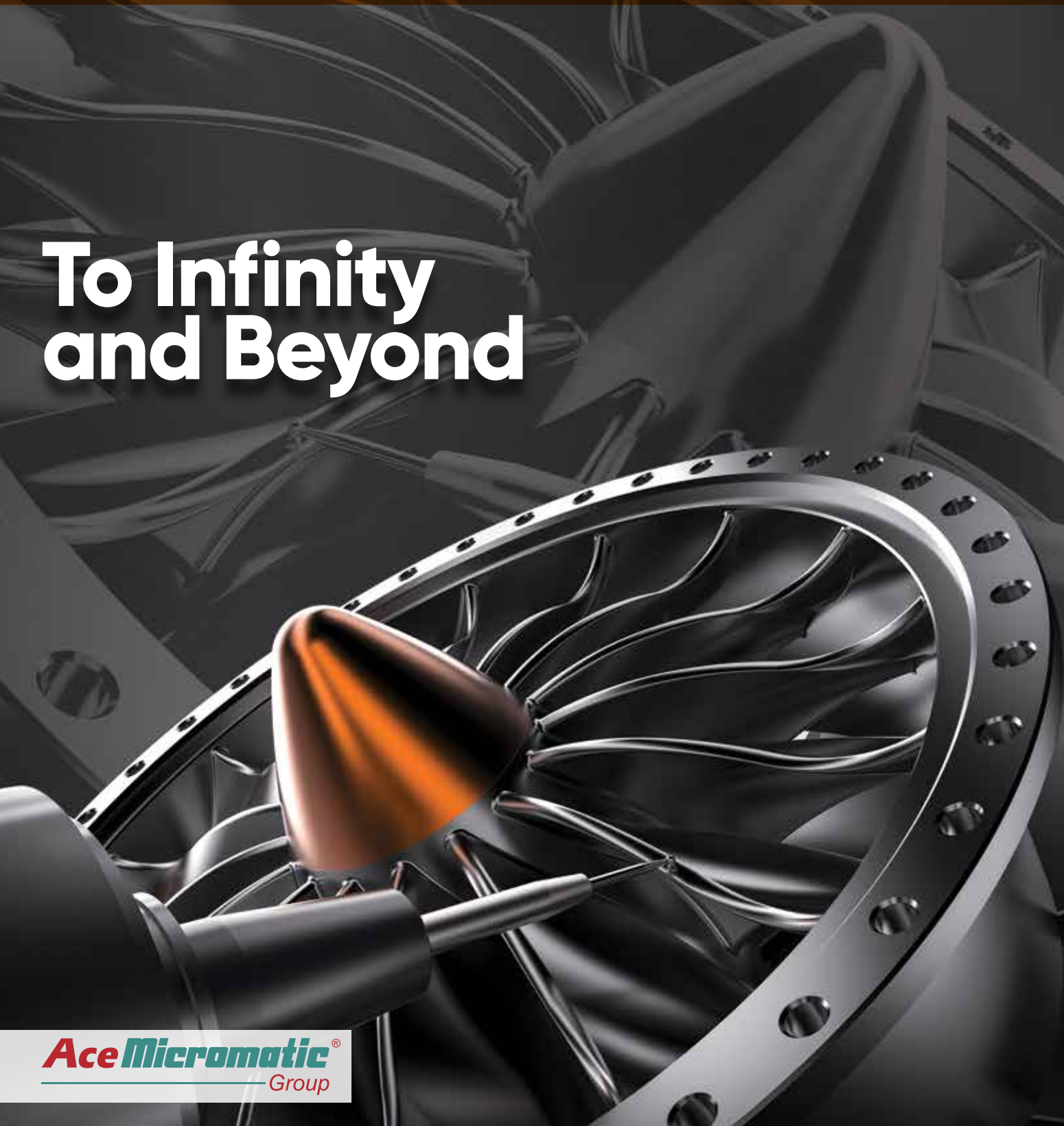
CNC Plus

Ace Micromatic Group Newsletter

Issue 04 January 2019



To Infinity and Beyond

Ace Micromatic® Group





ACE DESIGNERS

Turning solutions

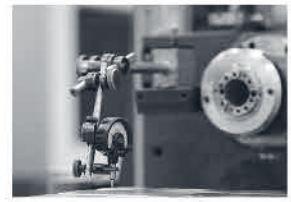
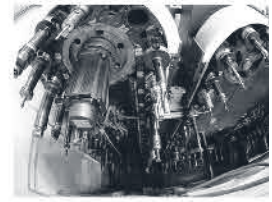

AMS®

In Pursuit of Excellence

Milling solutions

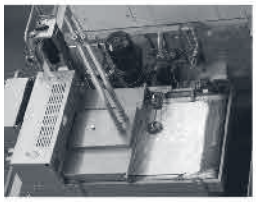




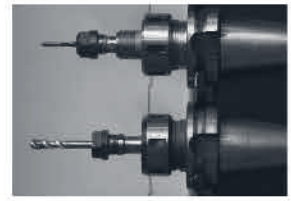



ALL YOU NEED IN MACHINING







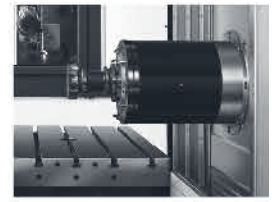



AmiT

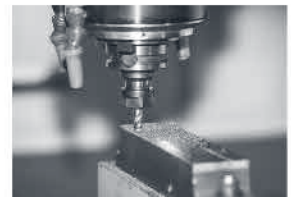
Industry 4.0
& IoT solutions

PRAGATI

Automation solutions








Micromatic Grinding Technologies Ltd.
Reliable customer friendly grinding solutions

Grinding solutions

Micromatic

Sales & service

TAURUS

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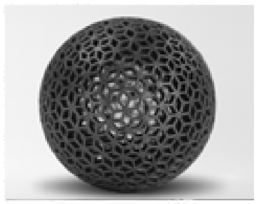
3D prinitng



Ace Micromatic Group is constantly striving to raise its bar in its endeavour to aid its customers from the Aerospace sphere to achieve the extreme precision the industry demands. Its stellar products and services are a reflection of its consistent innovation and the intention to go beyond the infinity and reach the unreachable.

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New Beginnings are in Order

Hello!

2018 was a great year for the manufacturing industry in India that presented us with many possibilities to integrate globally. However, there remains a lot to catch up with and meet the challenges strewn along the way. For this, it's crucial that we break away from our usual ways and adopt a fresh perspective on manufacturing. IMTEX 2019 offers just the right opportunity to do so.

Smart manufacturing is also people-oriented and helps people do their jobs better.

This IMTEX, the Ace Micromatic Group has its presence in two halls – the new Hall 5 houses all our metal cutting solutions in turning, milling and grinding and Hall 6 showcases our additive and IoT solutions.

Smart manufacturing, estimated to become the next industry revolution or Industry 4.0, is slowly being embraced by the Indian manufacturers owing its multi-fold benefits. It helps companies set up traceability in the supply chain to provide the information needed to ensure suppliers are operating in a productive, transparent and sustainable way. By faster data gathering, processing and communication, smart manufacturing also enables agility, leading to faster decision making.

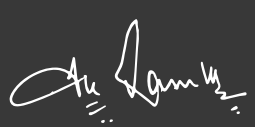
Smart manufacturing is also people-oriented and helps people do their jobs better. For example, providing factory operators with machine interfaces that deliver production and quality data allows them to act in real-time to address slowdowns or quality variances. Delivering information to procurement executives about a hitch in a critical supply chain enables them to quickly ramp up alternative sourcing.

When you provide everyone in your company with access to the data they need to solve problems and empower them to use it, you change the mindset of everyone in your company. They no longer simply do what they're told to do. Rather, they engage in continuously improving work practices to eliminate waste and drive value.

With these aspects in mind we are working on the theme of "Smart Manufacturing is Smart Leadership" in our endeavours with our customers this year.

This CNC Plus, we spotlight on Ace Micromatic Group's progress with the growth of Indian aerospace industry. The domestic aerospace component manufacturers are scaling up, offering us an opportunity to serve them and test our capabilities. We extend our gratitude to them with a promise to continue doing our best going ahead.

Hoping to meet you at our booth at IMTEX 2019 and wishing you a very happy, healthy and prosperous new year!



T K Ramesh
Managing Director and CEO
Micromatic Machine Tools

Source: Magic Wand Media

Auto sector to attract $8-10 bn FDI by 2023

New Delhi – The country's automobile sector is to attract around $8-10 billion in local and foreign investment by 2023 predicted the Ministry of Heavy Industries & Public Enterprises in the 'Year End Review 2018'. The sector attracted $16.5 billion in foreign direct investment (FDI) between April 2000 and December 2016.

"The growth of the automotive industry in India since the early 1990s is a shining example of how industrial prowess supported by progressive policies and national economic growth can yield rewards to all stakeholders," the review statement said.

"The advantage of experience, scale and expertise of Indian automotive companies along with the stimulus of high domestic demand provides the domestic industry with a unique opportunity to achieve global leadership in both manufacturing and engineering, especially in emerging areas," it added.

As per the review statement, the sector's contribution to the total GDP is 7.1 per cent and it provides employment to about 32 million people, directly and indirectly.

India needs indigenisation in Aerospace electronics

Hyderabad – Aerospace and Defence sector electronics consumption is high in India but the domestic production is negligible, particularly in the advanced or specialised electronics space, said Venugopal Menon, Senior Director, Society of Indian Aerospace Technologies & Industries (SIATI).

"Most of the material needed to make electronic systems is all imported and small and medium enterprises (SMEs) in India cannot afford to procure such expensive material to make electronics. So, only large Indian companies are in this space. ISRO is looking at ways to address this in order to enable SMEs to get into electronics manufacturing," he added.

The import component in many of the systems and sub-systems that the Indian defence wings use is estimated to be over 60 percent at present. SIATI has been encouraging Indian companies for tie ups within the country and also with overseas companies.

Manufacturing continues upward trend

Mumbai – According to the RBI, the manufacturing sector, particularly textile and iron and steel segments, has maintained a steady pace of sales growth in the second quarter of 2018-19 as compared to the period in the previous year. Demand condition in the manufacturing sector retained the pace in the September quarter of 2018-19 as supported by strong sales growth (year-on-year) as per the RBI analysis of 2,700 listed private sector non-financial companies. The data of abridged financial results of 1,734 companies indicate that the manufacturing sector posted a net profit of ₹47,100 Cr in the reported quarter, up 29.4 percent from the same period last year. "The manufacturing sector sales growth was mainly supported by robust demand conditions in chemical and chemical products, iron and steel, and petroleum products industries coupled with significant improvement recorded by textile industry," the RBI said.

Innovation is in the Air

Expert Opinion

S Sekhar Vasan, Chairman & Managing Director, Sansera Engineering Pvt Ltd, the leading manufacturer of high-end aeronautical parts, proffers his take on the opportunities and advantages India has to become one of the major destinations for the Aerospace sector.

To meet the stringent demands of aerospace sector, right talent and training is highly crucial and so is a strong ecosystem to strengthen the entire value chain. Kindly share your views on this.

Mr Vasan: The standards and requirements of OEMs and Tier 1s in the Aerospace sector are different from Automotive or other sectors. It again varies from one OEM / Tier 1 to the other. It is a huge challenge to meet these requirements where a complete ecosystem has to be in place like special processes such as surface treatment or heat treatment with the necessary approvals from the respective OEMs or Tier 1s. Today machining is not a big challenge to the Indian companies because we can import best of the machines for the right application. Machining knowledge is also well advanced in the country. The biggest challenge is developing and retaining the right skill set, which involves training, technology transfer and decades of experience. Added to this is the sourcing of the raw materials from the approved mills. This is mostly imported today because we do not have any approved mills in the country to source these raw materials which is again a factor where we lose our competitiveness. All this makes it more sensible to form a cluster to develop a complete ecosystem.

Source: AMG

As a manufacturer of high-end aeronautical parts / products please share your thoughts on what kind of technological upgradation is required by the Indian machine tool builders to subsequently facilitate meeting your high-precision requirements?

Mr Vasan: There are a number of things that can help us move up to the next level including high-speed machining with required accuracy levels; large stroke 5-axis machines; better spindle technology to ensure continuous machining; accuracy; reliability and special purpose high-end machines.

What are the emerging trends in the Indian industry?

Mr Vasan: Going green is a growing trend. Hence, there is an increasing adoption of environmentally friendly practices in facilities such as fluid-free cutting. Smart manufacturing is another trend which will help us compete with our global peers on an equal footing. The advantages that it offers will help us significantly.

> The business opportunities are quite promising in the Aerospace sector in India because most OEMs and Tier 1s are looking at low-cost countries as the drivers for cost reduction and capacity build up.
>
> **S Sekhar Vasan**
> **Chairman & Managing Director**
> **Sansera Engineering Pvt Ltd**

How do you foresee the growth of aerospace machining in India?

Mr Vasan: The business opportunities are quite promising in the Aerospace sector in India because most OEMs and Tier 1s are looking at low-cost countries as the drivers for cost reduction and capacity build up. This is a big task for them today because the aircraft run rate is increasing. India, known for its engineering capabilities, fits well into this requirement with an advantage of huge engineering man-power available to encash this opportunity. Major OEMs and Tier 1s have already started tapping this resource and reaping its benefits. Going forward India is going to be one of the major destinations for the Aerospace sector. CNC Plus

Cover Story

To Infinity and Beyond

Counted among India's sunrise industries, the Aerospace industry is well known for its stringent aesthetic, functional and design requirements. In their endeavour to fulfill them and make the best of the opportunities, the component manufacturers of the industry have found an ally in the Ace Micromatic Group, owing its slew of cutting-edge machining tools.

Source: Magic Wand Media

Source: AMG

An AMG Machine at work at Sansera Engineering Ltd

The Aerospace industry of India is brimming with opportunities and undergoing transformation of a colossal kind. The rapid growth of airlines and passenger traffic in the past five years has led to an unprecedented demand for new airplanes. In India alone, it is at over 15 percent per year, increasing from around 70 to 200 million passengers in the past 10 years in domestic and international air travel.

With the positive trend consistently on the rise, the Aerospace and Defence (A&D) market is estimated to reach around $70 billion by 2030.

Components manufacturing

A single commercial aircraft needs around 2 to 4 million components. Hence, the rise in the number of airlines and aircraft spells favourable opportunities for Aerospace component manufacturing for India.

With its gamut of advantages comprising low production costs, developing infrastructure, the Government's investor-friendly policies, leading information technology and engineering services, manufacturing expertise, and a huge pool of semi-skilled manpower, the country is being viewed as a competent player in the global supply chain for Aerospace components and parts. We have become an attractive destination for the foreign Aerospace component manufacturers such as Mach Aero and the Trelleborg Group to forge alliances with Indian firms for the manufacturing of Aerospace related parts and assemblies for commercial and defence aircraft and helicopters.

Sensing opportunities, our home-grown automotive component manufacturers such as Maini Precision Products and Sansera Engineering Ltd have also forayed into Aerospace sector, developing India as a preferred location for aero structures, components, sub-assemblies and complex system assemblies.

Optimism among Indian machine tool builders

The proliferation of Aerospace manufacturing companies in India has provided impetus to the local machine tool builders such as the Ace Micromatic Group (AMG) who have upped their game to deliver world-class high-productivity, high-accuracy yet cost-effective machining solutions. They have the capability to adhere to stricter norms in the Aerospace safety, where quality control takes the driver's seat.

Having incorporated state-of-the-art technologies to bring in the requisite efficiency, precision and quality, the local players are equipped with the tools specifically designed to machine light and strong components made of exotic materials and special alloys such as Aluminium, Titanium, Inconel and Waspaloy that can withstand extreme temperatures and pressures.

Furthermore, their proximity helps in procuring faster after-sales and maintenance service of their machines.

Source: AMG

Trelleborg team with AMG machine

❝We started with buying two Turning Centres from AMG in 1997. Today, we have 59. We too have scaled from two machines to several hundred machines. We have grown together. AMG is an integral part of our growth story.❞

Raghavendra Nagaragadde
General Manager
Trelleborg Sealing Solutions, Bengaluru

Partners in growth

The Ace Micromatic Group, comprising Ace Designers, Ace Manufacturing Systems (AMS), AmiT, Micromatic Grinding Technologies (MGT), Pragati and amace solutions, is making the most of this opportunity by catering to the growing Aerospace sector's complex needs with its wide range of CNC cutting tools including CNC Turning Solutions, CNC Machining Solutions, and Grinding Solutions etc.

Among its awe-inspiring long list of customers come Mach Aero Components Pvt Ltd, Sansera Engineering Ltd, Maini Precision Products and Trelleborg Sealing Solutions, Bengaluru to name a few.

Incorporated in 2005 and based in Bengaluru, Mach Aero Components manufactures precision machined components for aircraft. The company has bought a wide range of machines from the Group – Vertical Machining Centre (VMC) Acer and Turning Centres from AMS and Turnmill Centres from Ace Designers.

"Our journey with AMG began in 2006. They are one of the best in the industry. Every year we buy Turning Centres and Milling Machines from the Group. We now have a total of 35 Machining Centres comprising 3-, 4- and 5-axis says Raghavendra Hebbar, COO, Mach Aero Components. "The machines are just right for machining Aerospace materials including Stainless Steel, Inconel, Titanium and other exotic materials," he adds.

Mach Aero Components' products get exported to the Principal company Mach Aero France and from there they are supplied to leading aircraft OEMs including Airbus SAS, Embraer SA and The Boeing Company.

The Bengaluru-based firm, Sansera Engineering, is an engineering-led integrated manufacturer of complex and high-quality precision components for the automotive and Aerospace sectors.

"We forayed into the Aerospace sector in 2010 and by 2012 we had a dedicated plant for Aerospace with AS 9100 certification. Luckily, we grew more than we expected and by 2015 we started supplying to leading OEMs and also Tier 1s. At the Aerospace plant, we manufacture precision machined components and mechanical assemblies which go into the cargo, seating and lighting system. We also supply flight safety critical parts which go into the actuation system of the aircraft," explains Rakesh SB, Associate Vice President, Sansera Engineering.

"We have been using AMG machines since 2004 for our automotive business. In 2012, we got the first AMG's machine for the Aerospace division. We choose machines depending on the accuracy, power, torque and the complexity of the part to be machined," he states. The Aerospace company's manufactured products are all exported and supplied to OEMs like Boeing and Tier 1s like Collins Aerospace, Magellan Aerospace, Meggit.

Today, the Sansera Group has 66 Turning Centres, 42 Machining Centres and 16 Grinding Machines from AMG. For Aerospace particularly, the company has bought six VMCs from AMS.

The more, the stronger

The Swedish polymer group, Trelleborg's business in India,

❝It was in 2004 that we started off our journey with AMG. They have been highly receptive to our ideas and been successfully fulfilling our ever-changing demands. That's the reason we have more than 120 machines from them.❞

S Sekhar Vasan
Chairman & Managing Director
Sansera Engineering Ltd

❝We have a total of 35 Machining Centres from AMG and have never resented the decision to procure them. The best part is we can have two AMG machines at the cost of one imported machine without any compromise on the quality front.❞

Raghavendra Hebbar
COO
Mach Aero Components Pvt Ltd

❝We machine the structural parts on AMG machines. I really appreciate the design part on the coolant management systems on these machines because chips and coolant is one of the biggest concerns in machine tool designing.❞

Rakesh SB
Associate Vice President
Sansera Engineering Ltd

Trelleborg Sealing Solutions, Bengaluru has been manufacturing seals and sealing systems for the last 20 years to cater to Industrial, Automotive and Aerospace sectors. TSS, Bengaluru forayed into the Aerospace around seven years ago and caters mainly to the American market.

Raghavendra Nagaragadde, General Manager, Trelleborg Sealing Solutions, Bengaluru, talks about the company's long association with AMG: "It was in 1997 that we bought two CNC Turning Centres from the Group. Today, we have 59 machines that include a wide range of CNC Turning Centres, Turnmill Centres, Turnmill Subspindle Machines (Ace Designers) and CNC Grinding Machines (MGT). We have also scaled from two machines to several hundred machines and from 10 people to 350 in two decades. So we have grown together. AMG has been a prominent part of our growth story."

Maini Precision Products is yet another of AMG's leading partners. The company is a significant player in both Auto and Aerospace sectors and owns a total of 130 AMG machines: CNC Turning Machines – Jobber (Ace Designers); VMCs – Acer and MCV 400 (AMS), Gemini Twin Spindle Machining Centres (AMS), Grinding Machines – SM 40, SM 63 (MGT). The Aerospace facility of the company has OD and ID Grinding Machines from MGT.

"We are into mid-range component manufacturing and mainly manufacture commercial aircraft parts related to engines, structures and systems," states Ramachandra R, Vice President, Aerospace Operations, Maini Precision Products.

Raising the bar

With the increasingly rising demand from the domestic and offshore markets, India has become one of the key players in the global machine tools scene. The 'Make in India' initiative has further bolstered the growth of the industry.

AMG, with its strength in metal cutting tools, has been offering stellar products and services. However, realizing the needs of a volatile market, the Group relentlessly tries to up its game through constant innovation.

"We have never resented the decision to procure AMG machines. The best part is we can have two AMG machines at the cost of one imported machine without any compromise on the quality front," says Hebbar.

"We find our AMS machines highly reliable and a complete value for money. We have selected them to machine components for the structural parts. "We machine the structural parts on AMG machines. I really appreciate the design part on the coolant management systems on these machines because chips and coolant is one of the biggest concerns in machine tool designing," Rakesh points out.

Nagaragadde has high regards for AMG's CNC Grinding Machines, "It is a very good product of the Group; we have about eight of them. These are sophisticated machines which not many players in the market can provide. These machines have actually helped our business grow."

For even Ramachandra, AMG's Grinding machines are of the highest order, "It requires highly precise and accurate machine tools to manufacture components that

Source: AMG

Mach Aero Components team is happy with AMG's machine standards

❝The top management has fostered a culture of 'customer first'. They are competent and thorough professionals who do not discriminate. They meet our managers personally and hear them out to suggest the right solutions.❞

Pavithra
Manager - Head of Purchase
Secretary - Founder
Mach Aero Components Pvt Ltd

require stringent specifications. In Aerospace, the accuracies are many times below 10 micron which can be achieved only through a reputed brand of machine tools. When it comes to grinding, we have no second thoughts in procuring their machines. They give the desired accuracies expected on Aerospace components."

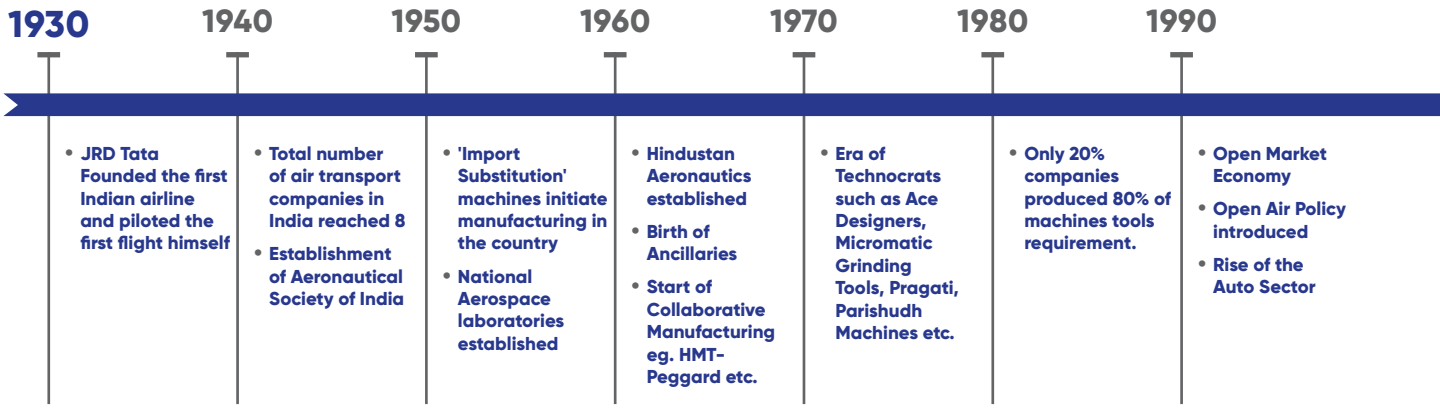
'Customer First' attitude

That AMG's customers have repeatedly bought their machines from the company is a testimony in itself of the machines' world-class quality. But where the customers find each other exactly on the same page is their review on AMG's after-sales services. "We are extremely satisfied with the Group's service. The major advantage is that since they are just 30 km from us, it takes us just a phone call for them to reach us in no more than four hours and diagnose the issue," says Hebbar.

"The top management has fostered this culture of 'customer first'. They are competent and thorough professionals and do not discriminate when we send our managers there. They make it a point to meet them personally and hear them out to suggest the right solutions," notes Pavithra, Manager – Head of Purchase, & Secretary of Jean Malonda - Founder, Mach Aero Components.

"They do not limit us to technical solutions, there have been cases where we have had human relations solutions from them. This is the kind of synergy we share," Hebbar adds.

Rakesh puts forth his view on the



"We have been using AMG Grinding Machines for the last five to six years. When it comes to grinding, we have no second thoughts in procuring their machines. They give the desired accuracies expected on aerospace components."

Ramachandra R
Vice President
Aerospace Operations
Maini Precision Products

service team of AMG, "They are excellent team. We are extremely happy with their approach towards the customers."

"Since we have a wide range of AMG machines, we keep needing the team for customisation. What makes them different is their speed of response. Even the new machines are delivered within two to three months," says Nagaragadde.

Recounting great experiences

Experiences become lasting impressions. Hence, AMG ensures it offers only the superior ones to its customers and prioritizes customer experience improvements. The Group listens to the voice of the customer and iterates based on their feedback. In doing so, it examines the customers' evolving needs and identifies their pain points.

Customers have endless options and it's easy to find an alternative if a company is not meeting their needs. "It has never happened that they have not paid heed to our requirements. We keep needing modifications as per specifications from our Mach Aero France unit. Their co-operation in customisation is absolute. They are extremely thorough in their products and hence, their 5-axis machines have a broad customer base," says Hebbar.

Debashish Sheel, Chief Admin. Officer, Mach Aero Components, narrates an incident to drive this point home, "There was an additional requirement of their machines for our production unit, the opening of which was preponed by a month. We urgently needed four machines since the Chairman of the Group and the Founding Chairman had to inaugurate and press the start button as per the tradition. AMG was highly co-operative and delivered the machines at an extremely short notice. They saved our day and it's something that we cannot forget."

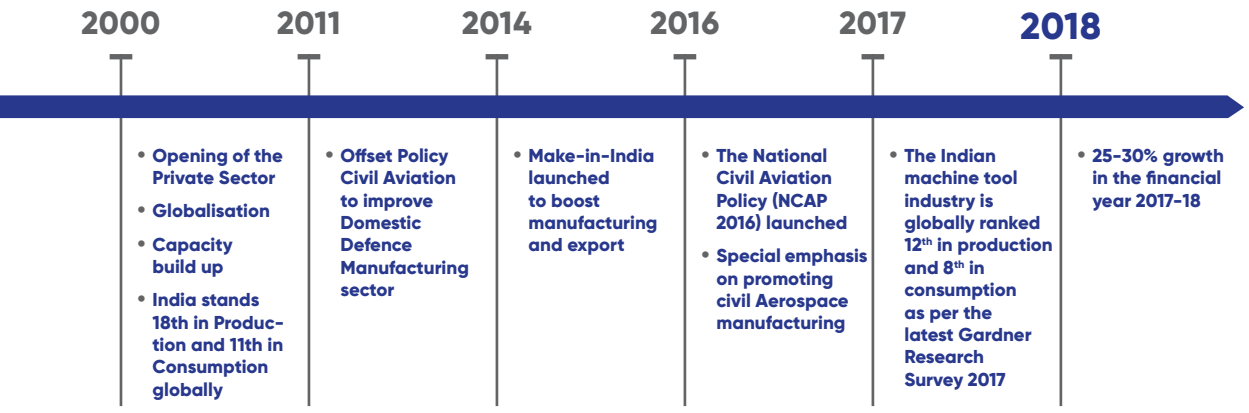
Rakesh shares the sentiment, "They always go the extra mile. The service team tends to a machine repair even if it's late evenings. Recently, we had issues with a spindle, which was taken care of by them rather very quickly. What's amazing is that they even welcome our suggestions and try to incorporate them in either their machines or their service."

It needs special skills to operate the machines

Talking of the challenges that the Indian Aerospace industry is currently coping with, the dearth of skilled manpower deserves a special mention. The all-pervasive manufacturing industry issue becomes all the more crucial in the manufacture of Aerospace components since it requires a unique set of skills, know-how, precision and technology-intensive focus.

Hence, companies such as Sansera and Mach Aero are taking the initiative of training their employees before they are assigned to machine operations.

"We cannot take 0.1 percent chance. It's people's lives at stake. Every operator who gets placed in Sansera must undergo three months of rigorous training and then we put him onto the machine.



Source: https://www.slideshare.net/PrincePatni1/indian-aerospace-market

We have a special training team for that," informs Rakesh.

For this, the company maintains a calendar and the training programmes are scheduled throughout the year. The workforce has a three-hour training sessions twice every week for the routine work. "We start from the basics and we do not just teach them the technical part of the work, we also work on their personal skills. Working on their soft skills changes their attitude, which has led to the overall change in the culture. One needs a different approach for working in the industry where there is no room for error," he adds.

Employees at Sansera are groomed in a way that they develop a sense of ownership. "The person who produces a part is made responsible for that particular part. We have brought in the concept of self-certification. Based on their experience, the operators check the parts themselves and escalate if any issue. If all things right, they certify them," reveals Rakesh.

"Since they lack it, we need to give machine operators on-the-job training. The spirit and approach of the Aerospace sector is unique and the consequences of non-quality are grim. We impart not just technical but also behavioural training."

Debashish Sheel
Chief Admin. Officer
Mach Aero Components Pvt Ltd

Earlier the company made use of simple machines like V-axis. "It was easier to train the operators on those machines. With our progress we have scaled up our operations with the 3-, 4-, and 5-axis," he adds.

Mach Aero in India too offers training to its employees. "We need to give on-the-job training because the spirit and approach of the Aerospace is unique and consequences of non-quality are grim. It's not just technical but also behavioural training," says Sheel.

Towards improvement

AMG firmly believes that no matter how happy or satisfied customers are, there will always be something that will provide the clue to what needs to be worked upon and step up the game. This feedback system is a way to earnestly listen to their demands and identify the gaps to fill in. It helps to take stock of AMG's present standing and build and improve tools to keep up with the changing marketplace. CNC Plus

We extend our heartfelt thanks to our customers for their support and valuable contribution to our magazine:
Sansera Engineering Ltd, Maini Precision Products, Trelleborg Sealing Solutions, Bengaluru, and Mach Aero Components Pvt Ltd

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CSR Activity

Road to Opportunities

The Ace Micromatic Group believes in paying back to the society which has been a paramount part in its growth story. To this end, Ace Designers' aid in constructing road and drainage facilities in a rural village in South India has significantly enhanced the quality of life of the villagers, opening up doors to growth.

Source: AMG

Before

Source: AMG

After

It's unfortunate that India's rural hinterlands have largely remained impervious to its progress. Despite the enormous government efforts, a daunting number of distant parts of the country still suffer from the lack of all-weather connectivity, limiting their mobility and depriving them of any access to employment, social, health and education services.

Connectivity helps

Taking heed of the issue, Ace Designers, an Ace Micromatic Group company, has come to the aid of providing the basic of infrastructure facilities to Minnapura Village in Nelamangala, a Bengaluru rural district in the state of Karnataka. The company has built a road in the village, which the residents consider to be of immense help in their connectivity to the surrounding areas of amenities and opportunities.

Fixing drainage issue

Additionally, poor drainage system is the biggest sanitation issue plaguing not just rural, but also urban India with severe health hazards such as diarrhoea, which is the third leading cause of childhood mortality in India. Contributing its bit to address the problem in Minnapura Village, Ace Designers has made provisions to improve the state of drainage facilities. CNC+Plus

We thankfully acknowledge the contribution of Ace Designers. To know more contact us: connect@acemicromatic.com

Brain Teaser

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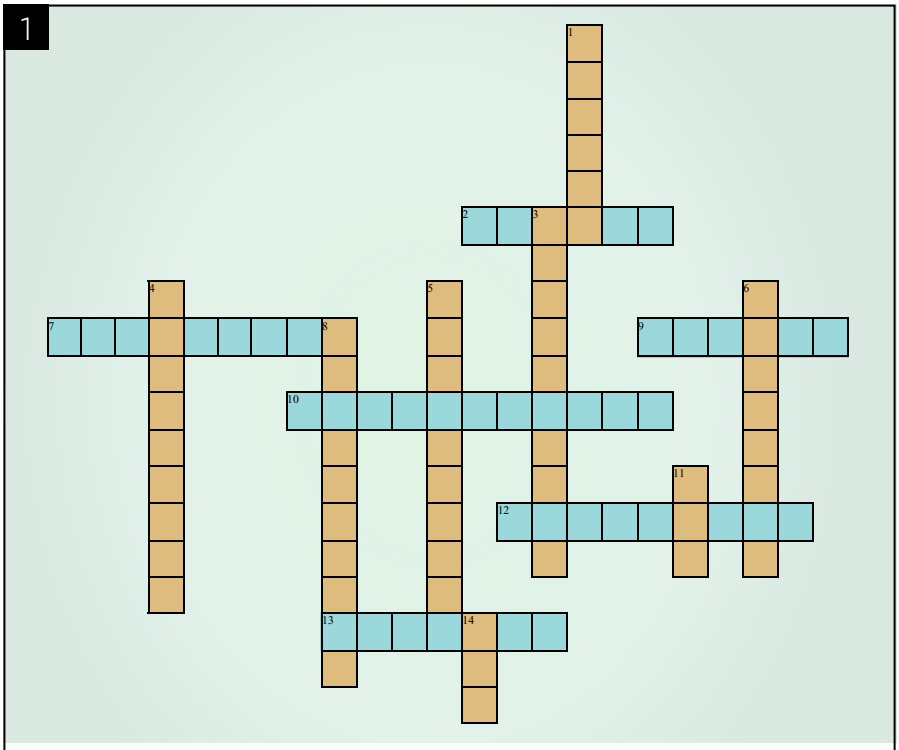
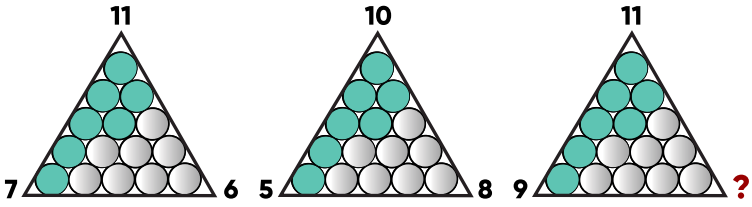


Across
2. Extra items meant for replacement **7.** A technology and applied science using engineering, chemistry, and other sciences involving the mechanical properties and use of liquids **9.** _____ interpolation is smoothly moving multiple axes of the machine so the tool follows a straight line as closely as possible. **10.** The process of preserving optimum condition of machine or item **12.** A part that is being worked on. It may be subject to cutting, welding, forming, or other operations **13.** A manufacturing process involving the shaping of metal using localized compressive forces

Down
1. Restore back to original condition **3.** The technology by which a process or procedure is performed with minimum human assistance **4.** The first version of the new product **5.** Finishing of an intricate or unique part **6.** A return signal that confirms the position of the tool or worktable **8.** Related to crank—is a mechanical part able to perform a conversion between reciprocating motion and rotational motion **11.** A type of custom-made tool used to control the location and/or motion of another tool **14.** The network of devices that contain electronics, software, actuators, and connectivity which allows these things to connect, interact and exchange data

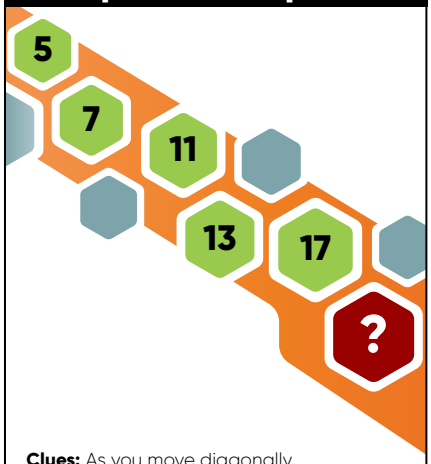
Which number replaces the question mark?



Clues: In each triangle, add together the lower two digits and subtract 2 for the left hand triangle, 3 for the middle and 4 for the right hand triangle, putting the result at the apex of the triangle.

2

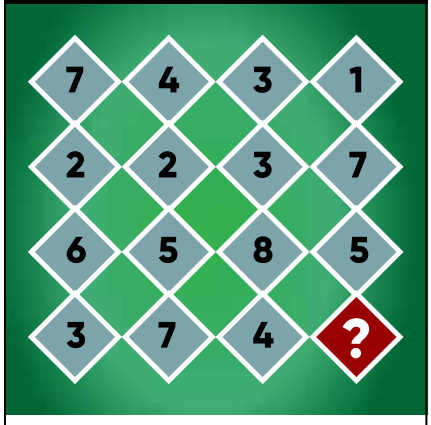
Which number completes the puzzle?



Clues: As you move diagonally down, numbers follow the sequence of Prime Numbers.

3

Which number replaces the question mark?



Clues: Working in columns, the sum of the numbers in each column equals 18.

4

Answers

1 **Across:** 2. Spares 7. Hydraulic 9. Linear 10. Maintenance 12. Workpiece 13. Forging
Down: 1. Repair 3. Automation 4. Prototype 5. Contouring 6. Feedback 8. Crankshaft 11. Jig 14. IoT

2 6 3 10 4 5

Spotlight

This edition, our focus is on machining for the Aerospace industry, hence we present to you some of our best machines from our principals that are perfectly crafted to meet the industry's complex needs to a T.

ACER

Source: AMG

Acer, the high-performance Vertical Machining Centre from Ace Micromatic Systems, promises high accuracy and enhanced productivity. The machine has a rigid structure and ergonomic design, and is loaded with a high-speed spindle, high-precision roller guideways and ball screws. A wide door opening fixture allows the components to be easily loaded and unloaded from the machine.

Specifications

- The machine is ergonomically designed for outstanding dynamic rigidity.
- It offers a maximum RoI.
- 40 / 40 / 32 m/min rapid traverse rates on X/Y/Z axes are able to meet high-speed machining requirements.
- It comes with a twin arm tool changer.
- The machine offers 24 tool ATC and 15/11 kW spindle power.

LT 2 LM 500 MSY

Source: AMG

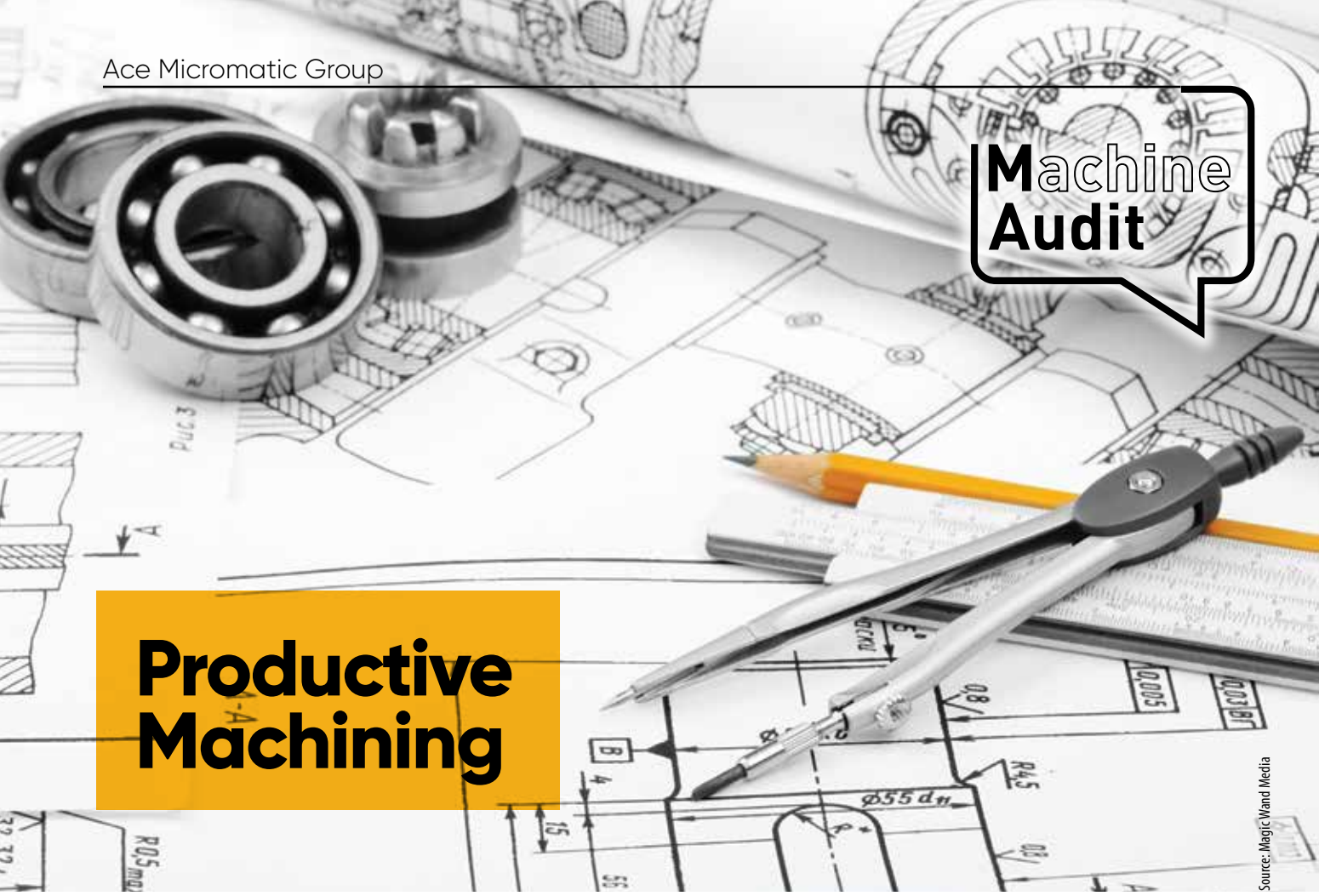
LT 2 LM 500 MSY is a versatile Turnmill Centre from Ace Designers, offering a powerful main spindle and a substantially capable motorised sub-spindle. Perfect for machining complex components, the X and Y axes interpolation helps this turnmill centre perform machining above and below the centre line. Double end radial live tool holder helps perform axial applications on main and sub-spindle without the need of two different tool holders. Seamless synchronisation of main and sub-spindle speeds help on the fly component transfer between spindles.

Specifications

- Y-axis
- Main spindle with 9/11 kW power
- Motorised sub-spindle with 5.5/7.5 kW power
- 12-station live tool turret with 2.2kW/5000 rpm live tool motor
- Optional Bar Feeder and Parts Catcher arrangement

Machine Audit

Productive Machining



Source: Magic Wand Media

Far from being a theoretical exercise, Machining Audit studies and upgrades CNC machining methods to produce components more efficiently and at an optimum cycle time and tool cost from the existing state of things.

In mass production, every second saved or an increased tool life is a part produced. The higher your production quantities, the more important it is that your CNC machine runs as efficiently as possible. Machining Audit serves as a third party inspection of your part programs and operations. Their periodic reviewing and revamping eliminate any accumulated inefficiencies. The main objectives of Machining Audit is to tighten and shorten machining cycle times, and as a result increase the number of parts produced and the tool life. Following is the way it's done:

Resource

Team:

- Identify the team members who are all involved in the given component manufacturing – Machining process, Tooling, Material handling, Deburring and Inspection;
- Discuss the project, individual roles and their availability with a tentative schedule and a target date;
- Identify if any training is required;
- Prepare skill matrix and a training plan.

Machines:

- Whoever develops the part must know about the machine and its features, limitations and capacity.

Resource

Bill of operation and technique:

- Each operation for the given part must be defined with a sustainable machining technique;
- Record the Dos & Don'ts;
- Make a freehand sketch for the tool movement;
- Name the operations to help the team members to identify them easily;
- Identify CTQ's (Critical to Quality) and write comments on how they can be achieved.

Cutting tools and parameters:

- Make a freehand sketch of the tool with the identified overhang and clamping;
- List tool specifications and make;
- List VC, Feed, and depth of cut;
- Use surface finish formulae for feed rate;
- Check machine maximum and minimum RPM and also maximum programmable feed. (mm/rev & mm/min)

Work holding:

- Make freehand sketch of the holding area;
- Identify work holding devices. Write a comment on why this work holding has been chosen.

Documentation:

- Prepare documents which will be useful for the team members;
- These documents can be other than ISO. If useful we can regularise later.

Method

Machining Adapt:

- Target "1st right OK";
- Produce a few parts at lower parameters;
- List safety / setting requirements;
- Operators must be aware that running at low parameters is intentional.

Establish:

- Establish machining with the recommended parameters;
- Inform the operators about the changes in CIP;
- Do continuous improvements;
- Record KAIZEN and continuous feedback.

Expectations

Safety:

- Development engineers must record the safety requirement for the given component machining.

Quality:

- Development engineers must discuss and record the quality requirements such as dimensions CTQs, aesthetic, and application of the part;
- Convey the essential information to all the team members.

Quantity:

- It is a number indication of the quantity needed in the required time.

Efficiency:

- Establish that by doing things systematically, how much efficiency can be achieved and how much can be enhanced from existing state of things;
- It can be team efficiency or equipment efficiency.

Throughput:

- It is a number indicating the quantity produced in a time frame;
- If the production is less, take the corrective action to improve;
- If the required production happens in the right time frame, make action plans to sustain and improve.

Cycle time:

- After observing 2-3 sets of machining, we can arrive at a cycle time.

Kashinath M Patnasetty, Head – VAS & Application Support Group, Ace Designers E: kashinathp@acedesigners.co.in

Source: AMG

The Dos and Don'ts of Machine Maintenance

We, at AMG, are believers in the age-old adage of prevention being better than cure. In the industry it amounts to keeping your machines in the best condition that prevents untimely shutdowns and saves time and expense. Here is a checklist for ensuring a smooth running shopfloor...

DOs	DON'Ts
General	
• Clean electrical cabinet, operator panel-interior and exterior	• Do not weld any extension to the bed
• Clean the interior and exterior of all sub assembly areas like Limit Switch Bed, LM, Box Guide, Tailstock Telescopic cover, Wiper and Spindle so they are free from swarf, coolant, dust and muck etc.	• Do not attempt to grind / any machining on the bed
• Check for any leakage of coolant and hydraulic oil, and correct the same	• Do not keep the machine close to the pressing or forging machine
Head Stock	
• Encode belt and spindle tension	• Do not use direct compressed Air jet or Coolant jet over the spindle
• Clean spindle labyrinth holes	• Do not run the spindle above the specified max rpm
• Overhaul workholding - CHUCK (clean & grease)	• Do not exceed the recommended max clamping force

DOs	DON'Ts
X – Axis	
• Check wiper condition	• Do not dissemble the ball screw for any reason
• Clean LUB drain hole	• Do not run the machine without cover
• Inspect turret oil level	• Do not disturb the proximity sensor for any reason
• Check turret alignment	
Tail Stock	
• Operate the quill once a day	• Do not use the tailstock at pressure higher than the recommended max value
• Ensure wiper condition	• Do not loosen the base screws for any reason
• Ensure tightness of base screws	
Hydraulics	
• Maintain system pressure 30 bar	• Do not dismantle the pump assembly
• Inspect oil level	• Do not disturb the pump setting for flow, noise and pressure
• Check accumulator functioning	• Do not disturb the system pressure setting for any reason
• Look out for leakage at different areas	• Do not over-tighten the fittings
Lubrication	
• Check oil level and fill	• Do not dismantle the pump assembly
• Ensure proper functioning of metering cartridge	• Do not disturb the pressure switch setting
	• Do not disturb the ON / OFF time for motor
Coolant	
• Look out for Y - Strainer blockagel	• Do not run the pump without a coolant
• Check impeller condition	
• Inspect coolant level	
PCC	
• Check for PCC drain hose routing of Hyd & Coolant	• Do not over-tighten the fittings
• Check for V seal condition	• Do not use length bars
• Check for PCC runout	• Do not run the machine without V seal
A/C Unit	
• Ensure proper functioning of temperature	• Do not run the machine with keeping the cabinet door open
• Clean filter	• Do not disturb the thermostat setting for any reason
Electrical	
• Take the data backup	• Do not remove the cable with the machine ON
• Check CNC system battery - voltage	• Do not remove the battery with the machine OFF
• Check servo drive - battery - voltage	• Do not run the machine without a stablizer or ELCB
• Check current % of axis/spindle	
• Inspect drive and heat sink cooling fan working condition	

We trust that you have found the above details useful and wish to assure you that compliance will help your team to ensure better reliability and machine uptime. If you need any further assistance, please do not hesitate to contact our local service support.
Email: customercare@acemicromatic.com • www.acemicromatic.net • To know more contact us: connect@acemicromatic.com

amace

Featured Company

Source: AMG

Shaping the Future

Additive Manufacturing or 3D Printing has arrived as a revolutionary technology in the manufacturing space offering innumerable benefits. Ace Micromatic Group has made its foray into this sphere with a state-of-the-art facility for 3D Printing – amace solutions.

3D Printing or Additive Manufacturing (AM) has caused quite a stir in the manufacturing industry. To keep pace with the technological changes and cater to complex market demands, the manufacturers are now embracing this highly precise way of manufacturing and reaping in gains that are too good to pass up.

amace solutions pvt ltd, the brainchild of two leading machine

Source: AMG

With cutting-edge 3D Printing technology, amace solutions produces components with highly versatile and intricate designs for various sectors including General Engineering, Medical, Aerospace and Automotive

Source: AMG

"amace solutions is one of India's few organisations that specialises in 3D Printing of metal alloys. With a strong technical background, our engineers are capable of providing services in design, engineering, analysis, simulation, optimisation, manufacturing (3D Print) critical components and parts, using in-house technologies and advanced software applications."

Dr Vishwas R Puttige
Head, Business Development
Ace Manufacturing Systems Ltd

tool manufacturing companies in India – Ace Designers Ltd and Ace Manufacturing Systems Ltd (AMS), the integral part of the larger Ace Micromatic Group – is trying to step up the manufacturing game in the country through this groundbreaking technology.

The new company commenced its operations in September 2018 and is currently based out of AMS' new facility in Bengaluru. Leveraging some of the best available tools in 3D modelling, simulation, analysis, additive design, topology optimisation, and CAM software, the company provides a wide spectrum of solutions to its customers from diverse industries ranging from Aerospace to Medical and General Engineering.

amace solutions is managed by Mr TP Shridhar, CEO, Ace Designers; Mr LS Umesh, Director & CEO, AMS; and Dr Vishwas R Puttige, Head, Business Development, AMS.

What makes Additive Manufacturing unique

Unlike subtractive manufacturing, 3D Printing offers unlimited design freedom to engineers. Almost any design can be produced in a short period of time and cost-effectively. The technology also enables the construction and manufacturing of highly stable light-weight structures that cannot be produced using any conventional technologies.

What is more, 3D Printing is subjected to very minimum scrap rate and wastages compared to conventional methodologies. It also offers increasing supply chain efficiency by printing parts on demand with the available CAD files of a specific component without the need to carry inventory.

Serving the aerospace industry

3D Printing is currently being explored and heavily applied in the Aerospace industry. Applications range from brackets, hinges, heat exchangers, combustion chambers to new component production.

It is believed that aero companies are willing to spend up to €1,000 to reduce 1 kg of weight from aircrafts and for space projects this value can go up to €10,000. Light weighting and reduction in part count is one of the most popular applications in this industry.

In many cases, 3D Printing of parts has proven to be more cost-effective than machining them from solid blocks of expensive material such as Titanium and Inconel. Multiple instances of part consolidation have been successfully demonstrated and have been productionised.

amace solutions possesses the capability to design and analyse parts for AM, print them in metal and perform post-processing operations on them meeting the desired specifications. CNC+Plus

We thankfully acknowledge the contribution of amace solutions pvt ltd. To know more contact us: connect@acemicromatic.com

Case Study

CMH-400 XL

Source: AMG

Boosting Productivity

Ace Micromatic Systems' (AMS) column moving type Horizontal Machining Centre, the CMH400XL mitigated a customer's woes by enhancing accuracy and performance and reducing the cycle time in aerospace component machining.

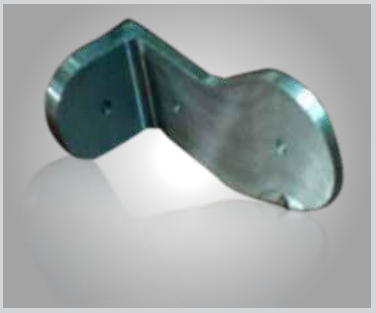
Materials used for Aerospace Components are expensive and generally are imported. Defects that arise during the machining of components result in the rejection of the complete part and the consequential loss of material and time. Further, unlike automotive components wherein the material removal is less as we use cast / moulded raw material, in the case of Aerospace application, the component is carved out of a single block of raw material. Thus, in many cases, we have to scoop out more than 80 percent of the material to obtain the finished part. Also, the parts are of thin wall sections which make machining more difficult. All these complexities lead the customer to opt for expensive imported machines for machining of aerospace components.

CMH400XL Specifications
Spindle BT-40 Taper 10,000 rpm with Direct Drive
Spindle Power 11/7.5 kw with Spindle Chiller Unit
Traverse 500/480/480 mm

Outcome with AMS' CMH400XL
Significant reduction of cycle time freeing up manpower and machines, and thus improving productivity phenomenally; the older process was done on 3 machines with 6 operators.
Excellent surface finish with no tool marks, drastically reducing the time needed for buffing and polishing
Enhanced machine accuracy and performance

OUTPUT

C-Max with pair



C-Max

Source: AMG

Challenge

Machining of Aerospace Components, C Max and C Min, with a non-AMS machine was a longer time time for the customer, requiring multiple set-ups and the finish obtained was sub-optimal. The components' material was Imported Grade Aluminium 2024 (T735).

Solution

AMS, with its strong design background and application knowhow, understands the critical needs for the machining of Aerospace Components. One of the important requirements for ensuring high surface finish and accurate machining is the high rigidity of the machine and low spindle run-out which ensures vibration-free machining. The CMH400XL – column moving type horizontal machining centre from AMS – incorporates the features. With machining done on the machine, the cycle time was reduced from 20:55 min to 5:35 min, in addition to significant improvements in accuracy and surface finish. CNC+Plus

We thankfully acknowledge the contribution of Ace Micromatic Systems' (AMS. To know more contact us: connect@acemicromatic.com

Exhibitions
Domestic and International

Events

Pune Machine Tool Expo 2018

Organiser: Indian Machine Tool Manufacturers' Association

Venue: Pune, Maharashtra

Date: Sep 27-30, 2018

AMG was an active participant at the second edition of the Western India's most prominent B2B exhibition, Pune Machine Tool Expo showcasing an entire gamut of metal working machine tools for both metal cutting and metal forming including automation and robotics, tooling systems, CAD/CAM and other technologies essential for today's manufacturing.

Source: AMG

Metalex 2018

Organiser: Reed Tradex Co., Ltd

Venue: Bangkok, Thailand

Date: Nov 21-24, 2018

Metalex 2018, the most important gathering of the ASEAN metalworking community, presented AMG an opportunity to get close to their existing and potential customers of the South Asian region. The platform is ideal for new networks and new ideas and to inspire industrialists to optimize their competitive advantages.

Source: AMG

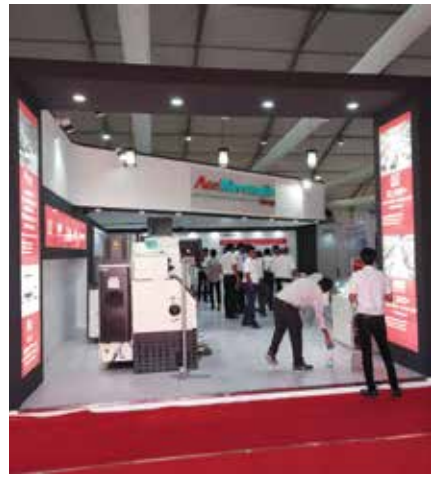
Rajkot Machine Tools Show 2018

Organiser: K&D Communication Ltd

Venue: Rajkot, Gujarat

Date: Nov 28-Dec 01, 2018

The Rajkot Machine Tools Show is an international trade fair for engineering, machine tools, automation and automotive technology. AMG exhibited its products with the latest technology including Linear Tooling CNC Lathes, Compact CNC Lathes, Compact VMCs, Smart Manufacturing IoT and Industry 4.0 Solutions.



Source: AMG

Customer Meets & Interactive Seminars

Events

Customer Meet and Interactive Seminar

Venue: Indore, Madhya Pradesh

Date: Nov 17, 2018

Topic: New Products and Facilities

Source: AMG

Customer Meet and Interactive Seminar

Venue: Bangalore, Karnataka

Date: Nov 23, 2018

Topic: Latest Developments in CNC Turning Technology & Industry 4.0 – IoT

Source: AMG

Technical Seminar in Association with TaeguTec

Venue: Coimbatore, Tamil Nadu

Date: Dec 15, 2018

Topic: High Productive Machine Centres and Industry 4.0 for an Efficient Shop Floor

Source: AMG

Events

Awards & Recognition

Awards and honours mirror the fact that we are doing all things right to ensure our and our customers' growth. These accomplishments act as a pat on our back, build credibility among our customers, and help us stay focused to keep getting better and stronger.

The Economic Times Best (Plastics & Polymers) Brands 2018 Award

Ace Designers bagged the coveted award for Plastic Turning / Machining. The remarkable achievement marks our foray into the non-metal turning segments.

Date: March 07, 2018

Source: AMG

The Economic Times Best Brands in Metal Cutting Industry 2018

The Ace Micromatic Group won the esteemed award that endeavours to highlight brands that have gained customers' confidence and maintained their positions. Our four principal companies have been felicitated with the award in following machine tools categories:

a. Turning Machine – Ace Designers
b. Machining Centres – Ace Manufacturing Systems
c. Grinding Machines – Micromatic Grinding Technologies
d. Smart Manufacturing Software – Ace Micromatic Manufacturing Intelligence Technologies (AmiT).

Date: Sep 21, 2018

Source: AMG

Karnataka Rajyotsava Award 2018

Mr P Ramadas, Managing Director, Ace Manufacturing Systems, was honoured with this prestigious award for his immensely valuable contribution to the manufacturing and machining domain. Felicitation by **Shri H D Kumaraswamy, Hon. CM of Karnataka.**

Date: Nov 29, 2018

Source: AMG

The Annual CII EXIM Bank Award for Business Excellence

Ace Designers received Platinum recognition for Business Excellence at the CII Quality Summit. It was honoured as one of India's best performing organisations for the category 'Large Organisations / Operating Units'.

Date: Nov 23 - 24, 2018

Source: AMG

KASSIA 'U CAN V CAN AWARDS'

Mr LS Umesh, Director & CEO, Ace Manufacturing Systems, was felicitated with the KASSIA 'U CAN V CAN AWARDS' for his significant contribution to the machine tool industry.

Date: Dec 2, 2018

Source: AMG

The CII Southern Region 5S Excellence Award

Micromatic Grinding Technologies won the prestigious CII (The Confederation of Indian Industry) Southern Region 5S Excellence Award for Medium and Small Scale Manufacturing Sector.

Date: Dec 11, 2018

Source: AMG

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IoT & Additive solutions at Hall 6

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