

equilibrium

VOL 63 - JANUARY - DECEMBER 2019

In the Pursuit of

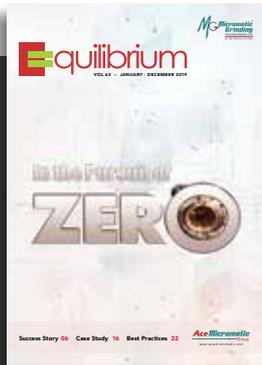
ZERO



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AceMicromatic
Group

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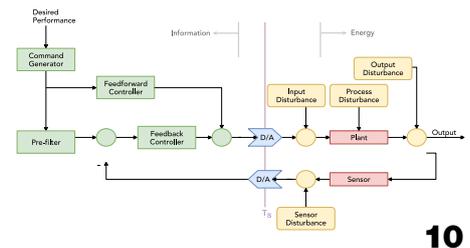
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Imprint

Published by
Micromatic Grinding
Technologies

Printed by
Repromen Offset
Printers Pvt Ltd,
Bangalore

Content & Design:





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Passing the Baton

Leaders have been leading the path of growth, owning their vision to gauge the present and predict the future. However, true leadership calls for efficient succession planning to hand over the reins in capable hands. Fortunately, this transitioning has been smooth for me as I could not have found better competent people than Kapil Dhand and TG Deenabandhu. I take pride in passing the torch to these high-potential individuals who will be taking MGT to new heights. Last but not the least, I thank MGT Board Member, Surender Kumar Kakkar under whose guidance I could choose a dream team for our organization, ably supported by the MCM-Managing Committee Members who are adept at performing their jobs and ever ready to act beyond their immediate responsibilities.

Pursuing Zero Intolerance in Communication



TG Deenabandhu
VP & SBU Head
MGT Bangalore Plant

There is an inner urge within each one of us to communicate in order to make ourselves understood to our fellow beings. It stems from our deep-rooted desire to bond, blend and belong. With India being a huge country, we are fortunate to be surrounded by people who speak different languages and dialects, giving us an enviable opportunity to learn them. Yet, there is a certain undeniable pull towards one's own mother tongue. Things are well articulated and understood in the language one grew up listening to.



A five-member group including Kapil Dhand, MD, MGT, and Sunil More, a three-months' old fresh recruit at MGTG SAEG group initiated into the program with 'Aksharabhyas' and handed a National language integration series book (Learn Kannada in 30 Days from Hindi) as a guide.



'Learn Hindi through Kannada Module' was launched on December 04, 2019. Our Hindi Guru, NK Dhand, Chairman, MGT, as one of the learners trying tongue twisting Kannada words.



Ashutosh S Ranjekar, our visiting customer from Bajaj Auto Ltd, Pune, having conversation in Hindi with our Hindi Guru's new disciple, Channegowda from MGTB works committee.

MGT replicates India when it comes to its diversity. People of all languages hail from almost all parts of the country to work together towards a common goal. Our customer base is equally diverse since they are spread all over India. Hence, to have utmost clarity regarding their requirements, it is highly crucial for us to communicate with them in the language they are most comfortable in.

When we initiate a business proposal to our customers or have a DAP session while delivering a machine tool of their choice to them or when they turn up at our work site, we take it as our duty to make them feel at home by speaking in their native language.

Our aim basically is to have a seamless and strong communication with our customers and suppliers alike. To turn this vision of ours into reality, we launched the 'LL' (Language Lab) program on November 01, 2019,

which is also celebrated as Karnataka Rajyotsava day as well as MGT Founder's day/Family day.

We, the diverse community at MGT, aim to stay united by attempting to learn each other's language. It is yet another attempt at Zero Defect in reaching out and striking a chord. 🇮🇳



Kapil Dhand
 Managing Director
 Micromatic Grinding Technologies (MGT)
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What cannot be measured cannot be improved

The reason I start by paraphrasing Peter Drucker's famous statement is simply because it illustrates the core of our business. **We are in the business of producing machines & providing services with measurable outcomes and improving ourselves by measurement. Today we measure tolerances in microns on parts produced, tomorrow perhaps in nanometers – whichever be the unit, we are inexorably moving towards the goal we made a commitment towards five years ago – the goal of achieving Zero.** Five years ago, we had committed to achieving the values of zero – whether it was in measuring tolerances, whether it was in exponentially adding value to whatever it was conjoined with or whether it was in its state of balanced equilibrium – placed between the positive and the negative numbers on the number line.

Five years is a long time. And a lot has happened in the previous five years. We have grown exponentially – and changed dramatically. Our management pool has changed. Our customer base profile is changing. Not only us, even the business environment too has changed. However, in the midst of this swirling change – which is a constant reality of business – we have been kept grounded and in state of equilibrium by a reaffirmed focus on our core values. We have articulated these often and have engaged in many exercises and initiatives that have strengthened these and helped us regain our equilibrium. A lot of these are on-going like our formation of Process Engineering Teams, our Strategy Development Session and our development of the HR Framework.

As we step boldly forward into a new and exciting era of growth and challenges, it may be wise to remind ourselves of the pillars on which we stand – those of 'evoking pride' and 'impacting society' at every touchpoint of our enterprise – both internal and external. To consistently keep achieving these, we will need to quickly regain our equilibrium from the changes that will be forced upon us by the exigencies of business. And to do this while constantly moving towards our goal of Zero, we will have to measure our progress at every step. I wish you all the very best going forward in this enterprise and would like to end with a simple observation – while we focus upon and measure the microns and the nanometers, sometimes – and these can be the most rewarding times – **the truest measure of an enterprise's success is not just in numbers – but in the smiles it creates, the warm glow it causes, the feeling of deep pride it evokes.** This may not be a SI measurement unit – which we as an engineering company are all familiar with – but it is an equally valid and sometimes more impactful measure of our success.

Here's wishing everyone a bright and happy year of impact!

Meeting Customer Needs

The customer is at the core of all MGT activities. Some of the critical Grinding Applications done at MGT's Grinding Centre reflect MGT's commitment to its customers and how it is striving to fulfil their needs.

WITH the vision to serve the industry with the best precision solutions, MGT has created a sophisticated Grinding Centre at its Bangalore facility having CNC OD / Non-Round Grinder, CNC Internal / External Grinder & CNC Centreless Grinder. The idea of bringing all possible cylindrical grinding solutions under one roof emerges from its Pursuit of Zero.

The Grinding Centre offers below services:

- New Process Development
- Part-proving • Pre-order trials
- Batch production to meet sudden demand surges of the customer.

Everyday actions at the Grinding Centre have led to a few stories worth sharing. Here we share some to showcase our efforts towards making our customers' world more precise.

CASE 1

Outer and Inner Diameter Grinding of a Thin-Walled Component

Machine: CNC Internal/External Grinder Model IG 150 U

Challenge: The challenge was to grind the OD and ID of a thin-walled component in a single setup to achieve highest level of accuracies possible.

Planning:

- Designed shoe centreless fixture suitable to hold thin-walled component to grind both ID and OD in a single setup on this IG model.
- Electromagnetic chuck used for face clamping
- Carbide roller with float joint used for support.

Achievements: Flatness achieved within 5µm

Value Addition:

- Developed New process and Capability to grind thin-walled component ID and OD in a Single Chucking



CASE 2

Grinding Flat & Square Surfaces of Punches

Machine: CNC Non-Round Grinder

Challenge: To build the customer's confidence in grinding precise flat and square profile surfaces of critical medicine tablet punches

Planning: CBN Grinder installed at the Centre with MGT's special non-round grinding software was used to grind the critical profile.

Achievements: Following results were achieved after the process:

1. Flatness achieved within 5µm
2. Parallelism achieved between the faces were within 5µm.

Value Addition:

- Built the customer's confidence on the new solution
- Capability of flat and square grinding was proven
- Pharma industry's need for precision grinding of tablet punches will be met by this cost-effective indigenous solution.



Personalizing Customer Success

MGT's success mantra has been to focus on its customers' success. By helping them meet their business goals, the company ensures converting them into its advocates. Here's Concerta's take on the long association it has had with MGT, and the significant value it has derived out of it...

Bangalore-based Concerta manufactures special tooling, machinery components and assemblies and provide CNC machining services. It supplies to a number of customers within India and also exports to customers in the US, Europe and Asia.

The company takes pride in having a stringent quality policy with competent and dedicated personnel and calibrated measuring instruments to handle a wide variety of challenging and process critical components.

Concerta works out of a sprawling facility with a total land area of 86,000 sq ft and a shop floor area of 28,000 sq ft, and is equipped with state-of-the-art machines with quite a few from MGT.

LONG-TERM ASSOCIATION

"We installed our first machine in 1984 with support from TK Ramesh, then Branch Manager, MMT Bangalore. We have been receiving the same unconditional support from him and the entire team including NK Dhand for solutions that have helped us to greatly profit from this machine," says

Mathew Mylador, Managing Director, Concerta. The machine has been under continuous production since 1984 till date, a testament to the exceptional design and build quality of the machine.

Concerta after using the conventional hydraulic machine for more than 35 years then moved to CNC grinding of machining centre spindles in 2018, for which it uses SM 100 machine with IPG. "We have seen significant improvement in quality and cycle time reduction of more than 50 percent. The machine is able to maintain tolerances of $\pm 1\mu$ consistently. This performance is on par with the imported machines available in the market. MGT has achieved this level of performance at one-fourth the cost of a similar sized imported machine, which is truly a great achievement," states Arjun Mylador, Head - Plant Operations, Concerta.

The company has 5 GCU 350 hydraulic grinders installed in 1984, 1986, 1995, 2004 and 2014, plus 2 more hydraulic and one CNC machines bought in the new plant last year. All are used for Finish grinding of spindles for CNC machining centers, CNC turn centers and grinding machines, tool





MGT, with its rich experience of over 40 years in grinding applications and world-class facilities for manufacturing and assemblies, has always proffered us proven and cost-effective solutions and reliable customer support. We have always held the company in high regard.”

Mathew Myladoor
Managing Director
Concentra



With MGT's SM 100 CNC, we have seen significant improvement in quality and cycle time reduction of more than 50 percent. This performance is on par with any imported machine available in the market, and at one-fourth the cost. This is truly a great achievement.”

Arjun Myladoor
Head-Plant Operations
Concentra

holders, cutting tool bodies and other precision machine tool parts. “All components have very precise tolerances and high geometrical accuracies of 0.002 mm,” informs Arjun.

AHEAD OF COMPETITION

Mathew shares that the company has been approached by MGT's competitors and that it has never crossed his mind to consider other options. “MGT, with its rich experience of over

40 years in grinding applications and world-class facilities for manufacturing and assemblies, has always proffered us proven and cost-effective solutions and reliable customer support. We have always held the company in high regard. In fact, we have recommended it to many of our business associates,” he adds.

To support his point, Mathew gives example of CNC Machine SM 100, which has been offering the company a number of benefits as compared to conventional hydraulic machines. Following are a few:

- The training of operators is faster. New operators can be deployed on the machine within a month as compared to 3-4 years of training required in the case of conventional hydraulic machines.
- **The cost of manpower has significantly reduced by as much as 50%.**
- **The machine can be operated in all shifts as the need for skill is eliminated and the process is not man dependant any more.**
- Production can be ramped up quickly with consistent productivity and quality.

INDIAN MACHINE TOOL BUILDING

The machine tool builders of the country, believes Mathew, have evolved over the last few years. “Reliability and accuracy of indigenous machines have consistently improved over the years, which has reduced dependency on imported machines. The performance that was only possible on machines made by Studer and Kellenberger is now possible in India at a fraction of the cost,” he notes.

“The sub systems, peripherals and toolings developed locally have helped in reducing the overall cost to the customer. Improvement in the quality of castings and accuracy of individual components and sub-assemblies have greatly contributed to making highly reliable machines in the country attainable,” points out Arjun, summing up. 



Committed to Precision

MGT, through its 'In the Pursuit of Zero' program, endeavors to bring to the table ideal grinding solutions, helping its customers achieve Zero Defect in their products and services. A round up on what exactly does the term mean and the company's efforts together with the academia and the experts in the field towards delivering it...

ZERO Defect is a principle introduced to provide goods and services with zero deviation from the expected output. Actually, this is a development on the earlier target of restricting specific defects to parts per million (ppm), which was the driving force for mass production industries such as automobile to improve their quality levels to higher standards.

Having achieved a near zero ppm, it is inevitable that the industry has moved to Zero Defect, which, in effect, means that no product or service delivered from an organization will be found defective in the hands of the customer or user. This is a very high level of quality commitment, and is only possible

*P Mohanram
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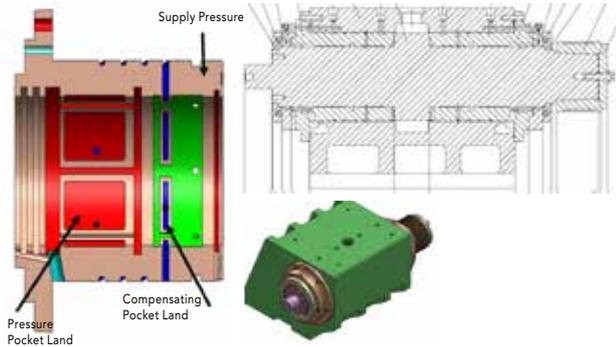


if organizations approach it holistically, instead of addressing individual issues. This means that to achieve Zero Defect, it is essential to adopt a system-approach through the whole process. In manufacturing, this means that the entire process, from design to despatch, is brought under a system-driven quality management, which optimizes the process to achieve Zero Defect.



Next Generation Precision Grinder NGPG installed at IIT-M

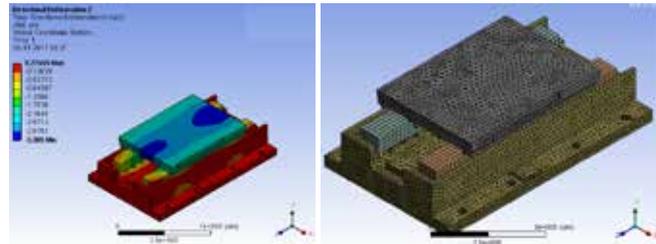
HYDROSTATIC SPINDLE DESIGN CONCEPT



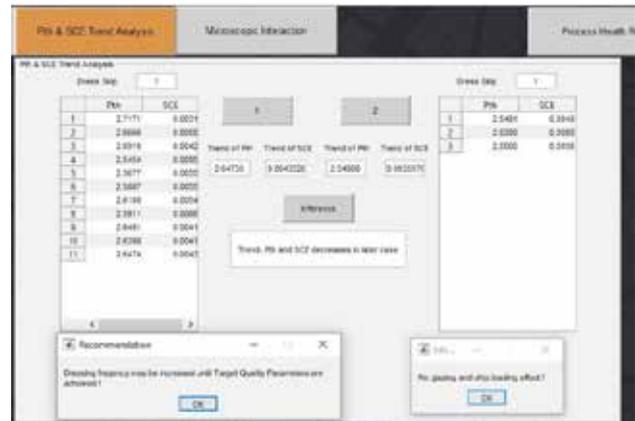
TAKING INITIATIVE

MGT has been in the forefront of adopting the system approach to its manufacturing activity of producing grinding machines. Working with IIT Madras and with inputs from Dr Subramaniam who is an expert in grinding technology from Saint Gobain, USA, the manufacture of high-precision grinding machines has been put on a system platform where every stage is as per the specified high-quality levels and the final machine is built to the requisite precision levels. **The production processes have been streamlined to ensure that the specified quality levels are met at every production step (see example on page 13).** These quality levels (tolerance, finish, assembly steps etc.) have been set after a deep analysis of errors occurring in manufacturing, tolerance stack up and distributing them such that the end product is achieved to the required level of precision without resorting to manual correction. This has resulted in the development of the New Generation Precision Grinding machine at MGT. This concept has been taken a step further by MGT in association with the AMTDC (Advanced Manufacturing Technology Development Centre) at IIT Madras. In the follow up project, the target now is to optimize the grinding process through a thorough understanding of the process and its parameters in actual grinding. By monitoring the process through instrumentation on the machine, a large amount of data is generated on the process parameters and their influence on the resultant finish ground component. This data is analyzed to determine the influence each parameter has on the end result. This data inference is used to advise the user in selecting a proper grinding cycle to obtain the best productivity along with a consistently high quality of the component. Since grinding is a

FEM - HYDROSTATIC SLIDE



AGI



finishing process, it is essential to reduce defects at this stage to the minimum so that the value added in previous stages of manufacture is not lost. Hence, AGI (Automation of Grinding Intelligence), getting developed under the aegis of MGT and AMTDC, will remove process uncertainties and deliver Zero Defect Grinding process.

BEEFING UP EFFORTS

There is yet another project under development by MGT and AMTDC at IIT Madras which aims at bringing critical technologies to machine tool builders: hydrostatic slides and spindles. These technologies are important in high-precision machines, especially grinding machines to produce parts of sub-micron accuracy consistently. **As manufacturing moves to higher precision dictated by technical requirements, hydrostatic slides and spindles will be of immense help in achieving them. The MGT-AMTDC project is an ideal example of industry-academia collaboration in high-tech areas in moving to Zero Defect manufacturing.**

MGT's 'In the Pursuit of Zero' is a program that aims to deliver ideal grinding solutions to the industry combining high-precision machines and process intelligence gathered from the experience with grinding components in volume. It is designed to deliver a high value to its customers.

The Mechatronics Way to Zero

Realizing the crucial role Mechatronics can play in product development and product improvement, MGT has joined hands with Mechatronics School, USA, and the Advanced Manufacturing Technology Development Centre (AMTDC) at IIT Madras. Here's knowing more about it...



*Brij Bhushan
PhD Candidate,
Dept. of Mechanical Engineering
MIT, USA*

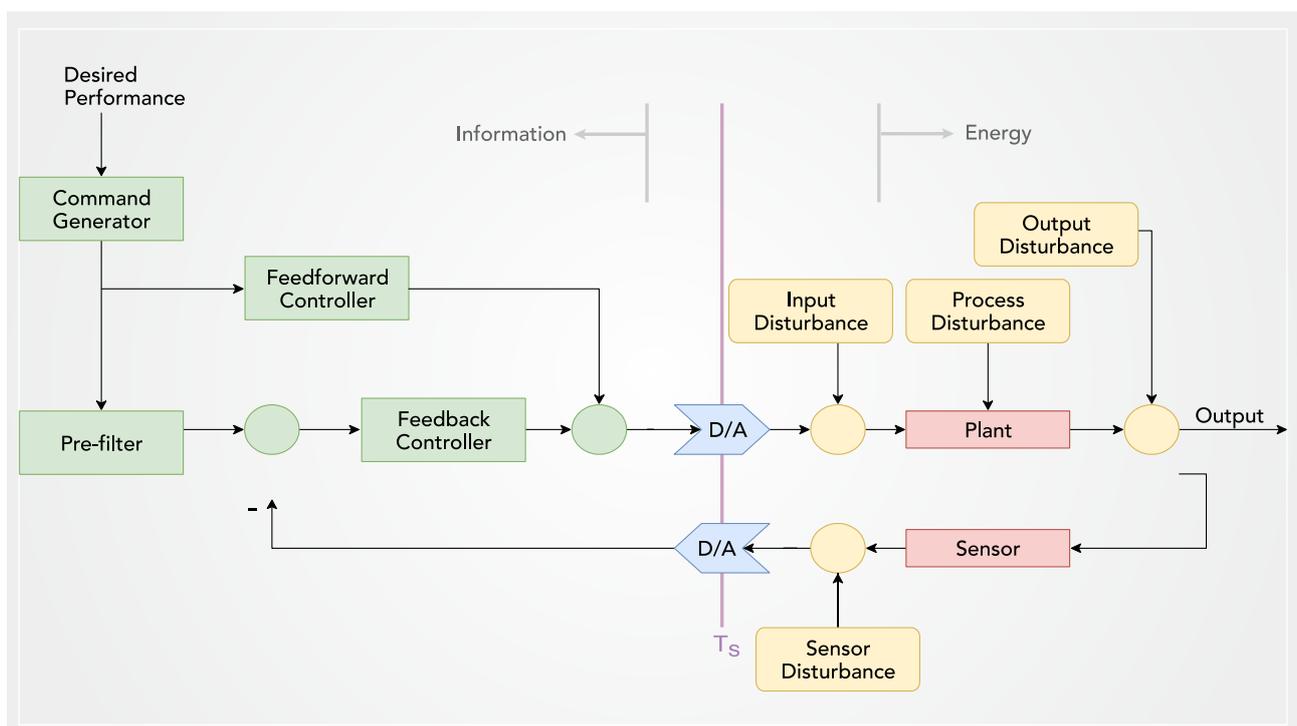
A common element in the famous Russian method of inventive thinking, TRIZ is that any technical system moves towards ideality. An 'Ideal System' can be defined as one that performs the function without existing. As we get closer to ideality, it costs less, and is simpler and more efficient. The pursuit of zero, then, is the pursuit of that ideality.

TRIZ further outlines four ways to make the system more ideal:

- Increase the functions of the system. In other words, make it multi-functional;
- Transfer as many functions to that working element that produces the final action;
- Transfer some of the functions of the system to a supersystem;
- Utilize internal and external resources that already exist and are available.

UNDERSTANDING COHESIVELY

In order to do any of the above, a cohesive system of understanding and designing a complex system is required. In dynamic systems such as machine tools, this requires understanding the



performance and impact of various components of a motion system such as the prime mover or the actuator, amplifier which drives the actuator, dynamics of the motion stage, interactions of the motion stage with the rest of the machine frame, sensing of the position, controller design and path-planning, trajectory generation, and material and manufacturing considerations. All these aspects must be concurrently considered for an effective machine tool design having balanced design margins throughout the system, minimizing any unnecessary overdesign.

MECHATRONIC PERSPECTIVE

The language of control systems provides such a unified perspective which is invaluable for such computer controlled dynamic physical systems. Through my experience working at MGT and in my PhD studies, I have learnt more about control systems and have come to appreciate the tremendous value of having a unified mechatronic perspective during high-performance, cost-effective machine tool design. A perfect day-to-day example of this is in the development of printers, which are so ubiquitous these days that most people who can read and write have seen one. The earliest printers were purely mechanical – rather bulky and unwieldy to use. Later, with the growing requirement of automation, electronics were introduced – starting with analog and then using microcontrollers, which gave more flexibility to automation. Initially, the traditional disciplines of mechanical, electrical and software were in

The first step is to develop mechatronic engineers who can bridge different disciplines and lead to mechatronic product development efforts. These engineers are experts in their domains with interdisciplinary knowledge that allows them to masterfully navigate the entire design process from concept to manufacturing.

silos, mostly working independently. The increased competition and pressure for reduction in cost per page and increased performance led to more and more integration of the various disciplines using mechatronics as the foundation. Mechatronics considers the entire system, right from the early design stage through the product life cycle rather than as individual parts.

Using multifunctional laser printers, which can also copy, scan and fax these days, it may seem obvious that an integrated mechatronic system approach to machine tool design is the natural way to go. The real challenge of mechatronics lies in implementation. Mechatronic product development is a difficult proposition as it brings together highly complicated disciplines with little understanding or visibility into their companion areas. Getting a diverse team of mechanical, electrical, controls, and software engineers together is a challenge, and there are natural silos of knowledge that must be overcome for them to work together to develop an integrated system. The famous Chinese adage, “The journey of a thousand miles begins with a single step” points to the requisite steps that need to be taken to bring about the mechatronic revolution that we see in consumer devices to CNC machine tools. The first step is to develop mechatronic engineers who can bridge different disciplines and lead to mechatronic product development efforts. These engineers are experts in their domains with interdisciplinary knowledge that allows them to masterfully navigate the entire design process from concept to manufacturing.

MGT's INITIATIVE

MGT has started its journey by collaborating with Mechatronics School (mechatronics-school.com) and the Advanced Manufacturing Technology Development Centre (AMTDC) at IIT Madras to organize the first summer short-course on Mechatronics in July 2019 which was attended by more than 40 engineers from various departments from the Indian machine tool industry. Post course engagements between Mechatronics School and MGT are ongoing, and we are making steady progress in building the Mechatronic knowledge base at MGT and deploying these learnings in MGT's product development and product improvement efforts.

Getting it Right the First Time

Attaining manufacturing excellence requires a culture of zero tolerance for defects in machines, processes and values. MGT's vision of 'In the Pursuit of Zero' stems from the First Time Right (FTR) concept and keeps the company focused on its strive for perfection.

THE pursuit of Zero is the pursuit of perfection. The Zero Defect theory is the concept of 'Doing it First Time Right', which essentially is ensuring that the processes are performed right the first time with a maximum yield and minimum waste possible. It is a powerful instrument to keep Process Quality in check.

A STRONG TEAM

To improve internal processes, MGT has built a team comprising highly experienced engineers from design, manufacturing, assembly and quality control to put their experience and knowledge to attain FTR in process design and optimization. The idea is to bring different perspectives on one table to improve production efficiency. The team strives towards strengthening inhouse manufacturing and assembly operations by improving existing

*RK Guleria
AGM
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Micromatic Grinding Technologies*

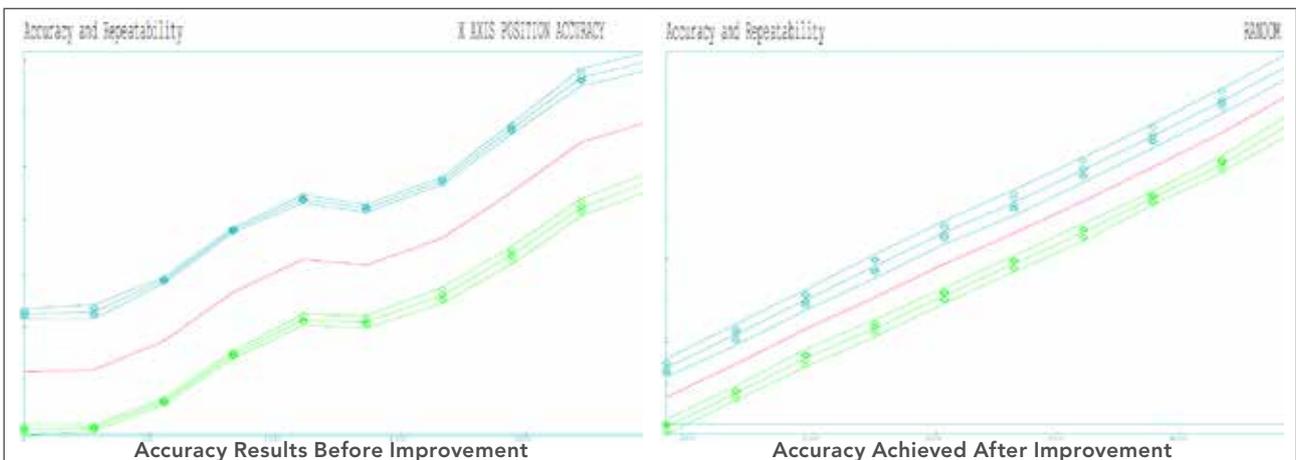
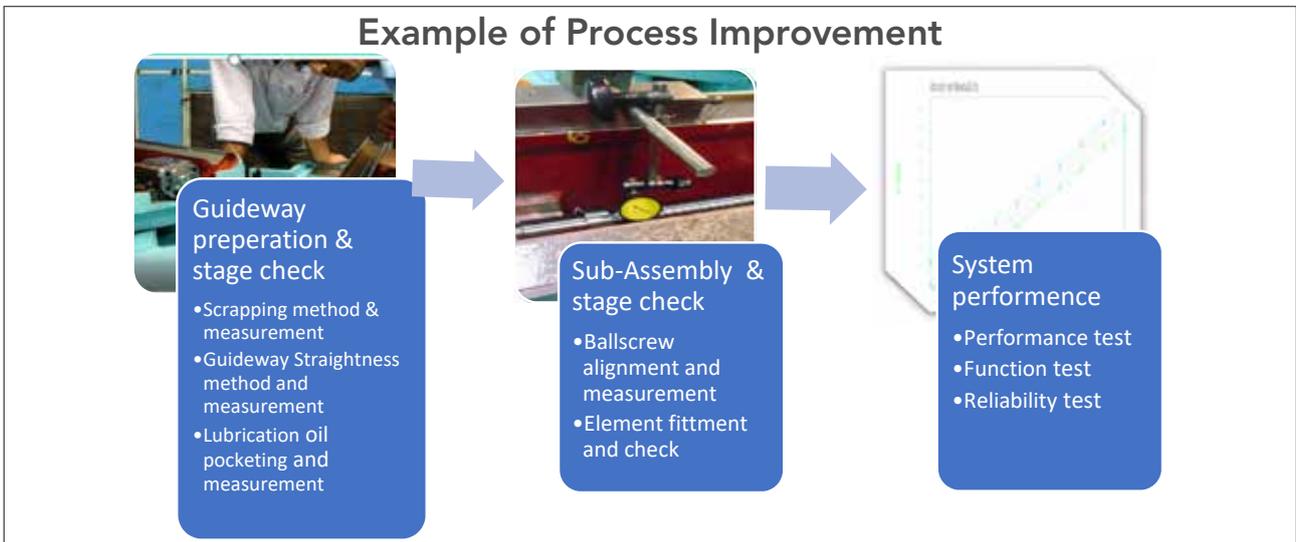
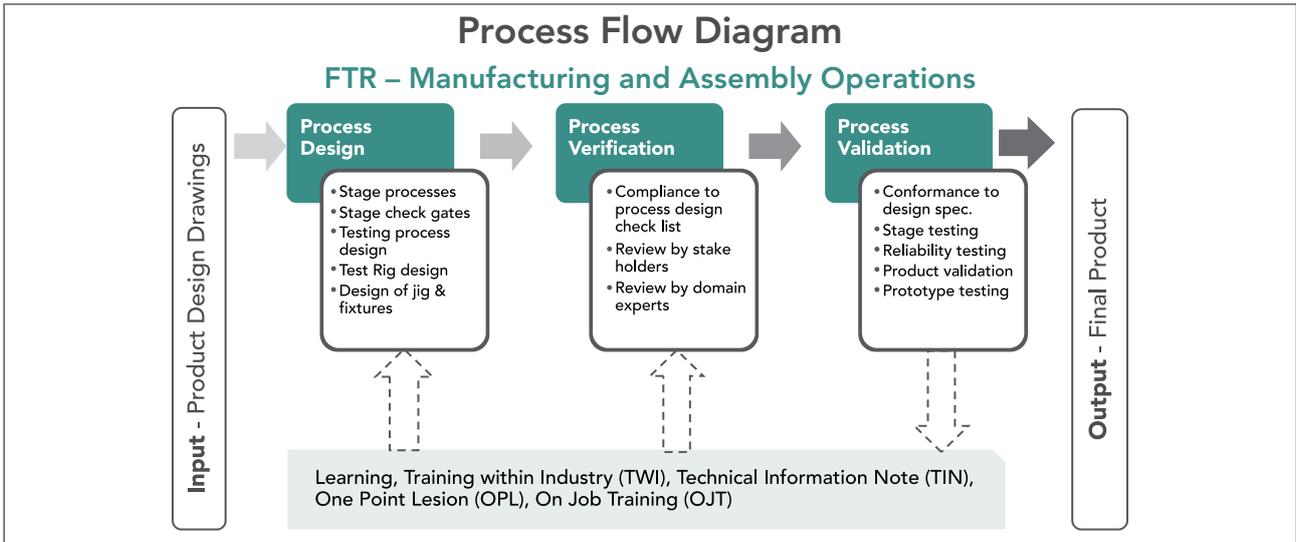


processes, and developing new processes, skills and knowledge. The process team adds value in design reviews, critical processes, trials and testing, and imparts training to manufacturing and assembly personnel. **The team gets involved in the new product development right from the design stage up to the final validation, and monitors processes for at least three successful cycles before handing it over to the production team.**

The following example highlights how the New 'machine axis slide ways and ball screw assy. process' ensures much improved accuracies.



(L-R) RK Guleria (Design & Development), Ashutosh Deshaver (Methods Engineering), Sumer Raheja (Manufacturing), Saurabh Pal (Manufacturing), Anand Kashyap (Manufacturing), Rajeshwar Singh (Manufacturing), Firoz Khan (Quality Control), Tejbahadur (Assembly), Bhagwan Singh (Design & Development)



BENEFITS ABOUND

The FTR initiative entails a host of benefits. The primary goal behind the principle is to minimize the number of product issues that get past design release and cause rework and scrap, leading to dissatisfied customers. To do

so, the principle encompasses practices that allow engineers to perform more due diligence and validate their decisions. It helps the process team to eliminate waste and reduce cost, and thus boosts confidence of the people involved in the process value chain.

Developing Talent Pool

MGT believes in maximizing the potential of its employees to equip them with the requisite skills to meet current and future industry demands. In its attempt at making them future leaders, the company collaborates with research teams at IIT Madras and its end users. Here's to know where its initiatives are heading...

Dr K Subramanian (Subbu)
President
STIMS Institute Inc.
USA



MICROMATIC Grinding Technology Ltd (MGT) and STIMS Institute Inc. USA, have been collaborating for more than eight years on an initiative to develop Unique New Solutions (UNS). These are solutions for new machine tools and their auxiliaries for novel grinding processes for customers. **The goal is to focus on unique outcomes not available in India and, in some cases, first of its kind in the world. The focus is always on the end to end innovation (i.e.) from concept to commercially realized or implemented solutions.** This initiative also involves an innovative program designed to train and foster a few highly competent graduates into future leaders in manufacturing technology through System Thinking and Transformational Skills. This team works in close collaboration with design, manufacturing and application departments at MGT, with end customers as well as research teams at IIT Madras.

Through the years, the team has had several successes many of which are first of its kind for 'Make in India'. Following are a few examples:

TALENT DEVELOPMENT FOR THE UNS-R&D TEAM

Recruitment and development of the members for this initiative is rather unique: Individuals, mostly recent graduates, are recruited and assigned to assume a range of responsibilities in a short period of time. The assignments include:

- Market assessment in close collaboration with Sales and Application Engineering to establish

the 'need' or the customer's interest and the reason behind;

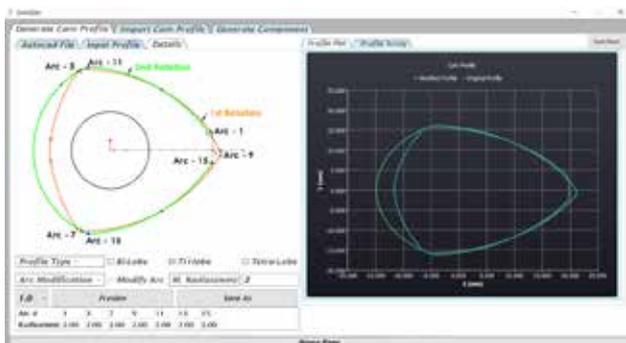
- Concept development for new solutions as a system, pricing and commercial contract execution;
- Design and analysis of critical sub-assemblies and components;
- Design validation through theoretical calculations using modern tools and methods of FEA/FEM/ Mechatronics as well as advanced software solutions;
- Development of the solution through Concept Validation (establish the 'science'), Prototype Demonstration (refine the 'Engineering'), develop the Complete Solution and implement at the customer facility;
- Complete ownership in the development of unique products (machines, software, process solutions) from Concept to Commercially Viable Solutions.

Thus, in a short period of a few years, the fresh graduate can grow into a thorough technology professional in the manufacturing sector. All the shift requires is constant training and mentoring on System Thinking and Transformational Skills.



Hydrostatic Slide Testing Rig installed at AMTDC-IITM

NON-ROUND GRINDING, NRG SOFTWARE GRINDZEN



This experiment in human resource innovation has been very interesting to say the least! It requires continuous engagement by the senior management as well as rigorous review and on-line mentoring on a weekly basis.

TALENT IS MORE THAN ACADEMIC KNOWLEDGE

Developing a new solution requires an integration of knowledge across various disciplines. No one person can come with the knowledge from diverse fields such as Mechanical Engineering, Design, Materials, Electrical Engineering, Instrumentation, Testing, FEA, Mechatronics, Advanced Software and CNC programming skills. Hence, recruiting the right talent with the required knowledge is a challenge and a starting point.

While graduates from well-known institutions have an edge in the beginning, this advantage is sustained more by those with a passion for continuous learning.

After a few years of our experiment we find that true talent resides in those who excel at three core capabilities: Knowledge, Experience and People skills.



Experience is not to be judged by the years of work in a given job or assignment. Instead it's gained

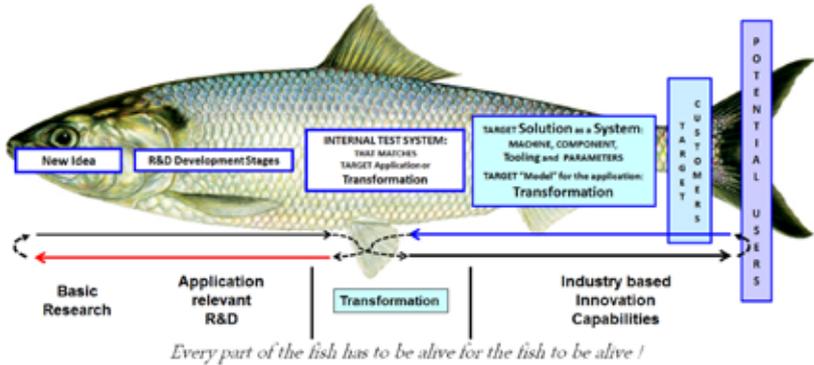
| Core Capabilities of Professionals | Description | Tools or Enablers |
|------------------------------------|---|---|
| Knowledge | Deep and extensive learning, Well informed, Understanding of various aspects of a subject | Formal Education, Reading, Learning from peers, Data driven, Searching on-line data base, Observations |
| Experience | Skill derived from actual participation or direct involvement, Accumulated wisdom from real life | Hands-on activities, Involvement, Experiments, Risk-taking |
| People Skills | Ability to seek out others and receive their support, help, and cooperation; Willingness to reciprocate and achieve mutual benefits | Honesty, Integrity, Communication skills, Collaboration, Team spirit, Results-driven attitude, Emotional Intelligence |

very quickly by those who are risk takers willing to experiment with new ideas. Real life validation of their knowledge through working models, prototypes or sales contract builds self-confidence and a true sense of self-worth in young professionals, which is priceless. But this also requires a set of personal skills such as involvement, risk taking, collaboration and a result-driven attitude.

People skills are those beyond the well-known attributes for inter-personal interactions to get along well with others. In some regards, the people skills we find valuable are grounded in factors such as honesty, integrity and emotional intelligence. These are the skills that not only impel one to personal success, but also helps others and the team to the same outcome.

END TO END INNOVATION

In most companies, R&D and commercial efforts are run as two parallel silos. Our experiment has been to find a seamless blend between the two. Typically, such seamless connection happens in small startup companies. But our goal through



End to End Innovation: Fish is not alive unless every part of the fish is alive

UNS is to bring about an entrepreneurial team, talent and outcome while leveraging the resources and facilities of a well-established enterprise. The talent development for this UNS effort requires education and commitment from everyone, especially the young talented professionals who learn and believe that 'Every part of the fish has to be alive for the fish to be alive!'. 

Working Together is Success

An account of how MGT provided a CLG to M/s. Patco Precision Components, Nashik for the CR nozzle grinding and took care of the issues that cropped up later with the help of Delphi-TVS Technologies, the end customer...



TN Umasankar
Senior VP-PED
Delphi-TVS



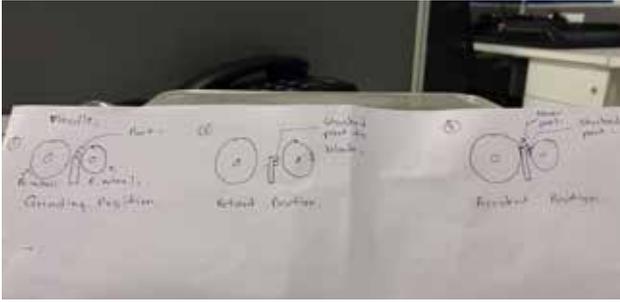
TG Deenabandhu
VP & SBU Head
MGT Bangalore Plant

Delphi-TVS Technologies Ltd (DTVS) was up with a challenge to launch new CR nozzle assemblies and at the same time, keep the investments down. To this end, in early 2018,

the company chose Patco Precision Components Pvt Ltd in Nashik as a supplier to deliver centreless ground 'needle' blanks. The part was to be made of HSS (High-Speed Steel), turned on sliding head CNC, vacuum heat treated to 64+ HRC, and then had to be ground with the plunging method.

While Patco excelled at precision machining, it did not have significant exposure to grinding. Hence, DTVS deliberated over all the options, of which just one was Indian. Hence, it zeroed in on CLG 5020 - 4CNC from MGTB. **TN Umasankar, Senior Vice President, PED, DTVS, confirms that the company itself used an imported machine for a similar application and had never bought an Indian CLG.**





NOT A SIMPLE TASK

The machine from MGTB had to be tooled up for a second component, 'Jet' and **needed 2 per load**. MGTB completed a pre-order trial in 2 months, met +/-2.5µm on diameters and 5µm on roundness/straightness, which helped DTVS gain some confidence.

Mahesh Samaria, Senior General Manager, Design & R&D, MGTB, with process support from DTVS took up this challenge. The machine build was complete in 7 months with 4 axes CNC, diamond roll dresser for form, load unload system, bowl feeder, pick and place robot, poke yoke cognex camera, single axis servo gantry for loading and unloading component on the belt conveyor near the control wheel.

With active participation from DTVS **ME** and Patco project team, MGTB made repeat changeovers between 2 components to demonstrate operator friendliness and completed **MQ1** and durability samples.

OVERCOMING HURDLES

By late 2018, the next hurdle, MQ2 was over. Ravindra Patil, Managing Director, Patco Precision Components, got approval from DTVS in July 2019 to PPAP and keep the wheels rolling at DTVS. It took him some time to catch up and manage the whole VSM – material, machining, HT (bent parts) and grinding. This was followed by some or the other challenge until the end of August 2019.

There was once an issue for which MGT got a message on WhatsApp – "Production auto mode – abnormal noise – machine emergency mode – GW, CW and work rest blade damaged component found sticking to the blade in melted form".

MGT got the team to Patco for an immediate action to ensure the company does not face any production disruption. This was followed up by



Umasankar and Sivaraman from DTVS, team MGTB comprising CR Kumarswamy, Basavaraj Kotagi, and TG Deenabandhu along with **Patil, Kale**, Technical Director and others from Patco. Together they had a brain storming session, and the issue of 'the ground part not being cleared but staying put in the gap, leading to accidents' was analyzed. The primary focus was to check which of the inputs had been changed or replaced since August 28, 2019 that were not conforming to the requirements.

SETTING THINGS RIGHT

A day-long workshop was then organized that led to the implementation of changes – both for insurance (on the machine side) and assurance (input part side). The Patco working team was also imparted training for trouble-shooting.

Later, after having a trouble-free three months, on November 28, 2019, the primary line of defence got breached with a part getting stuck on the work rest blade. The abnormal torque alarm was 'reset' and the part was not removed from the location. This led to the blade getting damaged. MGT immediately added a secondary line of defence and another alarm was replaced for prompt part removal. The reset button that naturally forced the control wheels and the axes were moved to Home. Today, by arranging a value stream reassessment by each of the sub-system suppliers of automation (integrator - TESPA robotics) and managing wear parts, MGT, as ever, is ensuring Patco owns the process and grows in confidence. DTVS, meanwhile, is driving Patco's control of input quality with the latter's output averaging about 3.5+K/day!

Growing Global Footprint

Micromatic Grinding Technologies is taking its strengths outward to its key markets and extensively increasing its presence on the global map.

FOR the last three decades, Micromatic Grinding Technologies (MGT) is gradually increasing its presence in the international grinding machines scene. The company has exported nearly 400 machines to about 30 countries across the world, from small job shops to OEMs. In today's world where market scenario changes overnight, MGT is striving hard to provide innovative and economic solutions thru customized work holding, tooling and process optimization.

MGT's FOCUS

Precision Component Manufacturing

High-Precision Hydraulic Grinders, introduced back in 1977, are still MGT's most popular machines in the world market for one off tool room applications or small batch production of high-precision component. MGT had supplied below models of Precision Hydraulic Cylindrical grinder in overseas market catering wide range of components:

- Eco 200 – 65 nos + 70 nos GCU 100 (Previous version)
- GC 350 – 112 nos
- GCH 440 – 5 nos

Major specification of these machines are:

| Description | eco 200 | GC 350 | GCH440 |
|---|---------------|---------------|---------------|
| Swing diameter | 200mm | 350mm | 440mm |
| Grinding length | 400mm | Up to 1200mm | Upto 3000mm |
| Max. weight of job between centers | 30Kg | 80Kg | 250Kg |
| Max. weight of job on chucking application (Including Chuck weight) | 10Kg | 50Kg | 80Kg |
| Roundness (as per ISO 2433 on Standard test part) | 0.001mm | 0.001mm | 0.002mm |
| Roundness (as per ISO 2433 on Standard test part) | 0.002 / 400mm | 0.002 / 400mm | 0.002 / 400mm |



ECO 200U



Wire Drawing Die on eco 200



Carbide Blank Grinding on eco 200



Compressor Eccentric Shaft Pin grinding using MGT's special fixture on GCE 350



GCU 350 x 500



Rotor grinding on GCE 350 x 500



GCHE 440 x 2000



Broach OD Grinding on GCHE 440 x 1600

2019: The Year of Thriving

The year 2019 spelled success and excitement for MGT as it could identify and leverage opportunities that came its way. It was a winning situation on the export front too as several machines were sent out to overseas cutting tool manufacturers and precision hydraulic component manufacturers, all precisely cut out to their requirements. Onsite training was also provided to customers for operation and machine maintenance. Following are some captured moments that bring to life the success achieved this past year.

CUSTOMER ENGAGEMENT

Somta Tools (Pty) Ltd, Pietermaritzburg, South Africa



O.M.F.B. S.p.A – Hydraulic Components, Brescia, Italy



Guhring Cutting Tools (Pty) Ltd, Port Elizabeth, South Africa



OVERSEAS EXHIBITION

MGT participated in several International Exhibitions. With its maiden presence in MSV Brno, Czech Republic and Metalex 2019, Ho Chi Minh City, Vietnam, MGT firmed its footprint in new geographies.



Protecting the Planet

MGT has always been mindful of its impact on the environment and society at large. With the aim to preserve irreplaceable natural resources and ensure sustainability, the company engages in environmentally-responsible practices, and recycling and renewable programs.



MGT treats around 20 lakh litre of sewage water in a year, which is used for gardening, sprinkling and flushing.

THE waste hierarchy of 'Three R's' – Reduce, Reuse and Recycle - is a guiding principle for a sustainable life, which could seem daunting to implement. However, it does not require more than small changes in one's daily lifestyle to ensure less gets wasted and less ends up in the landfill. These minor changes then add up to a cumulative significant reduction of one's carbon footprint. In order to play the role of a responsible corporate citizen, MGT is working on the following initiatives towards environment protection.

- Reduction of energy consumption in all areas:
 - Use of LED lights that are up to 80 percent more efficient than traditional lighting. Less energy use reduces the demand from power plants and decreases greenhouse gas emissions.
 - Use of VFD in case of motors for blowers, pumps and compressors to reduce the jerk load and power.
 - Provision of the means to switch off the power easily in majority of areas. The company plans to bring in automation in the near future.
 - Use of **energy efficient motors** in bulk consumption like chillers and pumps.
- Replacement of fossil fuels with electricity or less polluting fuel like PNG (Piped Natural Gas) to reduce carbon emissions.
- We are planning to install roof top **Solar power plant to supply our 40% of electrical power.**
- Water conservation in all plants and operations by:
 - **Using rain water harvesting, the two operational plants in Ghaziabad save about 50 lakh litre of water annually.**
 - A community pond in a nearby village has been taken to recharge underground aquifer.
 - Special accessories like photo sensors, waterless urinals and nozzles are being used in the washrooms to conserve water in day to day operations.
 - Cooling towers are being revamped to conserve water.
 - **Around 20 lakh litre of sewage water gets treated in a year, which is used for gardening, sprinkling and flushing.**
- Use of environment-friendly refrigerants in air conditioning units and machines produced by the company.
- MGT urges its customers to return the wooden packing of its products for recycling. Additionally, the plan to put reusable steel packing materials is in the pipeline.
- Disposal of waste items like coolants, oils etc. gets done as per the directions of the local pollution body, with the help of an authorized agency. 

Partnering for Change

MGT along with Gram Niyojan Kendra (GNK) has created an enabling environment for children and their mothers in some villages in Ghaziabad and Greater Noida which has brought a meaningful difference in their lives.

TWO and a half decades ago, MGT associated itself with Gram Niyojan Kendra (GNK) with a vision to bring in change in the surrounding community. What started as a small initiative of supporting a balwadi centre in the JJ cluster of Raj Nagar has now expanded to a full-fledged program that touches the lives of 4,332 families. In order to play the role of a responsible corporate citizen, MGT is working on the following initiatives towards environment protection.

Through the intervention supported by MGT, GNK has changed the lives of the community people in Raispur and Sadarpur villages of Ghaziabad. In 2019, the efforts expanded to five new areas, which are primarily construction sites in Ghaziabad and Greater Noida districts.

SUCCESS MILESTONES IN THE PROJECT

- a. Prioritizing childcare through early childcare centres: GNK ensures childcare by focussing on health, nutrition, early learning and care for children between 3-6 years old through balwadi centres.
- In the last one year, 245 children enrolled in the centres at Sadarpur and Raispur villages and 163 children were enrolled across the childcare centres at construction sites.



1. Immunization of children 2. Children's activities
3. Awareness meeting with adolescents

- 100% children from the centres were enrolled in the local government and private schools.
 - The mothers of enrolled children were mobilized into groups and provided information on health practices, child nutrition, good parenting and other child protection issues. Every month at each site, an average of 18-22 mothers attend the meetings and gain knowledge.
- b. Academic support for children through corporate engagement: As part of corporate staff engagement, the MGT staff taught children in the remedial classes at Raispur. A total of 23 children from 6th - 9th grade attended these classes.
- c. Mobilizing and empowering women: Multisectoral interventions are being implemented with the women in the two villages.
- 650 women have been part of the various meetings and awareness generation programmes in both villages.
 - In Sadarpur and Raispur, 200 women have made 20 self-help groups of which nearly 70% members are engaged in various livelihood activities.
 - For the last decade, 320 women have been generating an average monthly income of nearly ₹5,000 through tailoring services. Similarly, 244 women provide beauty care services and earn an average of ₹7,000 per month.
- d. Strengthening youth voice and capacity building:
- 340 adolescent girls in Raispur village participated in the meetings held through the year to discuss issues around personality development, health and hygiene, child rights and other social issues.
 - Skill training of youth in various trades such as computer, electrical repairs and health attendant programme is also being implemented. Since the start of the program, nearly 50 youngsters have taken up jobs and set up their own initiatives after undergoing their training with GNK.

HR Framework

You can create a smart strategy, offer amazing products and services and be operationally efficient but unless you can consistently bring out the best in your people, none of that matters.



*Kapil Dhand
Managing Director
Micromatic Grinding Technologies*



*Deepak Kumar Chauhan
Senior Manager HR
Micromatic Grinding Technologies*

immune system in preventing viruses and bacteria from taking hold and damaging the body. Right CULTURE promotes and reinforces 'Right Thinking, Behavior and Actions' and stops us from 'Wrong Thinking, Behavior and Actions'.

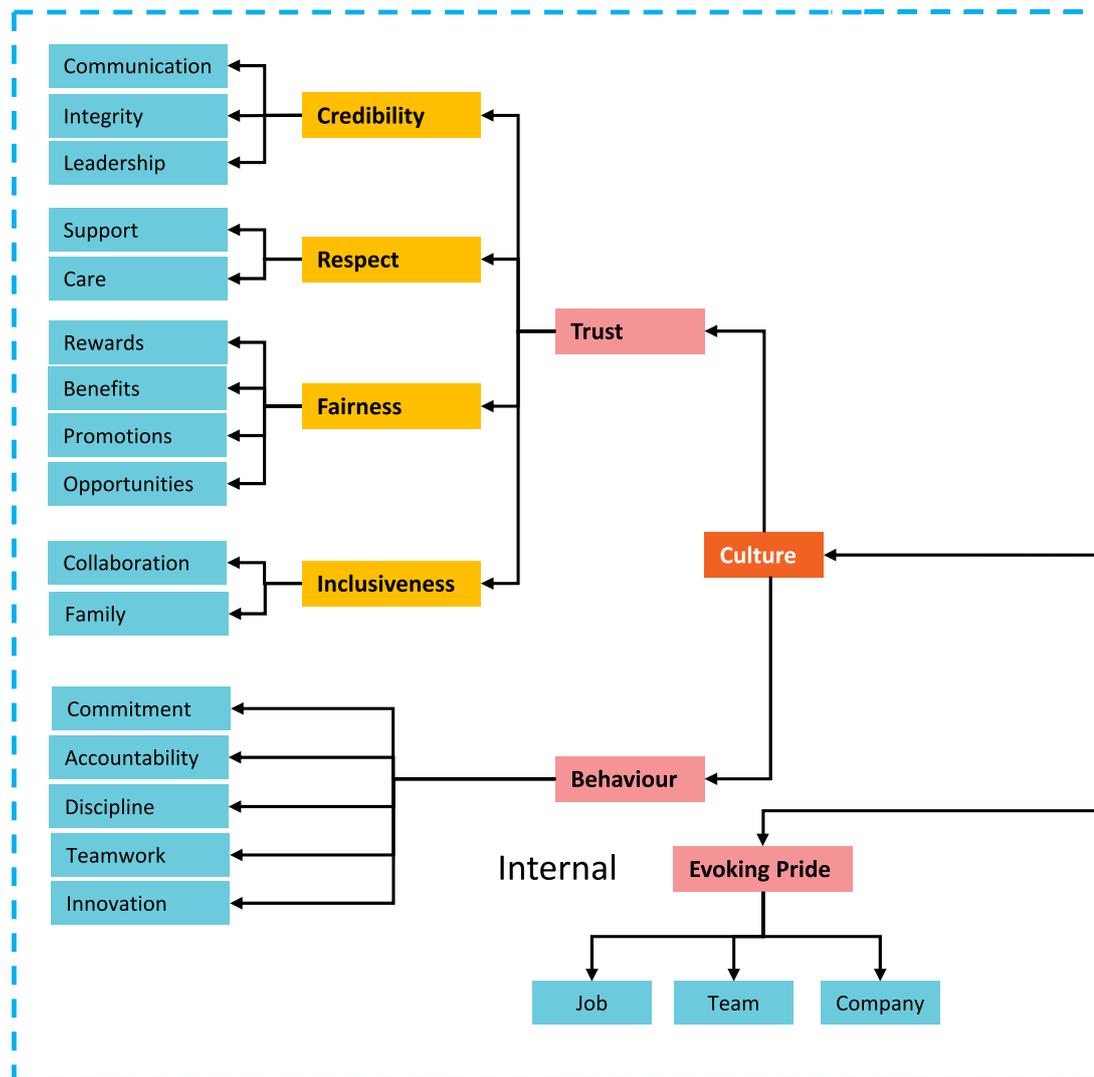
We have further divided Culture in two sub dimensions: Trust and Behavior.

MG T has always been known for its Humanistic Practices in Management [1]. We are determined to consistently improve experience of our people at the workplace. HR framework has been evolved to guide us to plan and execute specific, actionable steps in our journey for 'THE PURSUIT OF ZERO'. Culture, People Development and Alignment with the Brand Ideal, are key pillars of this framework. We will develop, deploy, manage and improve our processes, systems and practices in these areas. Some of the key elements of this framework are briefly explained as follows:

1. Culture

Culture in any organization functions much like the human

The HR Framework



1.1 Trust: At the foundation of all relationships is 'TRUST'. It is just as important in professional relationships as it is in personal ones. We are determined to enhance trust at MGT which will enable us to weather not only the storms thrown up by the competition, but also the ever-changing economic and political environment. We understand Credibility, Respect, Fairness, Inclusiveness are key ingredients to build and enhance trust at MGT.

1.1.1 Credibility: Trust is built through actions not by words. We intend to improve communication practices, competence of the Leadership team so that people see them as credible/trustworthy.

1.1.2 Respect: We completely understand that our success is due to the contributions of our people. Therefore, we have a deep regard and respect for every individual. MGTians must have a feeling that they are being offered enough support and care to attain their personal and professional goals

1.1.3 Fairness: Fairness is fundamental to our purpose as a Business. We are committed to foster fairness at MGT in all our actions and decisions related to Rewards, Recognition, Opportunities and Benefits. We also have mechanisms

for appeal in case someone feels otherwise and needs to voice his/her concern.

1.1.4 Inclusiveness: Encouraging Collaboration through Involvement of our people in all major decisions to make them feel included and part of the MGT Family.

1.2 Behaviour:

1.2.1 Commitment & Accountability: A Culture of Commitment & Accountability is cultivated among MGTians to focus on achieving the company's purpose over and above individual objective.

1.2.2 Self-Discipline: MGTians take pride in being high on self-discipline. This helps them achieve maximum productivity at work and optimum work-life balance.

1.2.3 Teamwork: Fostering Teamwork by creating opportunities for MGTians to work together and utilize all available resources and skills to achieve Organization's Goals.

1.2.4 Innovation: MGTians are encouraged to direct their thoughts and energies towards innovative solutions to address both stated and implied needs of internal and external customers.

2. People Development

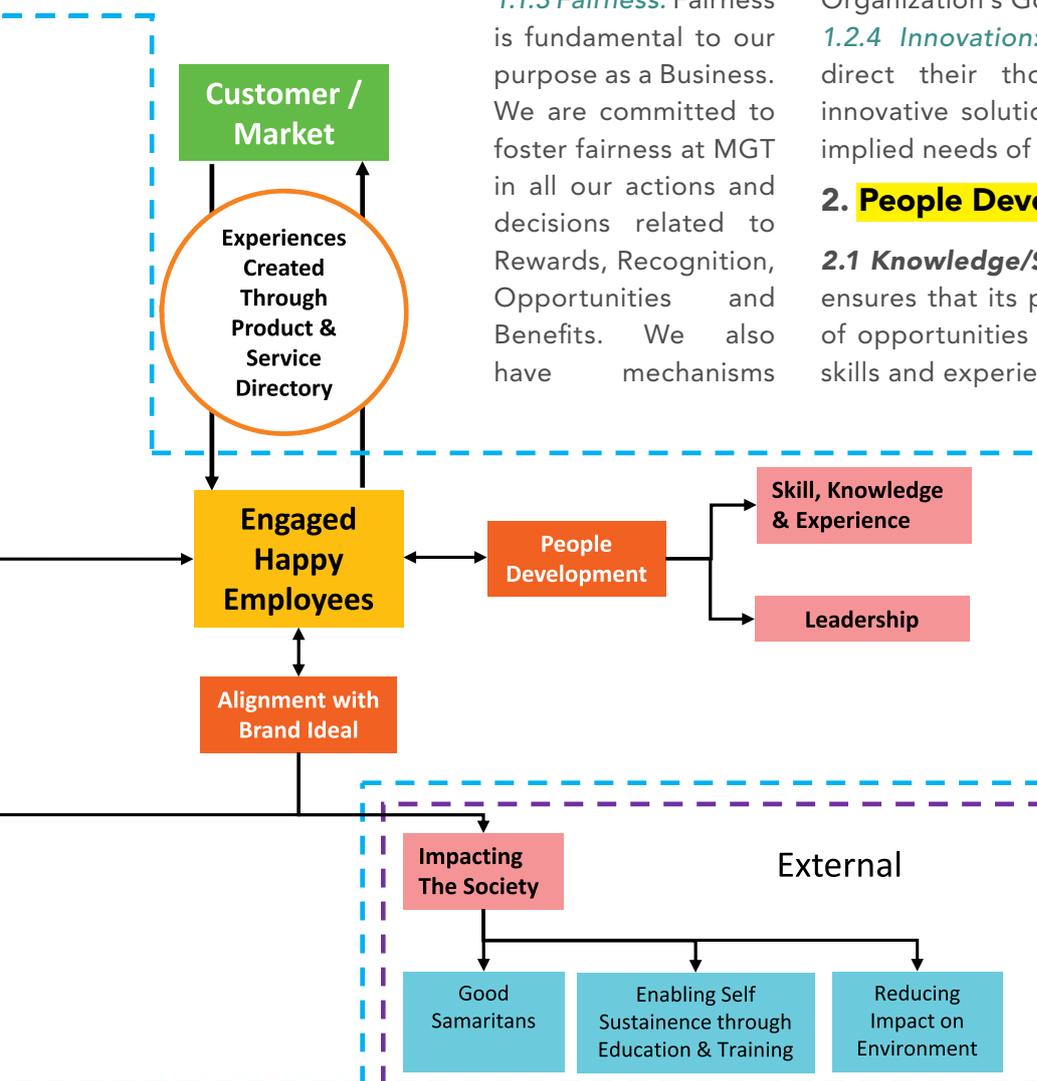
2.1 Knowledge/Skills/Experience: The company ensures that its people are provided with plenty of opportunities for enhancing their knowledge, skills and experience.

2.2 Leadership: Developing Leadership pipeline across all the levels.

3. Alignment with Brand Ideal

We strive to drive every Thought and Action, in alignment with our higher Purpose of 'Evoking Pride' in each MGTian by creating a world-class experience for all stakeholders and 'Impacting the Society' in positive ways through our actions.^[1]

^[1]www.micromaticgrinding.com/Humanistic_Management_in_Practice.pdf



PRODUCT LAUNCH FOR THE NEXT DECADE



PLUTO 18 CNC External Grinder

- Space Saving
- Competitive Grinding solution
- High performance
- Ease of operation thru MGT's customized user-friendly Standard Graphics screen
- Suitable to produce high precision shaft type parts in plunge / traverse grinding operations
- Available in Straight and Angular Configuration



MGT menu program

| Specifications | U/M | Value |
|--------------------------------------|-------|-------------------------|
| Swing Diameter | mm | 200 |
| Admit Between Centre | mm | 230 |
| Grinding Length | mm | 180 (Towards tailstock) |
| Grinding Wheel (Max dia x Max width) | mm | 400 x 50 |
| Spindle Power | kW | 3.7 |
| Wheel Speed | m/Sec | 30 |



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