CSPM

About Telescopic Cover

The main function of telescopic cover is to protect the machine guide-way surfaces and components of moving axes of machines from chips, dust, liquid, and fallen objects. A wide range of telescopic covers can be applied on machine tools according to the different brands' production with different types of covers. The Challenger is going to introduce the application of shear-type telescopic cover with compound synchronized parallel mechanism on MICRO-CUT high speed machines.

Shear-Type Telescopic Cover with Compound Synchronized Parallel Mechanism

For high speed applications, telescopic covers must meet extreme requirements, such as capabilities of moving on traverse path in a short time and smoothing speed acceleration/deceleration during high speed machining. The compound synchronized ability of telescopic cover can ensure the balancing force on moving axes under high speed machining which can limit the wearing down of the machine and to prolong the machine life.

CSPM Benefits High Speed Machining

As mentioned above, the shear-type telescopic cover can prevent the guide-way surfaces, electronic equipment, and components of moving axes of machines from the invasions of cutting chip or powder, oil mist, and cutting fluid. Equipped with the CSPM, the shear-type telescopic cover is composed of a plurality of cover sections. Instead of the working of traditional shear-type cover to pull the cover section by section, the compound synchronized parallel mechanism pulls the sections of cover in synchronous motion to improve the working efficiency and optimize the performance of high speed cutting. Apart from that, the mechanism can reduce noise. During high speed machining, the loud sound is unavoidable and can be irritating. However, the CSPM can smooth the machining process and lessen the noise to make your workplace more pleasant. Furthermore, during operation, CSPM ensures perfectly impact-free extending movement, as well as optimizes the movement stabilization and equalizes the loading force, and extend the longevity of the cover.

hining Center –

Compound Synchronized Parallel Mechanism

Buffalo Machinery cooperates with the components supplier KEYARROW of which shear-type telescopic cover with compound synchronized parallel mechanism is applied on MICROCUT high speed machining centers V-26 and V-30. KEYARROW is continually developing new technology to meet customers' demands since the 1st stage production of DSM series, shear-type telescopic cover with dual synchronized mechanism, and then the following was the 2nd stage production of SPM series, shear-type telescopic cover with synchronized parallel mechanism. Until now, evolving the 3rd stage--CSPM series, shear-type telescopic cover with compound synchronized parallel mechanism was invented, which means that two sets of SPM synchronized parallel mechanisms are integrated and the performance is the best when applying to the high speed machines. The CSPM has received seven patents granted by 16 countries, including Taiwan, China, Japan, US, India, Russia, German, UK, France, Swiss, Italy, Spain, Poland, Czech, Turkey, and Austria.

Reference:
2013 KEYARROW Press Release
http://www.keyarrow.com/

** The Challenger would like to acknowledge KEYARROW for the contribution of photos and information.*

Traditionally, the shear-type telescopic cover with synchronized mechanism is limited to "one limit point" while moving. However, KEYARROW developed the "two limit points" synchronized parallel mechanism (SPM). Then, followed by the SPM, the further invention was developed—the "three limit points" compound synchronized parallel mechanism (CSPM) is specially designed for the high speed machining. Under the condition of high speed of 200M/min 3G, the cover is smoothly paralleled moving in stability since its streamlined structure and high rigidity. Moreover, the CSPM can avoid crooked movement in virtue of the optimization of bad length-width ratio.

Shear-type telescopic cover

2013 MICROCUT—Innovation Technology Seminar–Part II

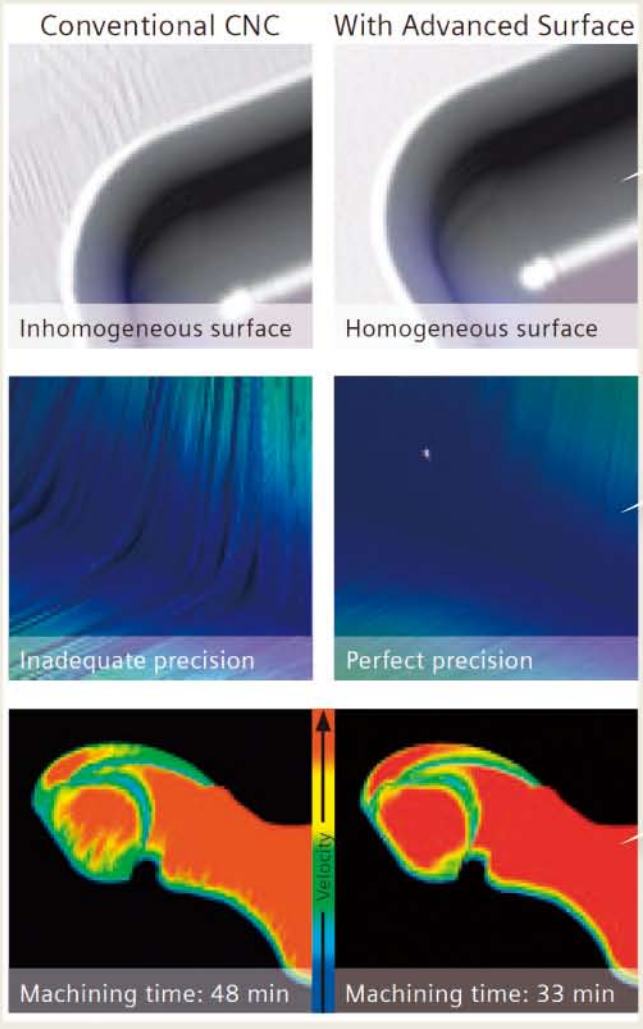
**Part 1. has been published in the Issue 19 of MICROCUT – The Challenger journal*

Advanced Technology for the Control of Die & Mold Industry

CNC systems for Mold & Die machining are demanding; therefore, SINUMERIK controllers provide special high-speed functions and milling cycles, and are not necessary to refinish surface through intelligent path control with Advanced Surface. When using the path control, an optimized "look-ahead" function helps to achieve perfect surface quality through reproducible results in adjacent milling paths, accuracy and influenced speed. The new compressor has also been optimized to ensure exact contour precision and high speed machining. An intelligent jerk limitation puts less stress on the mechanical system of the machine. It enables smooth acceleration and deceleration during all dynamic responses and thus extends the service life of the machine. Another major advance is the automatic harmonization of the velocity profiles on adjacent milling paths through the CNC. It is also effective during the forward / backward line-by-line milling of contours and free-form surfaces and results in a more precise and perfect workpiece quality.

**Presented by SIEMENS*

Advanced Surface - The new intelligent path control



Perfect Surface Quality with Advanced surface
Due to optimized "look ahead", reproducible results are in adjacent tool paths, and accuracy and velocity are higher.

Workpiece Precision with Advanced Surface
Highest contour accuracy results of the optimized compressor.

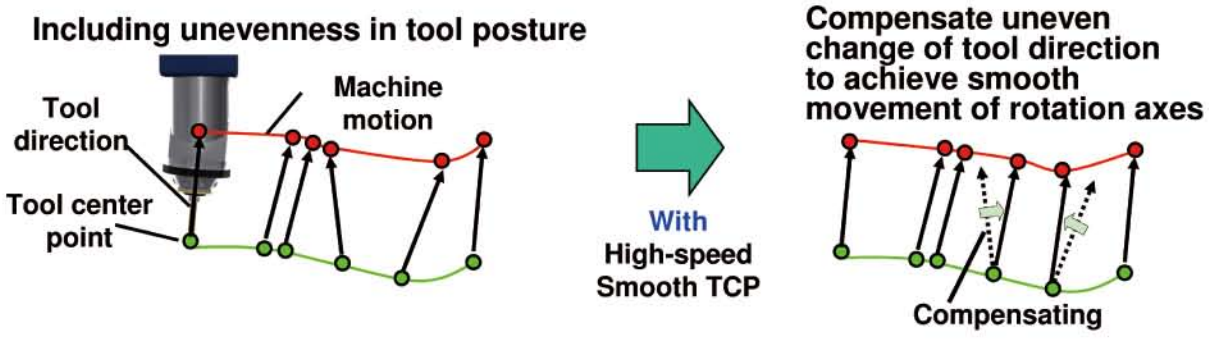
Very High Machining Speed
Through an improved velocity profile

High-End Techniques for High Speed Machining

FANUC Series 0i / 0i Mate – MODEL D has excellent operating guidance and enriched control functions such as AI contour control and NANO interpolation, especially the advanced digital servo technology like SERVO HRV3 Control for high speed and high precision. Also, the 30i / 31i / 32i / 35i - B series offers newly enhanced features and functions with new advancements in operability, reliability, and maintainability. High-speed and high-accuracy machining is achieved through enhancement of synchronization between spindles and servo axes and high-precision processing in nanometers and reputed HRV control. To reduce down time, fault diagnosis and preventive maintenance function are enhanced. Handy operator panel iPendant and USB memory port for CNC improve the operability. Besides, a leading-edge high-reliability technology, ECC (Error Correcting Code), is used to correct errors if they happen during data transfer. Abundant alarm detecting functions of I/O Link i surely identify where the failure occurred and the failing cause. These functions minimize the down time of machines.

In addition, the FANUC Series 30i – B / 31i - B5 is capably applied to the high-speed 5-axis machining; the machine can move smoothly by compensating program command of Tool Center Point (TCP) automatically. The fineness of workpiece surface is improved and the cycle-time is shortened. Furthermore, the FANUC Manual Guide i is an integrated operation guidance, which provides handy operation guidance from programming through machine operation on one single screen. It can be applied to lathe, milling machine and machining center.

*Presented by FANUC



RAM Spindle Tolerance Compensation Techniques

MICROCUT RAM-Type Horizontal Borers

MICROCUT's newly developed CNC RAM-type boring and milling machines, expanding models of HBM series, including T / TE type (with working table), TD / TDM type (with working table / double column), and floor type can be applied to 5-side / 5-axis machining. The applied fields include the die & mold industries, wind mills / water power / solar power, and shipyard / sheet metal industries. The HBM series horizontal borers can perform the perfect jobs in wide range of all fields.

RAM with hydrostatic system

HBM-140F has two different ways supporting the device for various applications. Roller bearings fit in front of the spindle (2 sets) and ball / angular contact bearings are at rear, which provide oil mist and oil spray devices with suction system in returning oil for lubrication. Two compensation systems promise a high tolerance when the RAM with extra accessories fitted. Head clamping is activated while machining. Also, mechanical counter weight with holding device ensures a smooth Y-movement and multi-axes simulated movement. The result shows that Ram compensation works perfectly if the head is clamped to the column. By the experiment, the result confirmed that the structure of Ram can be loaded with the proposed Ram compensation system and works perfectly. Furthermore, counter weight (balancer) compensation guarantee tolerance within the requirement when the additional device placed on the front of Ram. Besides, an electro-hydraulic monitoring and compensation system is provided for Ram tolerance, and the micro processor is developed to act IN-TIME feedback for CPU to react the required compensation.

The results mentioned above are solid and have already published in the International Journal of Advanced Manufacturing Technology. MICROCUT provides quality-guaranteed products to our distributors and has a great support from all the CNC manufacturers who are not just the component suppliers but also share more about advanced techniques with MICROCUT.

*Presented by BUFFALO MACHINERY CO., LTD.

People

My Life & My World Trip Part III

Travel, in the younger sort, is a part of education; in the elder, is a part of experience.

--- St. Francis Bacon

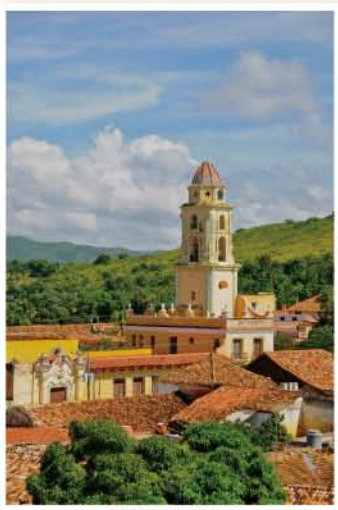
photo: Mr. Shuichi Hirota at Cuba

During the round-the-world trip, Mr. Hirota visited many countries which he has been to for work, but the mood and the scenery he wanted to experience was completely different from work. For travelers, planning a trip, communicating with locals, experiencing different cultures and viewing varied landscapes can always inspire their spirit.

The content of Mr. Hirota's journey is very diversity. Personal interests, such as playing golf at famed St. Andrews, England is included; long stay in one place for taking classes of language and cooking, and hire a local guide to explore a city thoroughly are also parts of the experience. Furthermore, taking different forms of transportation like Nile River's cruise and trains in Europe can also be a joy of journey.

Profile
- Shuichi Hirota
- 1946, born in Tokyo, Japan.
- Graduated from College of Law, Nihon University.
- M.A. degree of Department of History, National Taiwan University.
- Director of Daisho Tekkousho Co., Ltd.

However, even if everything was planned carefully, Mr. Hirota had faced some unexpected situations during the trip. In Europe, because the pronunciation of Vienna in Germany is similar to Venice, he found out the destination of his train ticket was wrong while he was about to take the train. Therefore, all itineraries had to be changed immediately. During the journey in Peru, Mrs. Hirota got server altitude sickness because of flu, in order to get down from the mountain as soon as possible, they had to take a train heading to the reverse direction of their trip, and changed their plan straightaway. These are situations that need to deal with instantly relying on travelers' ability and flexibility. These situations are contingencies but also priceless memories.



Trinidad, Cuba

World Heritage City of Aleppo, Syria, Middle East

The beautiful view is impossible to see anymore, after Syria civil war in 2012, among which most architecture was destroyed.

People

After the round-the-world trip, Mr. Hirota visited North Africa, Middle East and Cuba sequentially during 2011 and 2012. He plans to visit the opening up Myanmar in 2013. Alternatively, he wants to spend four months to have another round-the-world trip, visiting sights that didn't have chances to go in the last trip. Furthermore, he wants to visit Tibet once again before turning age 70.

What Mr. Hirota sees and hears during the trips educate him continuously. He emphasizes that people should believe what they see with their own eyes, not depending on media reports only. He also describes travel as buying lottery, which is so uncertain but full of surprises and opportunities at the same time. The key point of travel is not its destination, but the breeze, the stream and the light tasted during the trip. There is no limitation of knowledge that the Earth is the classroom and people in the world are the mentors.

Simba tribe, Namibia, South Africa

At the beginning of interview, Mr. Hirota mentioned that he always makes a "20-year plan" every year since he was 20. In the plan he lists all the targets and things to be achieved for every single year for the next 20 years. The world trip in the plan had been carried out as scheduled, yet it is an opening, more wonderful trips and experiences are going to accompany and enrich Mr. Hirota's life.

Havana, Cuba

Season's Greetings

Warmest wishes

for a healthy and prosperous new year!

~ From Buffalo Machinery Co., Ltd.

and The Global Distributors

www.exactmachinery.com

EXACT MACHINERY CO.,LTD

EXACT

OUR PROFESSIONAL INCLUDING

CNC Tilting Rotary Table
CNC Rotary Table
Index Table
Coupling Gear

HC-1800H-B

Non-lifting CNC Horizontal Hydraulic Coupling Gear Index Table

ERT

CNC Tilting Rotary Table

NCT+APC

CNC Rotary Table + APC

EXACT

No.418,Shueiyuan Rd.,Fongyuan City, Taichung County 420,TAIWAN
http://www.exactmachinery.com E-mail:info@exactmachinery.com
TEL:886-4-25158290 FAX:886-4-25158291

MICROCUT
THE CHALLENGER

MCG-5X
5-axis Gantry type VMC

DUAL Series
Dual spindle CNC Lathe

MU-5X
5-axis VMC

LT/HT Series
CNC Slant-bed Lathe

BNC Series
Teach-in Flat bed Lathe

V Series
V-20/5

BNC-3000/3500/4000
Large bore CNC Flat-bed Lathe

MM Series
Linear guideway VMC

BNC-5000/6500
4-Guideway Heavy Duty Lathe

MCV Series
Box way VMC

HBM-4
Table-moving Horizontal Borer

HBM-4T/5T
Travel-column Horizontal Borer

TT-40
Bridge type Twin-table VMC

TC Series
Travel Column VMC

VMC Series
Medium/Large Box way VMC

Buffalo Machinery Co., Ltd.
36th
Quality and Service Built Our Business

National Award of Outstanding TAIWAN

ISO 14001:2004
EMS 546518

ISO 9001:2008
FM 538421