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Indian Machine Tool Manufacturers' Association

**A Report on
Third 'International Seminar on
Machining Technologies' 15-16 July 2005,
NIMHANS Convention Centre, Bangalore**

A. Background

Rapidly evolving trends in the manufacturing industry necessitates the need for adapting newer and more productive manufacturing solutions with precision, combined with state-of-the-art automation and smart workforce. Continuous development and innovation in manufacturing technology, therefore assumes critical significance in order to achieve 'world-class excellence'.

Indian Machine Tool Manufacturers' Association (IMTMA) has been in the forefront of keeping the Indian industry abreast with the changing developments and innovations in manufacturing technologies, especially in the metal-cutting industry. After conscious evaluation on the status of metal-cutting industry in India, IMTMA took the lead in organising International seminars on these topics on a regular basis, so as to bring to the fore the emerging trends in machining technologies, as well as focusing on its futuristic scope.

The first International Seminar on Machining Technologies was scheduled in Bangalore in 1997. Success of this Seminar inspired the Association to schedule the second in the series in New Delhi in 2003.

The tremendous response in 1997 and 2003, enthused IMTMA to schedule it once again in Bangalore so as to bring to the fore the newest trends in metal-cutting machine tools revolving in other parts of the globe. IMTMA's consistent endeavour is to update users and manufacturers with latest happenings world-over on the entire gamut of manufacturing technologies.

With this aim, IMTMA with the support from International Centre for Advancement of Manufacturing Technology (UNIDO-ICAMT) decided to organise the third International Seminar on Machining Technologies on July 15-16, 2005 at the NIMHANS Convention Centre in Bangalore. Main objective of the International Seminar was to provide both users and manufacturers of metal-cutting machine tools with latest solutions that would enhance productivity, provide superior finish to machined components, as well as highly cost-competitive.

B. Pre-event Activity

Through this International Seminar, the Association wanted to cover more pertinent aspects of metal-cutting processes, its requirement in the manufacturing industry, and the gap existing in this area as well as means to bridge them. In order to achieve this objective, a core group of experts was constituted under the chairmanship of Mr R. Srinivasan, Past President, IMTMA with membership from machine tool manufacturers & users as well as academia. Core group met at regular intervals and finalised the programme structure, faculty and topics to be covered by each faculty. After consultation with ICAMT, programme schedule as detailed in **Annexure II** was frozen. Programme structure included five keynote sessions apart from 18 presentations in five concurrent sessions on process technologies, volume production, emerging technologies manufacturing technologies and enabling technologies. These segments form the bull-work of metal-cutting processes.

Core group also suggested to organise TECH – SHOW, a concurrent exhibition to highlight recent developments in metal-cutting industry through display of components, tools & dies, CAD/CAM, materials & testing equipment, posters, product literature and video demonstrations.

C. Publicity of the event

Attractive brochure for the programme was printed and sent to more than 5,000 companies who were expected to be benefited from this programme. Publicity of the programme was mainly through mailing of the brochure to target audience as well as coverage in the print media. Faculty for the programme was also effectively used for

promoting the participation. IMTMA secretariat staff constantly followed up with the target audience through telephone calls and email messages.

D. Faculty

The International Seminar was facilitated by 24 reputed international experts from leading global companies, including from the world's largest machine tool conglomerates – Yamazaki Mazak; Japn, Saint-Gobain Abrasives; USA, ISCAR, Israel; Kennametal, Germany; Hardinge, USA; FANUC, Japan; Siemens, Germany; Taegutec, Korea; Toyoda Machine Works, Japan; Vogel, Germany; Makino Milling Machine Co, Japan; Mitutoyo Corporation, Japan; Starragheckert Technology, Switzerland; Liebherr, Germany; Renishaw, UK, Extrude Hone, US, etc. Complete list of the faculty including their contact details are placed at **Annexure III**.

E. Inaugural Session

Mr C. P. Raman, President, TVS Motors while inaugurating the two-day International Seminar on 15th July 2005 gave an overview of the Indian Two Wheeler industry and challenges faced by them. He also highlighted their expectations from the Indian Machine Tool Industry and suggested that the Automotive & Machine Tool sector are required to work together for mutual benefits. Summary of his inaugural address is placed at **Annexure IV**.

F. Keynote Sessions

Mr Mahen R. Patel of Hardinge Inc. USA in his presentation on “**Hard Machining – Choose the best process for your application**” mainly focused on the process requirements for hard turning including design of the machine, work holding and tooling. His presentation also included real life applications, case studies, success stories and also on-going research in challenging areas such as tool wear and white layer formation.

The theme of this presentation **Mr Takashi Yamazaki**, of Yamazaki Mazak Corporation on “**Multi Task Machining**” was 'Done-in-One'. The philosophy of reducing lead times by combining processes was illustrated through case studies.

Dr Moshe Goldberg, ISCAR, Israil in his presentation on "**Development and Applications of New Cutting Materials**" outlined the current and future trends within the cutting tool industry emphasizing on the latest advancements in tungsten carbide material (composition, grain size etc.), advance coating technologies, innovative design of tool geometries and edge preparations. Furthermore, attention will also given to exceptional machining solutions, and machining strategies incorporating the Fast Metal Removal concept and multifunction tools.

Dr K. Subramanian, Saint Gobain Abrassives, USA made an excellent presentation on "**Grinding as a Surface Generation Technology – Advancements in Machine Tools in the context of Grinding**". In his presentation he looked into the future and explored possibilities and opportunities for machine tool developments as part of the Technology Value Chain. Opportunities envisioned by him included:

- Diagnostics capabilities and their integration with digital technology
- Optimization of subsystems (Coolant, Truing and Dressing...)
- Initiatives for inter-industry collaboration for system integration and maintenance
- Machine tools as an assemblage of standardized platforms and modules
- Dynamic aspects of the machine tool components and their development

He suggested that machine tool builders can pursue each of these avenues by themselves or in collaboration with other suppliers and end users in the industry. Such collaborative development through a group of companies – all linked by the same science base of the process – has several advantages to achieve, retain and maintain global competitive edge.

Mr Ulrich Krenzer, Kennametal, Germany in his presentation on "**Art and Science of Hole Making & Hole Finishing**" stated that amongst all metal cutting processes, holemaking, which is drilling, boring reaming and tapping, has the highest share of the overall production time in metal working industries. Nevertheless no other process is still using such a high rate of conventional HSS-products. This provides a tremendous potential for cost reduction and quality improvements! In his presentation he demonstrated how New high performance solid carbide drills can easily reduce process times by 80% compared to best in class HSS-Drills and even by 50% compared to other high performance carbide drills. He further explained

various issues connected with Holmaking and their solutions. Presentation also provided some success stories from the different industrial sectors.

G Concurrent Sessions

G 1 Process Technologies

Mr Yishi Takayama, Fanuc Japan, in his presentation on "**State of Art Wire Cut EDM's**" covered the principles of electric discharge, the structural design concepts of wire cut EDM, as well as latest technological advances in terms of high speed & high precision cutting, taper cutting, & introduction of automation system with robot. He also demonstrated various applications in wide range of machining fields.

Mr Hanjo Gissler, Litz Germany, while making the presentation on "**What's new in Toolings for Die & Mould**" stressed on current and future strategies in High Performance Cutting.

Presentation of **Dr Kwon-Hee Park, Taegutec, Korea** on "**Advances in Tool Materials for Hard Machining**" explained high speed machining technology for difficult to cut materials. Presentation provided detailed information on High Speed Cutting Tool Grades, as well as Tool grade application areas & work materials,

Mr Rainer Deuerling, Vogel, Germany in his presentation on "**Minimum Quantity Lubrication**" explained their co-operative project between cutting tool manufacturers, machine tool builders, research institution & lubrication equipment manufacture which has resulted in average reduction of cutting time by 30-40 min. and eliminated coolants, a major reason for deterioration in machine tools.

G 2 Volume Production

Mr Robert Marvin in his presentation on "**Single Pass Bore Finishing of Automation Components**" explained in detailed this highly productive boring process using pre-set diamond coated tools finishes in a single pass. He further demonstrated the ability to achieve very high precision at a relatively low cost per piece which makes the single-pass process ideal for finishing automotive components in production. It was also explained that the results would be dependant

on many factors and his presentation recommends that the "systems" approach to be taken.

Mr N. Hori, Toyoda Machine, Japan in his presentation on "**High Speed Grinding**" indicated that Main demands from users are high quality to maintain high accuracy, reliability and reduction of production cost per component. He explained how they provide engineering and technical development, based on technology of machine itself, grinding technology and CNC control system to keep high accuracy and minimize production cost. He also explains their recent development of a ecologically friendly grinding machine.

Other presentations under this concurrent session included presentations from **Mr Neeraj Pattir, Branson Inc** on "**Productive & Precision (Ultrasonic) Cleaning of Auto Components**"; and futuristic presentation from **Mr Makoto Sato, Makino Milling Machine, Japan** on "**Emerging Solutions through Evolution in Machining**"

G 3 Emerging Technologies

Concurrent session on Emerging Technologies included Six presentations from renowned machine tool manufacturers of the world. **Yamazaki Mazak**, world's largest manufacturer of machine tool explained the **advances in laser machining**, technology, which is slowly catching up in India. Another world's leading machine tool company, **Hardinge Inc of USA** represented by Dr Mahen Patel highlighted the key elements, available choices and selection guidelines from the viewpoint of their performance characteristics on **ultra precision machining**.

Presentation by Dr Pulak Bandopadhyay from Michigan University, USA on "**Re-configurable Machines & Systems**" provided a hybrid machining solution with productivity of dedicated lines and flexibility of CNC Machines. **Mr Gautam Doshi** in his presentation on "**Smart Machining**" explained how to make machine tool smarter. Concept of a Dream 'Smart' lathe was explained in detailed. Other presentations in this concurrent session included presentations on "**Anywhere CMM**" by **Mitutoyo, Japan**; and "**Productive Deburring for Automotive Components**" by **Extrude Hone, USA**.

G 4 Manufacturing Technologies

Concurrent session on Manufacturing Technologies included two excellent presentations very well received by the delegates. Mr Edward Baechler, Starragheckert Technologies, Switzerland in his presentation on "Machining of Aerospace Components" illustrated machining of Aluminium & Titanium aerospace components along with machining sequence with real life examples. His presentation also covered fixturing for aerospace components being one of very critical area.

The presentation of **Mr Andreas Hartig, Liebherr, Germany** on "**Contemporary Gear Hobbing – Tools & Process Strategies**" began by explaining the setup of a modern CNC Gear Hobbing machine including the various CNC axes normally found on such machines. He also explained the advantage of CNC hobbing machines which allows to do a setup change through software controls rather than by arduous mechanical changes. Typical kinematic deviations in hobbing will also be described and explained. Further, he explained various kinds of hobs available in the market along with the latest coating technologies and it's specific advantages.

G 5 Enabling Technologies

Concurrent session on Enabling Technologies covered Two presentations mainly of Process control. Mr Colin Price & Mr Mark Chappell, Fenishaw Plc UK started their presentation by explaining the today's manufacturing requirements and how metrology equipments can contribute to this by integration of inprocess gauging with CNC machine tools. They also covered tool-setting, component part set-up and inprocess inspection, monitoring and tool breakage detection in their presentation. Merits of total process monitoring by the use of automatic gauging to the machines control to provide a closed loop feedback process system was also discussed. Various video clips used for showing non-contact laser systems for tool setting and breakage and kinematic and straingauge spindle probing systems were greatly appreciated by delegates.

H CROSS FIRE

The two-day International Seminar was wrapped by an interesting 'Cross Fire' panel discussion. Panellists, comprising CEOs of well-known machine tool manufacturing

and user companies, debated on important issues critical for the growth and competitiveness of the industry. The discussions were moderated by Mr. Shailesh Sheth, Past President & Chairman Programmes Committee, IMTMA. The following issues were debated ;

Topics debated :

1. Indian machine tool manufacturers cannot offer machining solutions.

The Group unanimously felt that there is a need for Machine Tool manufacturers to move out of their own islands and offer Total Manufacturing solutions with inputs of appropriate, contemporary Technology. Towards this end, Machine Tool manufacturers need to scale up Design and Production capacities and work in a collaboration frame of mind with both customers and vendors.

2. Users do not pay needed attention to the manufacturing processes and blame machine tool manufacturers for poor quality and low productivity.

The Group opined that improving productivity and quality must be done with benefit to the Final (End) Customer in mind. All the players in the Value Chain need to work together to satisfy the End Customer through high performance reliability, OEE and MTBF. The process of Design, Development and Manufacture must produce reliable machine tools backed by efficient after-Sales-Service. Training own and customer's engineers and competence building throughout the Value Chain is the need of the hour.

J Participation

Target audience for this event was mainly manufacturers & users of machine tools. Based on the response received to the brochure, list of over 400 delegates were finalised for participation after due consultation with Mr Deepak Ballani of International Centre for Advancement in Manufacturing Technology. List of the delegates is placed at **Annexure V**. It could be observed from the list that the participation covered the entire cross-section of the Indian manufacturing industry. Of the total delegates, 60 % per cent comprised users of metal-cutting machine tools, especially from the key user industries such as automotive, auto ancillary, SSIs, Consumer durable sector, aerospace, railways, etc. And of the balance, 35 %

represented the machine tool industry. The rest came from R&D organisations, technical institutions, academia, etc.

K Feedback From the Participants

In order to know the usefulness of the seminar, a structured feedback form was designed and each participant was requested to return the same to the organizers on the concluding day. Feedback received from the participants was carefully analyzed for further improvements in the future programmes. Details of the analysis is summarized in the table below:

Participants Feedback

	Percentage Evaluation				
	Strongly Agree	Agree	Neither Agree Nor Disagree	Disagree	Strongly Disagree
The contents were relevant to my work situation	24%	70%	6%	---	---
The contents were appropriate for my experience level	18%	80%	1%	1%	---
I learned something that can be applied in my work	32%	63%	4%	1%	---
Sufficient time was allotted for the session(s)	11%	39%	23%	25%	2%
The session(s) answered my questions on this topic	11%	63%	19%	7%	---
Case study presentations, Panel discussions (Crossfire session) employed were appropriate	17%	66%	13%	4%	---

The Seminar met its stated objectives	18%	78%	3%	1%	---
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	Excellent	Very Good	Good	Fair	Poor
Overall I would rate this Seminar	11%	70%	17%	2%	---

It could be observed from the above table that more than 80% of the participants rated this seminar as Very good and not even single delegate rated this as Poor. This clearly establishes the success of this event.

Some of the suggestions given by the participants are as follows:

How could this Seminars' technical content be improved?

- By limiting topics and giving more time to learn in depth.
- Seminar could be 3 days
- Case studies from the users of machines and tools need to be added in the presentations
- Compare the industries in India and foreign and analysis should be done where ours is lagging in technical area.
- Lectures to cover the theory behind the product or technology rather than in the specific make of products.

Suggest topics to be added:

- Something for improving Indian engineering colleges and improve technical training and CAD/CAM/ CAE applications
- Technology chains for streams like gear cutting, housing machines, and assembly techniques.
- Economically sustainable technologies, which can adapted into Indian manufacturing, manufacturing automation
- Advances in grinding wheel and grinding operations and technology to get higher productivity.

- MEMS, Nano – Technology

Complete list of the various suggestions received from the participants is placed at **Annexure VI**.

L. Conclusion

More than 400 delegates present at this international seminar immensely benefited from the programme. Most delegates requested IMTMA to organise such programmes at regular intervals. IMTMA would like to thank UNIDO – ICAMT for supporting the event which enabled IMTMA to invite many key faculty from abroad, factor responsible for success of this event.

C.P RAMAN , President, TVS MOTOR CO - Speech for 3rd International Seminar on Machining Technologies – 15th July 2005 at Nimhans Convention Centre, Bangalore

Shri.C.P. Rangachar, President IMTMA, Mr.S.G. Shrigurkar, Chairman Organizing committee and Shri.H.R. Gupta, Vice President, IMTMA, Shri.V. Anbu, Shri. Praful Shinde, office bearers of IMTMA, CEOs and senior executives from Industry, ladies and gentlemen

A very good morning to all of you! It is indeed an honour and privilege for me to have this opportunity and I would like to thank IMTMA and Shri. C.P. Rangachar for giving me this.

I belong to the two-wheeler industry. I thought I would take this opportunity to bring this industry viewpoint. The two-wheeler industry of India is the second largest in the world – next only to China and it is currently 6.5 million two-wheelers per annum. The annual turnover of this industry is close to Rs.20, 000 crores.

In addition, for the last 15 years, this industry has consistently grown up at a CAGR of 12%.

With this kind of growth, we are adding a capacity of approximately 7,00,000 vehicles production every year currently and this calls for an overall investment of close to Rs. 1000 crore in capital expenditure per annum by the OE manufacturers, of which at least 60% (600 crores) would be in terms of machine tools. In addition parts manufacturers would invest on additional 50%. This will also see the same kind of CAGR as the two-wheeler industry.

The top 3 companies in India manufacturing and selling more than 1 million vehicles per annum, which makes them within the top ten two-wheeler companies in the world. The industry is of global size. The two-wheeler industry

also has been going through a rapid change. With in-house R&D, the number of new products flooding the market has increased manifold and to sum up the number of new products launched in the last 3 years is 44, which is about 10 times as much as what it was approximately 10 years back. The new product constitutes more than 70% of the total volume.

In addition, Indian products are also finding their way into many markets. The export is nearly doubled in two years time.

The Indian companies have the advantage of indigenous R&D and matching quality to Japanese. This industry is poised to go ahead and globalize and we require partners in this venture - be it suppliers of components or the machine tool manufacturers like you - who could help us to become world-class manufacturers at competitive price, quality, delivery and customer satisfaction.

Indian two-wheeler is world-class size. New products with indigenous R&D propel growth @12% CAGR. It is making forays in the world market and is increasing largely.

With this preliminary background, I thought I would express what further we are looking from machine tool industry. It is very selfish list and certainly not broad-based but still I thought it is weighty enough considering the potential of this sector.

If you look at the demands of our segment, about 2/3rd of machine tool procurement is local and 1/3rd is imported. How can Indian machines get higher share than this. What are the issues? What are the opportunities and what are the growing customer needs?

Firstly, as I said earlier, the product range is exploding and volumes also are large.

Most of the components for this industry are comparatively small in size and they are manufactured in cells. This would mean that we require not only flexible machines but also small and lean machines. We require machines with small footprints, de-featured to carry out limited operations and at the same time flexible enough to product varieties. They will have to deliver large volumes, occupy less floor space and have features, which will facilitate quick changeover.

With JIT, machine uptime will have to be virtually 100%. This means they will have to be user-friendly in terms of maintenance, easy to inspect, easy to clean and easy to lubricate. For example all gauges, indicators etc can be brought forward which will facilitate operator to look at controls at one glance.

Lubricating oil and cleaning oil circuits are separated and do not inter mix.

Design for minimum quantity lubrication or lubrication for life.

Improving the accuracy of the machine constantly. For example we have problem of Centre distance tolerance. Even though many of the sub-systems of the machining centers are still imported like systems, ball screws, motors, LM guides. The integration of all system in all aspects needs to be looked into more detail to deliver greater accuracy.

We need to work closely in reducing non-cutting time. How we reduce tool changeover time, improve acceleration and deceleration in order to improve the value added time.

How well can we extend a low cost automation to do loading, unloading and help the operator.

Can we integrate on line measurement feedback and correction to collapse variability?

Reliability improvement of the critical sub-system is very important. Our experience shows that while the accuracy is good. But the performance deteriorates quite fast overtime. In many cases it is due to coolant, chip dust etc entering into bearings, slide systems and accelerating wear and tear and corrosion. For eg. Simple design of the push button and positioning it correctly would reduce the breakdown of the machine due to coolant entry into push button. We need to give enough attention to smaller elements.

Support systems like Chip control, sliding guide ways, high pressure coolant flusher, chip disposers etc require a lot of detailing and understanding. We should build the lessons of TPM into this.

Dry cutting with excellent chip collection would definitely improve the 2S on the line and also reliability of the machine. This needs further focus.

In short, be it Quality, Accuracy, Reliability, Dependability, Productivity or Flexibility what we need is not a big leap in technology but attention to details. This requires collecting feedback from users of machine tool manufacturers offering maintenance contract, which provides them access to information.

Last but not the least, lead time and cost have to be brought down. Due to product life cycle reduction, we need to respond to the market very quickly. If we have to put up a line how quickly you will be able to deliver. Can we think of commonality of parts modularity of designs and usage of standard elements not only within the company but also perhaps across the industry to cut down the lead-time and cost?

Addition to machine tool, there is a tremendous opportunity for designing and delivering various testing machines. With Indian R&D flexing their muscle there

is a great demand in this area and those who can venture into this will find an excellent opportunity for business.

As I said earlier, these are some of the inputs from the two-wheeler industry, but I do feel whatever I have said is common with the requirement of many other industries you serve. The country is on the threshold of a revolution in manufacturing. The machine tool industry is a mother industry and we look forward to this industry to be very adaptive, to be more advanced and to be more focused and supportive so that, we as an Industry and as a nation can progress and prosper.

Once again I wish good luck for the seminar and also excellent future for the machine tool industry and thank to IMTA for giving me this opportunity.



**3RD INTERNATIONAL SEMINAR ON
MACHINING TECHNOLOGY
15-16 July 2005
NIMHANS Convention Centre, Bangalore**

ANNEXURE II

FRIDAY, 15th July 2005		
KEYNOTE SESSIONS		
<p>Hard Machining - Choose the best process for your application - HARDINGE Inc., USA Speaker : Dr. Mahon Patel & Mr. Robert Seach Moderator: Mr. C. P. Rangachar</p>		
<p>Multi Task Machining - YAMAZAKI MAZAK SINGAPORE, PTE.LTD., Singapore Speaker : Mr. Takashi Yamazaki Moderator: Mr. C. P. Rangachar</p>		
LUNCH		
Concurrent Technical Sessions PROCESS TECHNOLOGIES	Concurrent Technical Sessions VOLUME PRODUCTION	Concurrent Technical Sessions EMERGING TECHNOLOGIES
<p>State-of-the-art Wire-Cut EDMs - FANUC Ltd., Japan Speaker : Mr. Yushi Takayama Moderator: Mr. Ramadas</p>	<p>Single Pass, Superabrasive Bore Finishing for Automotive components- Engis Corporation, USA Speaker :Mr. Robert Marvin Moderator: Mr. T. Parabrahman</p>	<p>Advances in LASER Machining - YAMAZAKI MAZAK SINGAPORE, PTE. LTD., Singapore Speaker :Mr. Yogesh Aphale Moderator: Mr. Praful Shende</p>
<p>'What's new in Toolings for Die & Mould Machining' - LEITZ METAL WORKING TECHNOLOGY GROUP (LMT), Germany Speaker :Mr. Hanjo Gissler Moderator: Mr. N. Reguraj</p>	<p>Productive & Precision (Ultrasonic) Cleaning of auto components BRANSON Inc., Speaker : Mr. Neeraj Pattir Moderator: Mr. T. Parabrahman</p>	<p>Re-configurable Machines and Systems - 'Is it on the Horizon' ? UNIVERSITY OF MICHIGAN Speaker :Dr. Pulak Bandyopadhyay Moderator: Mr. Praful Shende</p>
TEA/COFFEE		
<p>Advances in Tool Materials for Hard Machining - TAEGUTEK , Korea Speaker :Dr.Kwon-Hee Park Moderator: Mr. K. G. Shashidhar</p>	<p>High Speed Grinding - TOYODA MACHINE WORKS Speaker : Mr. Nobumitsu Hori Moderator: Mr. N. K. Dhand</p>	<p>SMART Machining- PRODUCTIVITY & QUALITY IMPROVEMENT SERVICES, INDIA Speaker :Mr. Gautam Doshi Moderator: Mr. P. J. Mohanram</p>
<p>Minimum Quantity Lubrication (MQL) - VOGEL, Germany Speaker :Mr. Rainer Deuerling Moderator: Mr. K. G. Shashidhar</p>	<p>Emerging solutions through evolution in Machining- MAKINO MILLING MACHINE CO. LTD, JAPAN Speaker : Mr. Makoto Sato Moderator: Mr.N. K. Dhand</p>	<p>"Anywhere CMM" - MITUTOYO CORPN., Japan Speaker : Mr. Masahiro Ishikawa Moderator: Mr. P. J. Mohanram</p>
Networking Reception		



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SATURDAY, 16th July 2005		
KEYNOTE SESSIONS		
Development and Application of New Cutting Materials - ISCAR, Israel Speaker :Dr. Moshe Goldberg Moderator: Mr.S. G. Shirgurkar		
TEA/COFFEE		
"Grinding as a Surface Generation Technology - Advancements in Machine Tools in the context of Grinding Science" - SAINT-GOBAIN ABRASIVES, USA Speaker :Dr. K. SUBRAMANIAN Moderator: Mr.S. G. Shirgurkar		
Art and Science of Hole Making & Hole Finishing - KENNAMETAL, Germany Speaker :Mr. Ulrich Krenzer Moderator: Mr.S. G. Shirgurkar		
LUNCH		
Concurrent Technical Sessions		
MANUFACTURING TECHNOLOGIES	ENABLING TECHNOLOGIES	EMERGING TECHNOLOGIES
Machining of Aerospace Components STARRAGHECKERT TECHNOLOGY AG, Switzerland Speaker :Mr. Edward Baechler Moderator: Mr.R. Srinivasan	Sensing and feedback technologies for process control in Machining (Non-grinding) - RENISHAW plc, UK Speaker :Mr.Colin Price & Mr. Mark Chappell Moderator: Mr.H. R. Gupta	Productive Deburring for Automotive Components - EXTRUDE-HONE, USA Speaker : Mr.James Koroskenyi Moderator: Mr. Gautam Doshi
Contemporary Gear Hobbing - Tools & Process strategies - LIEBHERR, Germany Speaker : Mr. Andreas Hartig Moderator: Mr.R. Srinivasan	Latest advances in CNC Systems- Controller Technologies for High Speed and High Accuracy Machining - SIEMENS AG, Germany Speaker : Mr. Dirk Rebeneck Moderator: Mr.H. R. Gupta	Ultra precision machining - HARDINGE Inc., USA Speaker :Dr. Mahen Patel & Mr. Robert Seach Moderator: Mr.Gautam Doshi
TEA/COFFEE		
CROSSFIRE - Panel discussions & Action Plans		
Summing Up		



**3rd International Seminar on Machining Technologies
15 - 16 July 2005, Bangalore**

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**3rd International Seminar on Machining Technologies
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10	LMT Heidenheimer Str. 84 D-73447 Oberkochen Germany Phone: +49 (0) 7364 95 79 Fax: +49 (0) 7364 95 79 Email: hgissler@kieninger.de	Mr. Hanjo Gissler
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13	Productivity & Quality Improvement Services 2 nd Floor, 43 B.G. Corner, Nigdi PUNE - 411 044 India Phone : +91-9373328284 Email : imtma@vsnl.net	Mr. Gautam Doshi
14	RENISHAW plc New Mills, Wotton-Under-Edge Glos, GL12 8JR. UK Tel: +44 (0) 1453 524159 Direct Fax: +44 (0) 1453 524104 Email: Colin.Price@renishaw.com , Mark.Chappell@renishaw.com	Mr. Colin Price
		Mr. Mark Chappell
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18	TAEGUTEC 304, Yonggye-ri, Gachang, Galsung Taegu 711 860 KOREA Phone:0082 53 760 7638 Fax:0082 53 760 7660 Email id: khpark@taegutec.co.kr	Mr. Kwon-Hee Park
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<p>1. Ace Designers Ltd Plot No 7 & 8, II Phase Peenya Industrial Area Bangalore 560 058 Phone: 080-22186700-10</p> <p>Fax: 080-22186724 Email: acedesigners@acemicromatic.com</p>	<p>1 Mr. B. Machado Managing Director</p> <p>2 Mr. Sridhar T. P Sr. Manager - Design & Development</p> <p>3 Mr. Ravindra .K Applications Specialist</p> <p>4 Mr. S. Prakash Sr. Designer - Design & Development</p> <p>5 Mrs. Manisha G. Kannur Designer - Design & Development</p> <p>6 Mr. Madhusudan Sr. Manager - Methods Engg</p> <p>7 Mr. Vijaya Simha Manager – CMD</p>
<p>2. Ace Manufacturing Systems Ltd. 533, 10th Main, 4th Phase Peenya Industrial Area Bangalore 560 058 Phone: 080-28360508/9/10 Fax: 080-28362791 Email: sureshachars@amslindia.com</p>	<p>1 Mr. L. S. Umesh Vice President - Operations</p> <p>2 Mr. A. P. Dixit General Manager - Procurement</p> <p>3 Mr. Muralidhara Rao Manager - Design & Development</p>
<p>3. Addison & Co. Ltd. 4, 18 & 19, Smith Road Chennai 600 002 Phone: 044-28525201 Fax: 044-28522007</p>	<p>1 Mr. S. Rajasekar Manager - Machine Tools</p> <p>2 Mr. Lucas Pushparaj Senior Engineer – Marketing</p> <p>3 Mr. K. Gunasekaran Senior Engineer - Marketing</p>
<p>4. Amararaja Batteries Ltd. Renigunta-Cuddapah Road Karakambadi Tirupathi 517 520 Phone: 0877-2285561-66 Fax: 0877-2285 599/600 Email: ern@amararaja.co.in</p>	<p>1 Mr. E. Rudraiah Naidu Tool Eng. and SPM Cell</p> <p>2 Mr. S. Subba Rao Eng. Tool Mfg.</p>
<p>5. Amphenol Interconnect India Pvt. Ltd Plot No 61, Keonics Electronic City Hosur Road Bangalore 560 100 Phone: 080-28523838 Fax: 080-28520418 Email: vinodk@amphenol-in.com</p>	<p>1 Mr. Vinod Kumar Dy. Manager</p> <p>2 Mr. Harish Kumar Asst. Manager</p>



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6. Anz International A-322, 7th Main, 2nd Stage Peenya Industrial Estate Bangalore 560 058 Phone: 080-5117 2037 Fax: 080-2836 2217 Email: rvashee@anzintl.com	1 Mr. Rakesh Vashee Managing Partner
7. Apex Precision Agencies 303-308, Krishna Bhavan Annexe, 22B, Govandi station road, Deonar Mumbai 400 088 Phone: 022-2551 6158 / 0900 Fax: 022-2556 4987 Email: hemani@bom2.vsnl.net.in	1 Mr. Sony Jacob General Manager - Tech Sales 2 Mr. Shabresh Kumar Manager-Regional Sales
8. Aquasub Engineering Tudiyalur Post Coimbatore 641 034 Phone: 0422-2642484 Fax: 0422-2642128 Email: aquasubmfg@eth.net	1 Mr. B. Rubinkumar
9. Audco India Ltd. Mount Poonamallee Road Manapakkam Chennai 600 089 Phone: 044-22492323 Fax: 044-22495055 Email: ssr@audcoindia.com	1 Mr. P. V. Gopalakrishnan Head - Manufacturing R&D
10. Auto Shell Casts Pvt. Ltd. 10, SIDCO Industrial Estate Coimbatore 641 021 Phone: 0422-2672247 Fax: 0422-2672175 Email: autoshell@vsnl.com	1 Mr. N. Ramachandran Exe.Manager- O.A. & Devpt
11. Bajaj Auto Ltd. Akrudi Pune 411 035 Phone: 020-27472851 Fax: 020-27473398 Email: snadhav@bajajauto.co.in	1 Mr. N. D. Kulkarni Manager (Sec Gear) 2 Mr. Vijay R. Bhongale Asst. Manager (ME - E & T) 3 Mr. Girish Parundekar Manager (ME - E & T) 4 Mr. Vishvas V. Palande Sr. Manager (ME -E&T) 5 Mr. Rahul Kumar N Kadam Engineer - DVLP & PP SH 6 Mr. Rajesh Kokate Manager (TE-PDC)



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<p>12. Bangalore Gears (P) Ltd. Regd. Office 2078, 9th Cross 1st Main Road RPC Layout Bangalore 560 040 Phone: 080-23112715 Fax: 080-23112715 Email: bangaloregears@rediffmail.com</p>	<p>7 Mr. Hemant S Nikam Manager (TE-PDC)</p> <p>8 Mr. Ramesh V. Gaikwad Sr. Manager</p> <p>9 Mr. Ravindra D. Ingale</p> <p>1 Mr. V. Harish CEO</p>
<p>13. Batliboi Ltd Surat Navsari Road, P.O. Fatehnagar, Udhna, Surat 394 220 Phone: 0261-2890551 / 2890435 Fax: 0261-2890832 Email: mtu_sales@batliboi.com</p>	<p>1 Mr. Vivek Sharma Chief Executive Officer</p>
<p>14. Bhabha Atomic Research Centre Engineering Design and Development Section Nuclear Fuels Group Trombay Mumbai 400 085 Phone: 022-25590670 Fax: 022-25505151 Email: cumas@magnum.barc.ernet.in</p>	<p>1 Mr. C. Uma Shankar Scientific Officer - E</p>
<p>15. Bharat Electronics Ltd. Jalahalli Bangalore 560 013 Phone: 080-22195314 Fax: 080-28381652 Email: siddesh_mn@yahoo.com</p>	<p>1 Mr. K. S. Srinivasu Dy. Manager</p> <p>2 Mr. Umesh Ghimrey Dy. Manager</p> <p>3 Mr. Prasad Bhatkar Sr. Engineer</p>
<p>16. Bharat Forge Ltd. Pune Cantonment Mundhwa Pune 411 036 Phone: 020-26702777 Fax: 020-26822387 Email: Ldeshpande@bharatforge.com</p>	<p>1 Mr. H. K. N. Swami Vice President - Machine Tool Building</p> <p>2 Mr. S. K. Soni Associate Vice President (MCD)</p> <p>3 Mr. Anil Patil Vice President (Die Shop)</p> <p>4 Mr. Hingane Manager (Die Shop)</p> <p>5 Mr. Kasid Asst. Manager - CDFD (Engg)</p>



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	6 Mr. Sungshetti Asst. Manager - CDFD (Engg)
17. Bharat Fritz Werner Ltd. Off. Tumkur Road Bangalore 560 022 Phone: 080-28395745 Fax: 080-28394816 Email: bfw@bfw.co.in	1 Mr. W. Raghavendra Dy General Manager - SMD 2 Mr. M. H. M. Jambunath Asst. General Manager - Marketing 3 Mr. N. K. Vaidya General Manager – Technology 4 Mr. V. Amaresh Gandhi DGM - Special Machine Division 5 Mr. Mathew Kurian Chief Product Manager – CMD 6 Mr. K. Giridhar Rao Product Manager - MCD
18. Bharath Heavy Electricals Ltd Bhopal 462 022	1 Mr. T. G. Chauragade Sr. Dy. General Manager – FEX
19. Bismark Industries 508, 5th Floor, Amarchand Sharma Complex S.P. Road Secunderabad Phone: 040-39128535 Fax: 040-39128534	1 Mr. Shakeel M. Ghouse Managing Director 2 Mr. Syed Iqbal Ahmed Project Coordinator 3 Mr. Z. N. B. Patil Project Coordinator
20. Bosch Rexroth (India) Ltd. Near Vatva Railway Station Vatva Ahmedabad 382 445 Phone: 079-25832837/8/9 Fax: 079-25832558 Email: shah.bc@boschrexroth.co.in	1 Mr. Bhalchandra Shah Asst. General Manager - Maintenance
21. Brakes India Ltd. Padi Chennai 600 050 Phone: 044 - 26529707 Fax: 044 - 26251847 Email: bihrd@brakesindia.co.in	1 Mr. Kirthivasan R. Manager - Tool Room 2 Mr. Chellapperumal G. Manager - MSE 3 Mr. Sivarama Krishnan S. Divisional Manager - MSE 4 Mr. Manoj Hombal Divisional Manager - Tech. Devpt. 5 Mr. Srinivasan S. Dy. Manager - Tech. Devpt.



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21a. Brakes India Ltd. Polambakkam – 603 309 Phone: 04115 – 244105/06/07 Fax: 04115 - 244103	1 Mr. S. Varadarajan Vice President
22. CIPET 437/A, Hebbal Industrial Area Mysore 570 016 Phone: 0821-2511903/2510349 Email: cipetmys@sancharnet.in	1 Mr. Poomalai Chief Manager
23. CNC Engineers & Technical Consultants S-45, S.S.G.T Road Industrial Area Ghaziabad Phone: 0120-3096287 Fax: 0120-2840787 Email: rimaco@sify.com	1 Mr. Surendra Pal Managing Worker
24. CNC Times 102/103, Veena Beena Shopping Center Opp. Bandra Rly. Station Bandra (W) Mumbai 400 050 Phone: 022-56991171/91 Email: editor@cnctimes.com	1 Mr. Niraj M. Wanikar Proprietor
25. Carl Zeiss India Pvt. Ltd 22, Kensington Road Ulsoor Bangalore 560 008 Phone: 080-25567104 Fax: 080-25568103 Email: imtindia@zeiss.co.in	1 Mr. Sridhar V. Pissay National Sales Manager
26. Cast Craft Pvt. Ltd 49, Industrial Suburb Yeshwanthpur Bangalore 560 022 Phone: 080-23578255 Email: cast_craft@sancharnet.in	1 Mr. K. S. Swami 2 Mr. G. Venkatesan
27. Castrol India Ltd, ILS HQ Royal Towers, 5th Floor 781-785, Annasalai Chennai 600 002 Phone: 044-52198823 Fax: 044-28416305 Email: m.swamy@castrol.com	1 Mr. M. T. Swamy Product Manager
28. Central Manufacturing Technology Institute Tumkur Road Bangalore 560 022 Phone: 080-23375081/82/83 Fax: 080-23370428 Email: cmti@cmti-india.net	1 Mr. B. S. Somashekar Scientist - E / HOD (PMD) 2 Mr. K. Niranjan Reddy Scientist - C



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<p>29. Cimatron Limited Liasion Office 1, Runwal Prathista, Off Apte Road 567/2-B, Shivajinagar Pune 411 004 Phone: 022-25532963 Fax: 022-25532964 Email: amod@cimatronindia.com</p>	<p>1 Mr. Amod Onkar Country Manager</p>
<p>30. Consultant B1, Casa Lavella 5, 12/8, Lavelle Road Bangalore 560 001 Phone: 080-22292121 Email: sa_mas@rediffmail.com</p>	<p>1 Mr. S. Ananthanarayanan Consultant</p>
<p>31. Consulting Engineer 845, 2nd F - Cross, 8th Main Road 3rd Block, 3rd Stage Basaveshwaranagar Bangalore 560 079 Phone: 080-28394982 Fax: 080-28396450 Email: msm@wiprofluidpower.co.in</p>	<p>1 Mr. M. S. Muralidhara Murthy Consulting Engineer</p>
<p>32. Crane-Bel International Pvt. Ltd Devsatya Bhavan C-23, Lohia Nagar Ghaziabad 201 001 Phone: 0120-2713281/3963281/82 Fax: 0120-2712709 Email: ashok@crane-bel.com</p>	<p>1 Mr. Sarvesh Gupta Managing Director 2 Mr. T. R. Krishnamurthi Manager Technical</p>
<p>33. Crompton Greaves Ltd. Pumps Division A-28, MIDC Ahmednagar 414 111 Phone: 0124-5606515 Fax: 0124-5606550 Email: rajeev.gaitonde@cgl.co.in</p>	<p>1 Mr. Rajeev D. Gaitonde Engineering Manager</p>
<p>34. Cummins India Ltd. Kothrud Pune 411 038 Phone: 020-2538535 Fax: 020-25380125 Email: aparna.jha@Cummins.com</p>	<p>1 Mr. R. L. Rajopadhye Executive Manager 2 Mr. D. J. Parikh Executive Manager 3 Mr. P. A. Sadistap Sr. Manager 4 Mr. Ajesh Kulkarni Sr. Manager</p>
<p>35. Delphi - TVS Diesel Systems Ltd. Mannur, Thodukadu Post Sriperambudur Taluk Kanchipuram District</p>	<p>1 Mr. V. Gunasekar 2 Mr. D. Balakrishnan</p>



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Mannur 602 105 Phone: 04116-258454 Fax: 04116-258351	3 Mr. B. Karthik 4 Mr. Vikram Singh Rana
36. Desai Engineers S-28/3/1, Damodar Nagar Kharadi-Munhawa Road Kharadi Pune 411 014 Phone: 020-27012184 Fax: 020-27013791 Email: desaieng29@rediffmail.com	1 Mr. Viral S. Desai CEO
37. Diesel Locomotive Works Varanasi 221 004 Phone: 0542 - 2270102 Fax: 0542 - 2642700 Email: cpo@diesellocoworks.com	1 Dr. Narendra Kumar Chief Mechanical Engineer - Material
38. Disa India Ltd Paradise' No. 98 & 99 EPIP Whitefield Road Bangalore 560 066 Phone: 080-28413301/02/03 Fax: 080-28413315 Email: vallish@disaindia.com	1 Mr. S. V. Nanda Dy. General Manager - Production
39. Double Dee Tecchnology Pvt. Ltd. 127, Maneckji Wadia Bidg Mahatma Gandhi Road, Fort Mumbai 400 023 Phone: 022-56318373 Fax: 022-56341001 Email: gaurang@double-dee.com	1 Mr. Gaurang Doongursee Technical Director
40. Dynamatic Technologies Ltd. Dynamatic Park Peenya Bangalore 560 058 Phone: 080-28394933/34/35 Fax: 080-28394936 Email: bsh@dynamatics.net	1 Mr. P.S.Ramesh Sr. General Manager - Production 2 Mr. S.S.Reddy Asst. General Manager - Production
41. Eicher Demm S V Road, Chitalsar Manpada Thane 400 607 Phone: 022-25894314/15/17 Fax: 022-25894292 Email: pagarwal1@eicher.co.in	1 Mr. S. Parameshwaran Sr. Manager Engineering
42. Electronics & Radar Development Establishment C V Raman Nagar Bangalore 560 093 Phone: 080-25242734	1 Mr. U. C. Holla Scientist - F



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<p>44. Endurance Systems (India) Pvt Ltd B - 20 MIDC Chakan Industrial Area Vill - Mahalunge, Tal - Rajgurunagar Pune 410 501 Phone: 02135 - 259345/46 Fax: 02135-259347 Email: ndaloni@endurance.co.in</p>	<p>1 Mr. R. N. Tanpure Dy. General Manager - Operations</p> <p>2 Mr. S. N. Mengane Manager - Maintenance</p>
<p>45. Fair Tech Engineers 56/20, D-II Block, MIDC Chinchwad Gaon Pune 411 018 Phone: 020-27474390 Fax: 020-27470367</p>	<p>1 Mr. Nikhil Bansal Partner</p>
<p>46. Fine Forge Ltd. 151-HIG Bhel Township Hyderabad 502 032 Phone: 040-23021412 Fax: 040-23021045 Email: fineforge@hotmail.com</p>	<p>1 Mr. K. Vinod Reddy Director</p>
<p>47. Francis Klein & Co. Pvt. Ltd. 70/1, Mission Road, Bangalore 560 027 Phone: 080-2272781/ 82 Fax: 080-2276324 Email: fklein@vsnl.com</p>	<p>1 Mr. Ghansyam Agrawal Managing Director</p> <p>2 Mr. I. S. Renuka General Manager</p> <p>3 Mr. B. S. Jagadeesh Product Manager</p>
<p>48. Fuchs Lubricants (India) Pvt. Ltd. 83/3, Hennur Road Sait Palya Lingarajapuram Bangalore 560 084 Phone: 080-25482199 Fax: 080-25491844 Email: philip.jacob@fuchsindia.com</p>	<p>1 Mr. C. Philip Jacob Regional Manager - Marketing</p>
<p>49. Galaxy Bearings Ltd Pune-Nashik Road, At. P.O. Kuruli Tal - Khed Pune 410 501 Phone: 020-30907259 Email: naresh_patel@sunbearing.com</p>	<p>1 Mr. Patel Naresh .A General Manager</p> <p>2 Mr. Patel Ravi .M Plant Manager</p>



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<p>50. Gedee Weiler (P) Ltd. Gopal Bagh 1062 Avinashi Road Coimbatore 641 018 Phone: 0422-2221343915 Fax: 0422-2212760 Email: hrd@umsindia.com</p>	<p>1 Mr. G. D. Rajkumar Managing Director</p> <p>2 Mr. G. Gajendran General Manager</p> <p>3 Mr. R. Sekar General Manager - Production</p> <p>4 Mr. Krishnan Ramkumar Asst. Manager - Engineering</p> <p>5 Mr. M. Mathivanan Manager - Operations</p> <p>6 Mr. P. Mallinathan Asst. Manager - Training</p>
<p>51. General Optics (Asia) Ltd. R.S.NR.84/1, Nallavadu Road Thavalakuppam Pondicherry 605 007 Phone: 0413-2618755 Fax: 0413-2618755 Email: corp@vsnl.com</p>	<p>1 Mr. J. Narasimhan Vice President - R & D</p> <p>2 Mr. V. Mohansundaram General Manager - R & D</p>
<p>52. Godrej & Boyce Mfg. Co. Ltd. MHE Division, Pirojsha Nagar Vikhroli (E) Mumbai 400 079 Phone: 022-55964601 Fax: 022-55961519 Email: hmk@godrej.com</p>	<p>1 Mr. H. A. Dumasia General Manager (Mfg.)</p> <p>2 Mr. M. S. Deboo Asst. General Manager (Mfg.)</p>
<p>52a. Godrej & Boyce Mfg. Co. Ltd. Plant 9, PES Division, Pirojsha Nagar Vikhroli (E) Mumbai 400 079 Phone: 022-55962921 Fax: 022-55961519 Email: agarkar@godrej.com</p>	<p>1 Mr. S. S. Agarkar Senior Manager - Manufacturing</p>
<p>53. Govt. Tool Room & Training Center Rajajinagar Industrial Estate Bangalore 560 044 Phone: 080-23352118/19 Fax: 080-23301683 Email: gttcb@giabg01.vsnl.net.in</p>	<p>1 Mr. Shyam Komath Dy. Manager - Applications Engineering</p> <p>2 Mr. K. L. Ramprasad Manager</p>
<p>54. Grindwell Norton Ltd. Sai Complex, 4th Floor, 114 M. G. Road Bangalore 560 001 Phone: 080-25587248 Fax: 080-25091219 Email: shyam.komath@saint-gobain.com</p>	<p>1 Mr. Manoj Rathi Sr. Engineer - Product Engineering</p> <p>2 Mr. T. C. Venkatagiri Sr. Engineer - Sales & Marketing</p> <p>3 Mr. Gaurav Sharma</p>



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	<p>Sr. Engineer - Product Engineering 4 Mr. B. N. Nagendrakumar Manager</p>
<p>55. Grundfos Pumps India Pvt. Ltd. 277, 15th Cross, 100 Feet Road J. P. Nagar 5th Phase Bangalore 560 078 Phone: 080-26492660/61 Fax: 080-26492660/61 Email: ramana@grundfos.com</p>	<p>1 Mr. V.V. Ramanan Regional Sales Manager</p>
<p>56. Guhring India Pvt. Ltd. 129, Bommasandra Indl. Area, 4th Phase Bangalore 560 099 Phone: 080-22892500/01/02/03 Fax: 080-22892510 Email: vidya@guhringindia.com</p>	<p>1 Mr. Klaus Peter Simon Managing Director & CEO</p>
<p>57. Guindy Machine Tools Ltd. 154, Velachery-Tambaram Main Road Pallikaranai Chennai 601 302 Phone: 044-22460627/28/29 Fax: 044-22460112 Email: gmt@gmt.co.in</p>	<p>1 Mrs. Jayashree S. Mani Joint Managing Director</p> <p>2 Mr. P. Achutan Factory Manager</p> <p>3 Mr. N. Mahendran Deputy Factory Manager</p> <p>4 Mr. S. Kannan Manager - Design</p> <p>5 Mr. K. Sudhakaran Asst. Engineer</p>
<p>58. H & R Johnson India Ltd. Rahejas' 3rd Floor Corner of Main Avenue & V.P. Road Santacruz (W) Mumbai 400 054 Phone: 022-56906755 Fax: 022-26001286 Email: corphrd@hrjohnsonindia.com</p>	<p>1 Mr. Arun Deore Sr. Manager - Tool Room</p>
<p>59. HMT Machine Tools Ltd. Pinjore 134 101 Phone: 01733 - 263825 Fax: 01733 - 264114 Email: hmt_mtp@satyam.net.in</p>	<p>1 Mr. Neetu Kumar Singla Manager - CNC Applications</p>
<p>59a. HMT Machine Tools Ltd Bewar Road Ajmer - 305 003 Phone: 0145 - 2440620 Fax: 0145 - 2440082</p>	<p>1 Mr. S. L. Sahu Dy. Chief Engineer</p> <p>2 Mr. Mushir Baksh Manager - Engineering</p>



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<p>59b. HMT Machine Tools Ltd HMT Colony P.O Kalamachery – 683 503 Phone: 0484 – 2540733-39 Fax: 0484 – 2532166</p>	<p>1 Mrs. Hemalatha Dy. General Manager - Systems</p> <p>2 Mr. Joy Paniker Asst. General Manager – Sales Engineering</p>
<p>59c. HMT Machine Tools Ltd 59, Bellary Road, HMT Bhavan Bangalore – 560 032 Phone: 080 – 23330333 Fax: 080 - 23337800 Email: projects@hmtmtm.com</p>	<p>1 Mr. Basava Raju Pondhe Dy. General Manager - Technology</p>
<p>59c. HMT Machine Tools Ltd HMT P.O, Jalahalli Bangalore – 560 058 Phone: 080 – 28382211 Fax: 080 - 28382792 Email: projects@hmtmtm.com</p>	<p>1 Mr. R. Karunakaran Dy. General Manager - Design</p>
<p>60. Hindustan Export & Import Corp. 127, Jayamahal Extension Bangalore 560 046 Phone: 080-23331547 Fax: 080-23335153 Email: hei_bangalore@hei.co.in</p>	<p>1 Mr. C. R. Nagendran Vice President</p> <p>2 Mr. Bala Sharma Vice President - Technical</p>
<p>61. Honda Motorcycle & Scooter India Pvt. Ltd. Plot No. 1, Sector 3 IMT Manesar, District Gurgaon Haryana 122 050 Phone: 0124-2290911/12/13 Fax: 0124-2290890 Email: me7@hmsi-india.com</p>	<p>1 Mr. Pankaj Chauhan</p> <p>2 Mr. Manish Dua</p>
<p>62. Honda Siel Power Products Ltd. Plot No: 5, Sector -41, (KASNA) Greater Noida Industrial Development Area Greater Noida 201306 Phone: 0120-2341050/51/52/53/54 Fax: 0120 -2341077/ 78 Email: swapnilk@hspp.com</p>	<p>1 Mr. Rajeev Sharma Manager - Mfg.</p>
<p>63. ISRO Telemetry Tracking and Command Networking A-1, 1st Cross, Peenya Industrial Estate Bangalore 560 058 Phone: 080-28094544/4105 Fax: 080-28094103 Email: lakshmi@istrac.org</p>	<p>1 Mr. Hathwar G. R General Manager - TSG</p>
<p>64. India Pistons Ltd Huzur Gardens Sembiam Chennai 600 011 Phone: 044-25375871</p>	<p>1 Mr. B. Murali</p>



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<p>Fax: 044-25375095 65. Indian Seamless Metal Tubes 6th Floor, Lunkad Towers Business, Vimananagar Pune 411 014 Phone: 020-26630484 Fax: 020-5602491 Email: sonal.srinivasan@ismt.co.in</p>	<p>1 Mr. S. Bhargava Asst. General Manager - Added Value</p>
<p>66. Ingersoll -Rand Wadco Pvt.Ltd 37-A, Site-IV, Shahibabad Industrial Area Ghaziabad 201 010 Phone: 0120-2895116/17/18/19 Fax: 0120-2895127 Email: SRaja_Sekaran@irco.com</p>	<p>1 Mr. S. Rajasekharan Asst. Manager - Mfg. Engg.</p> <p>2 Mr. Jaideep Singhal Sr. Engineer - Production</p>
<p>67. Institute for Plasma Research Near Indira Bridge, Bhat Gandhinagar 382 428 Phone: 079-23969031 Fax: 079-23969017 Email: gautamv@ipr.res.in</p>	<p>1 Mr. Gautam R. Vadolia Engineer(SD) Workshop</p>
<p>68. International Tractors Ltd Village Chak Gujran P.O. Piplanwala Jalandhar Road 146 022 Phone: 01882 - 501220 Fax: 01882 - 501222 Email: mssharma@sonalika.com</p>	<p>1 Mr. Munish Sharma Manager</p>
<p>69. Jyoti CNC Automations Pvt. Ltd G-506, Lodhika G.I.D.C Vill-Metoda Rajkot 360 003 Phone: 02827-287212 Fax: 02827-287480 Email: kaushik@jyotient.com</p>	<p>1 Mr. P. G. Jadeja CMD</p> <p>2 Mr. P. D. Jadeja Manager Purchase</p>
<p>70. Kennametal Widia India Ltd. 8 / 9th Mile Tumkur Road Bangalore 560 073 Phone: 080-28394321 Fax: 080-28394708 Email: bangalore.information@kennametal.com</p>	<p>1 Mr. Syed Amjed Dy. General Manager</p> <p>2 Mr. B. Aravind Shetty Manager - Designs</p> <p>3 Mr. D. Ashok Kumar Asst. Manager - Production</p> <p>4 Mr. C. S. Venkatesh Manager - Production</p> <p>5 Mr. B. G. Balaji Asst. Manager - Sales</p> <p>6 Mr. D. Sarathy General Manager</p>



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	<p>7 Mr. Sushil Kumar Dadlani General Manager</p> <p>8 Mr. L. J. A. Naveenan Dy. General Manager</p> <p>9 Mr. K. Govindarajan Dy. General Manager</p> <p>10 Mr. Kumud Ranjan Dy. General Manager</p> <p>11 Mr. B. K. Dutta Sr. Manager</p> <p>12 Mr. A. P. Singh Manager</p> <p>13 Mr. S. D. Tamboli Sr. Manager</p> <p>14 Mr. Vivek Mahewari Sr. Manager</p>
<p>71. Khushbu Engineers F-24/1, MIDC, Shiroli Kolhapur 416 122 Phone: 0230-2468859 Fax: 0230-2468443 Email: honing@khushbuinida.com</p>	<p>1 Mr. A. H. Samani CEO</p>
<p>72. Kiron Hydraulic Needs Pvt. Ltd 6, 3rd Floor, Ready Money Terrace Worli Naka Mumbai 400 018 Phone: 022-24937330 Fax: 022-24932442 Email: ahaibatpure@yahoo.com</p>	<p>1 Mr. Anil Haibatpure Senior Engineer</p>
<p>73. Korber Schleifring GmbH India Liaison Office 99 Spencer Road, 1st Floor Frazer Town Bangalore 560 005 Phone: 080-51250425 Fax: 080-25565899 Email: rpereira@schleifring.in</p>	<p>1 Mr. Rohit Pereira General Manager</p>
<p>74. Kusalava International Ltd. Adavinek Kalam, Agiripalli Mandalam Krishna District Gollagudem 521 212 Phone: 08656-220254 Fax: 8656-220297 Email: office@kusalava.com</p>	<p>1 Mr. Y. Gopala Rao Works Manager</p>



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<p>75. L. G. Balakrishnan & Brothers Ltd. P.O.Box No. 2003, Ganapathy Coimbatore 641 006 Phone: 0422-2532325 Fax: 0422-2532333 Email: lgbgpy@vsnl.net</p>	<p>1 Mr. Prakash Sr. Engineer</p> <p>2 Mr. A. Shanmugam Asst. Manager</p>
<p>76. LMT Fette India Pvt Ltd Old No. 14, New No. 29, Il Main Road Gandhinagar, Adyar Chennai 600 020 Phone: 044-24405136 / 137 Fax: 044-24405205 Email: svenkat@lmtfetteindia.com</p>	<p>1 Mr. S. Venkat Managing Director</p> <p>2 Mr. Mark O Brein Vice President</p> <p>3 Mr. G. R. Vijayan Business Manager</p>
<p>77. Lakshmi Machine Works Limited Machine Tool Division Arasur Post Coimbatore 641 407 Phone: 0422-2360512/13/14 Fax: 0422-2360029 Email: hrd@lmw.co.in</p>	<p>1 Mr. M. A. Sadanandan Manager - Tool Making</p> <p>2 Mr. D. Rajendran Manager - Production Engineering</p>
<p>78. Lakshmi Precision Screws Ltd. Opp. Northern Bye Pass, Hissar Road Rohtak 124 001 Phone: 01262-249970/20/21 Fax: 01262-249922 Email: mktg@lpsboi.com</p>	<p>1 Mr. Gagan Jain Operation Head</p> <p>2 Mr. B. B. Chhabra Associate VP - Technical, Business Dev</p> <p>3 Mr. Neeraj Arora Sr. Executive - New Projects</p>
<p>79. Larsen & Toubro Ltd Industrial Products Marketing Gate No. 5, Saki Vihar Road P.O. Box 8901, Powai (East) Mumbai 400 072 Phone: 022-55050505 Fax: 022-55051717 Email: cr-inp@powai.Ltindia.com</p>	<p>1 Mr. C. Rao</p> <p>2 Mr. B. R. Naresh</p> <p>3 Mr. C. Rajesh</p>
<p>80. Liebherr Machine Tools India Pvt. Ltd 70/1, Mission Road, Bangalore 560 027 Phone: 080-2227 2781/82 Fax: 080-22276324 Email: g.sridhar@liebherrindia.com</p>	<p>1 Mr. G. Sridhar Dy. General Manager - Production</p>
<p>81. Lohia Starlinger Ltd. D-3/A, Panki Industrial Estate Kanpur 208 022 Phone: 0512-2691221 Fax: 0512-2691249 Email: lst@lohiagroup.com</p>	<p>1 Mr. A. K. Tiwary Head of Works</p> <p>2 Mr. D. Palit Vice President - Technical</p>



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<p>82. MBM Engineering India Ltd. 50, Armenian Street Chennai 600 001 Phone: 044-25341582 Fax: 044-25342194 Email: mbmengg@eth.net</p>	<p>1 Mr. Dinkar Kumar Director - Manufacturing</p> <p>2 Mr. P. C. Padhi Manager - Production</p>
<p>83. MM Forgings Ltd. 95, Annasalai Guindy Chennai 600 032 Phone: 044-22352153 Fax: 044-22352160 Email: kanakarajhr@mmforgings.com</p>	<p>1 Mr. S. Subramaniam General Manager - Technical</p>
<p>84. MMC Metal Singapore Pte. Ltd. 249, 1st Main Road HIG Colony RMV 2nd Stage Bangalore 560 094 Phone: 080-23516030 Fax: 080-23516031 Email: mmsindia@vsnl.com</p>	<p>1 Mr. Prashant Sardeshmukh Dy. General Manager</p> <p>2 Mr. Paramesh Navalgund Area Manager</p>
<p>85. Machine Tools (India) Ltd. 1/J, Ulsoor Road Bangalore 560 042 Phone: 080-25599256 Fax: 080-25599514 Email: gg@bng.mactool.com</p>	<p>1 Mr. G. Ganesh Branch Manager</p>
<p>86. Maharashtra Institute of Technology S. No. 124, Pand Road Pune 411 038 Phone: 020-25121427 Fax: 020-25442770 Email: pbj50@yahoo.com</p>	<p>1 Prof. Prakash Joshi Prof & Head Dept of Mechanical Engineering</p>
<p>87. Mahindra & Mahindra Ltd. Akurli Road, Kandivali (East) Mumbai 400 101 Phone: 022-28467267 Fax: 022-28864219 Email: deo.pralhad@mahindra.com</p>	<p>1 Mr. Deo Pralhad Keshav Manager - Corporate Projects</p> <p>2 Mr. H. P. Nadkarni</p> <p>3 Mr. Y. Nath</p> <p>4 Mr. R. N. Matodkar</p> <p>5 Mr. Pandurang Chavan</p> <p>6 Mr. Savio Fernandes</p> <p>7 Mr. D. V. Khobrekar Dy. General Manager - Manufacturing</p> <p>8 Mr. S. B. Rele</p>



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<p>88. Makino Machine Tool (India) Pvt Ltd No. 11, Export Promotion Industrial Park Whitefield Bangalore 560 066 Phone: 080-28410747 Fax: 080-284105383 Email: chandra@makino.co.in</p>	<p>Manager - Manufacturing Engineering</p> <ol style="list-style-type: none">1 Mr. Sanjay Sisodia Sr. Executive - Proposal2 Mr Vikram3 Mr Umesh4 Mr Shahshank
<p>89. Manugraph India Ltd. Unit No. 1, D-1, MIDC Shiroli Kolhapur 416 122 Phone: 0230-2468581/82/83 Fax: 0230-2468454 Email: ra.daftardar@manugraph.com</p>	<ol style="list-style-type: none">1 Mr. R. A. Daftardar Asst. Manager - Tool Room2 Mr. N. S. Chivate Asst. Manager - M/c Shop3 Mr. S. L. Jadhav Senior Engineer - PDD4 Mr. S. S. Bandekar Senior Engineer - M/c Shop
<p>90. MicroGenesis CADSoft Pvt Ltd. 3001, 5th Cross, 12th 'A' Main Hal 2nd Stage Indiranagar Bangalore 560 008 Phone: 080-25203826/27/28 Fax: 080-25203842 Email: arun.kumar@mgenindia.com</p>	<ol style="list-style-type: none">1 Mr. C. V. Arun Kumar Business Manager
<p>91. Micromatic Grinding Technologies Ltd C-27, Meerut Road Industrial Area Ghaziabad Phone: 0120-2712137/169 Fax: 0120-2717823 Email: strivedi@micromaticgrinding.com</p>	<ol style="list-style-type: none">1 Mr. Surendra Singh Asst. Manager
<p>92. Micromatic Machine Tools Pvt. Ltd. 10/30, Sindhi School Lane Kumarakrupa Road High Grounds Bangalore 560 001 Phone: 080-22263724 Fax: 080-22257713 Email: mmtblr@acemicromatic.com</p>	<ol style="list-style-type: none">1 Mr. T. K. Ramesh Vice President2 Mr. B. Harish Area Manager - South3 Mr. C. Raghuramachandran Asst. Manager - Marketing4 Mr. K. R. Raghavendra Area Manager
<p>93. Mitutoyo South Asia Pvt. Ltd C-122, Okhta Industrial Area, Phase I New Delhi 110 020 Phone: 011-26372090 Fax: 011-26372636 Email: delhi@mitutoyoindia.com</p>	<ol style="list-style-type: none">1 Mr. N. Bajaj Managing Director2 Mr. Tarun Gera Branch Manager



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<p>94. Motherson Techno Tools Ltd. A-9A, Sector - 16 Noida 201 301 Phone: 0120-2510754 Fax: 0120-2510047 Email: kalpana@mttl.motherson.com</p>	<ol style="list-style-type: none">1 Mr. Rajiv Malhotra General Manager2 Mr. Shridhar Bhat Regional Manager
<p>95. Motor Industries Company Ltd. Post Box 3000, Adugod Hosur Road Bangalore 560 030 Phone: 080-22992702 / 22992710 Fax: 080-22272851 Email: Maria.J@in.bosch.com</p>	<ol style="list-style-type: none">1 Mr. K. G. Shashidhar General Manager - Industrial Equipment2 Mr. Pratap Sargod Divisional Manager - Machine Design3 Mr. Madhusudhan R. Deputy Manager - Tool Design4 Mr. Rajesh Rao H. Manager - Machine Design5 Mr. Upendra Shenoy K. Deputy Manager - Machine Design6 Mr. Manjunath D. N. Deputy Manager - Tool Planning7 Mr. Shreedhar Anehosur Asst. Manager - SPM Manufacturing8 Mr. Asif M. Deputy Manager - Electrical9 Mr. Devaraj K. Deputy Manager - Tool Room10 Mr. Maria Joseph Manager - SPM Manufacturing11 Mr. Deva Raju G.R Assistant Manager - Methods
<p>95a. Motor Industries Company Ltd. 75, MIDC, Satpur Nashik 422 007 Phone: 0253-2295234 Fax: 0253-2295206 Email: mujumdar.bg@in.bosch.com</p>	<ol style="list-style-type: none">1 Mr. H. N. Tambade Manager - Technical Functions2 Mr. P. P. Shukla Asst. Manager - Manufacturing3 Mr. K. P. Gaykar Senior Engineer - Manufacturing
<p>96. Munjat Auto Components 58 KM Stone, Delhi - Jaipur High Way Village Binola Gurgaon 122 413 Phone: 0124-2379442/43/45 Fax: 0124-2379447 Email: projects@mac-herogrp.com</p>	<ol style="list-style-type: none">1 Mr. Neeraj Munjal Director2 Mr. Rajesh Grover Sr. Vice President



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97. NIT Calicut NIT Campus P.O Calicut 673 601 Phone: 0495-2286430 Fax: 0495-2287250 Email: josmat@nitc.ac.in	<ol style="list-style-type: none">1 Dr. Jose Mathew Asst. Professor - Department of MED2 Mr. P. B. Dhanish Lecturer & Ph. D Student
98. NIT Warangal Warangal 506 004 Phone: 0870-2459191 Fax: 0870-2459547 Email: venu@nitw.ernet.in	<ol style="list-style-type: none">1 Dr. A. Venugopal Asst. Professor2 Dr. N. Selvaraj Asst. Professor
99. NRB bearings Limited E-72(1) M.I.D.C, Waluj Aurangabad 431 133 Phone: 9822016243 Fax: 0240-5634 552 Email: s.ghosh@nrbbearings.co.in	<ol style="list-style-type: none">1 Mr. S. Ghosh Dy. General Manager
100. National Aerospace Laboratories Post Bag No. 1779 Bangalore 560 017 Phone: 080-25273351/52/53/54 Fax: 080-25270670	<ol style="list-style-type: none">1 Mr. S. Ravishankar Scientist, C-CADD2 Mr. L. G. Arun Scientist, C-CADD3 Mr. H. L. Vijaya Kumar Scientist, C-CADD4 Mr. C. Chandrasekhar Head, ESD5 Mr. Pradeep M. S. Technical Officer, ESD
101. Nettur Technical Training Foundation Post Box No.5857, Plot No. 23/24 II Phase, Peenya Industrial Area Bangalore 560 058 Phone: 080-28393167yy Fax: 080-51272146 Email: hrdcellnttf@yahoo.co.in	<ol style="list-style-type: none">1 Mr. Vishwanathan
102. Nikunj Eximp Enterprises Pvt. Ltd Sri Joravar Bhavan 93, Maharshi Karve Road Marine Lines Mumbai 400 020 Phone: 022-22009085/3534 Fax: 022-22060415 Email: nikeximp@vsnl.com	<ol style="list-style-type: none">1 Mr. Bhavin Gadhavi Asst. Manager2 Mr. Raveen Kumar Asst. Manager
103. Ordnance Factory Ambajhari Nagpur 440 021 Phone: 07104-2532261	<ol style="list-style-type: none">1 Mr. Ashok Kumar Addl. General Manager - PL & Store (MDO)



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<p>Fax: 07104-237705 104. PSG College of Technology Peelamedu Coimbatore 641 004 Phone: 0422-2572177 Fax: 0422-2573833 Email: principal@psgtech.ac.in</p>	<ol style="list-style-type: none">1 Mr. V. Krishnaraj Lecturer2 Mr. G. Madan Mohan Lecturer3 Mr. M. Raghu Student4 Mr. S. S. Karthivignesh Student5 Mr. Samraj Praveen Student
<p>105. Polymechplast Machines Ltd. 764/775, GIDC Industrial Estate Development Baroda 390 010 Email: pmlbrs_admin@polymechplast.com</p>	<ol style="list-style-type: none">1 Mr. Pankaj V. Patel Asst. Manager - Planning & Vendor
<p>106. Poona Seals Pvt. Ltd 5, Archana Aboli, Lane 13 Kale Path, Bhandarkar Road Shivajinagar Pune 411 004 Phone: 020 - 25410833 Fax: 020 - 25656935 Email: sachingupte@vsnl.net</p>	<ol style="list-style-type: none">1 Mr. Sachin Gupte Managing Director
<p>107. R. V. College of Engineering Mysore Road Bangalore 560 059 Phone: 080-28601700 Fax: 080-28600337 Email: ssk6@rediffmail.com</p>	<ol style="list-style-type: none">1 Mr. D. Venugopal Setty Sr. Lecturer - Department of IEM2 Mr. S. Sreekanta Lecturer - Department of IEM3 Mr. Raghav Ranganathan Student4 Mr. B. S. Prasanna Student
<p>108. Rane Engine Valves Ltd Plant 4, Aziz Nagar Hyderabad Email: r.maheshbabu@rane.co.in</p>	<ol style="list-style-type: none">1 Mr. C. V. R. Murthy Sr. Manager - Manufacturing
<p>109. Raychem RPG Limited. 463, Ceat Mahal Annexe, Dr. Annie Besant Road, Mumbai 400 030 Phone: 022-24937485 Fax: 022- 24938879 Email: amandke@raychemrpg.com</p>	<ol style="list-style-type: none">1 Mr. Ajit Mandke Executive



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110. Renuka Tools plot No. 253, Nandanvan Colony Aurangabad 431 002 Phone: 0240-2556582 Fax: 0240-2370992	1 Mr. Vivek Mulay Partner
111. S T I Industries 3A, Aneesh Apt, Azad Lane Andheri (W) Mumbai 400 058 Phone: 022-26249231 Fax: 022-26208515 Email: charuhas@calter.com	1 Mr. Charuhas A Gawandi Product Development Engineer
112. S. Textravellers Pvt. Ltd. 13, SNS Chambers, 239, Sankey Road Bangalore 560 080 Phone: 080-23615264 Fax: 080-23610504 Email: truetek@dataone.in	1 Mr. Sreeverma Shetty General Manager
113. SAP Technical & Marketing Consultants 1103, 35th 'D' Cross 4th 'T' Block, Jayanagar Bangalore 560 041 Phone: 080-26636894 Fax: 080-26652930 Email: saptech@bgl.vsnl.net.in	
114. SKF India Ltd. Plot 2, Bommasandra Industrial Area Hosur Road Bangalore 560 099 Phone: 080-27832155 Fax: 080-27832154 Email: N.Kamala@skf.com	1 Mr. M. N. Satish Kumar Manager
115. Sahney Commutators Pvt. Ltd 9E2, Bommasandra Industrial Area Bangalore 560 099 Phone: 080-27833164 Email: norbertc@sahney.com	1 Mr. R. N. Cornel General Manager - Engineering
116. San Engineering & Locomotive Co. Ltd P.O. Box No. 4802, Whitefield Bangalore 560 048 Phone: 080-28452271/72/73 Fax: 080-28452280	1 Mr. G. Madan Senior Engineer 2 Mr. Chidanand Engineer - Production
117. Sandvik Coromant 26/25, Abshot Layout, Opp. To Golf Club Sankey Road Bangalore 560 052 Phone: 080-22266810 Fax: 080-22256621	1 Mr. Subrahmanya Kumar. V Productivity Improvement Engineer



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<p>Email: subramanya.kumar@sandvik.com 118. Saras Micron Tools Pvt. Ltd 64-B, Bommasandra Industrial Area Hosur Road Bangalore 560 099 Phone: 080-7833108 Fax: 080-7834058 Email: sarasram@vsnl.com</p>	<p>1 Mr. D. R. Bheemesh Executive</p>
<p>119. Sharpline Machines Pvt. Ltd Chakan-Talegaon Road Chakan Pune Phone: 02135-254739 Fax: 02135-254945 Email: smpl@sharplinegroup.com</p>	<p>1 Mr. Vijay Kumar .T Director - Technical</p>
<p>120. Sheasha Tool Services 9, 19th Cross, 7th Main, N S Palya BTM 2nd Stage Bangalore 560 076 Phone: 080-26686505 Fax: 080-26789284 Email: sheasha59@vsnl.net</p>	<p>1 Mr. V. S. Sridhar Proprietor</p>
<p>121. Snigdha Marketing & Services Pvt. Ltd No.86, 2nd Cross, 24th Main 2nd Phase, J. P. Nagar Bangalore 560 078 Phone: 080-26596469 Fax: 080-26594305 Email: rajsms@vsnl.net</p>	<p>1 Mr. Raj Reddy Kallem Director</p>
<p>122. Southern Auto Castings Pvt. Ltd R-32/6, T. S. Krishna Nagar Mugappair Chennai 600 050 Phone: 044-26258257 Fax: 044-26258809 Email: sacpl@eth.net</p>	<p>1 Mr. R. Mani Asst. Foreman Production</p> <p>2 Mr. M. Ganapathy Subramanian Asst. Manager Production</p>
<p>123. Speciality Tools & Equipments Gala No. 12, sluy, MIDC, Chikalthana Aurangabad 431 210 Phone: 0240-2482586 Fax: 0240-2482586 Email: specialitytools@steqs.com</p>	<p>1 Mr. Ravi Kumar Subramanian CEO</p>
<p>124. Sphoorti Machine Tools Pvt. Ltd A-418 (b), 10th Main Road Peenya Industrial Area Bangalore 560 058 Phone: 080-28361222 Fax: 080-28362768 Email: sphoorti@touchtelindia.net</p>	<p>1 Mr. K. Rajanath Product Engineer</p> <p>2 Mr. V. Babu Design Engineer</p>



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<p>125. Stratmann Consulting 309, 3rd Main, 3rd Phase J. P. Nagar Bangalore 560 078 Phone: 080-51209075 Email: sanbait@rediffmail.com</p>	<p>1 Mr. Sanjeev Baitmangalkar CEO</p>
<p>126. Sundram Fasteners Ltd. Autolec Division 47/2, P.H. Road, Velappanchavadi Chennai 600 077 Phone: 044-26272231 Fax: 044-26272696 Email: ped@autolec.com</p>	<p>1 Mr. R. Seetharaman Dy. General Manager - Product Engg.</p> <p>2 Mr. Sekar Sr. Manager - Mfg Engg.</p>
<p>126a. Sundram Fasteners Ltd. Haritha Hosur - 635109 Phone: 04344-276651/52 Fax: 04344-276082</p>	<p>1 Mr. A. Loganathan Asst. Manager - Production CE.</p> <p>2 Mr. S. Harish Asst. Manager - Production CE</p>
<p>127. TI Metal Forming Chennai - Trivellore High Road Thiruninravur 602 024. Phone: 044-26390194 Fax: 044-26390634 Email: doraiswamy@tii.murugappa.com</p>	<p>1 Mr. T. Sivarama Prasad Dy. General Manager - Projects</p> <p>2 Mr. Ashutosh Sharma Head - Engineering</p> <p>3 Mr. D. Radhakrishnan Sr. Manager - NPD</p>
<p>128. TVS Motor Co. Ltd. Harita Hosur 635 109 Phone: 04344-276780/81/82 Fax: 04344-277414 Email: k.gowrishankar@tvs motor.co.in</p>	<p>1 Mr. L. Balasubramanian</p> <p>2 Mr. S. Senthil Kumar</p> <p>3 Mr. A. Prasanna Kumar</p> <p>4 Mr. Joshi Ajith</p> <p>5 Mr. Hemant Masih</p>
<p>129. Taegutec India Pvt. Ltd No. 120, Bommasandra Industrial Area, Phase IV, Bangalore 562 158 Phone: 080 - 7831870 Fax: 080 - 7831869 Email: sales@taegutec-india.com</p>	<p>1 Mr. L. Krishnan Managing Director</p> <p>2 Mr. Harish S. K Head - Manufacturing</p> <p>3 Mr. Jacob Joseph Manager Technical Support</p> <p>4 Mr. Chang Hae Choi Design Team Manager</p> <p>5 Mr. Suresh Kumar Team Leader - Technical Support</p>



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	<p>6 Mr. Ravi Degaskar Team Leader - Logistics</p> <p>7 Mr. Prakash Kini Technical Support - Application</p> <p>8 Mr. Rahulji K Technical Support - Application</p>
<p>130. Tara Ultimo Pvt. Ltd Se2 Seep2 Andheri (E) Mumbai 400 096 Phone: 022 - 56774444 Email: dharmesh@tarajewels.co.in</p>	<p>1 Mr. Isaac Thampi Dy. General Manager - Production</p> <p>2 Mr. Dharmesh H Mehta Dy. Manager - R & D Fax: 022 - 5674464</p>
<p>131. Tata Motors Ltd. Passenger Car Business Unit, Tool Engg Dept Sector 15 & 15A, PCNTDA Chikhali Pune 410 501 Phone: 020-56133674 Fax: 020-56138511..... Email: hemant.firodiya@tatamotors.com</p>	<p>1 Mr. H. B. Firodiya Asst. Manager</p> <p>2 Mr. S. K. Sagdeo Asst. Manager</p> <p>3 Mr. V. E. Awati Sr. Engineer</p> <p>4 Mr. N. G. Rajwade Engineer</p> <p>5 Mr. A. R. Gaikwari Engineer</p> <p>6 Mr. R. S. Kulkarni</p> <p>7 Mr. Narsimha Rao</p>
<p>131a. Tata Motors Ltd. Jamshedpur</p>	<p>1 Suneet Mishra Asst. Manager - QA</p> <p>2 S Krishna Asst. Manager - QA</p>
<p>132. Technology Development Consultancy Center B-446, 1st Stage Peenya Industrial Area Bangalore 560 058 Phone: 080-23723260 Fax: 080-23723260 Email: tdcc5@vsnl.net</p>	<p>1 Mr. Kishan Das .G. T Engineer - Projects</p>
<p>133. The Sanmar Group 9, Cathedral Road Chennai 600 086 Phone: 044-28118172 Fax: 044-28112627 Email: ns513@sanmargroup.com</p>	<p>1 Mr. K. Sudhakaran Asst. General Manager - Manufacturing</p>



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<p>134. Timken Engineering & Research India (P) Ltd. 39-42, Electronics City Phase II, Hosur Road Bangalore 560 100 Phone: 080-51362450 Fax: 080-51362452 Email: ram.ramakrishnan@timken.com</p>	<p>1 Mr. Thimmaiah Kumbera Sr. Engineer</p>
<p>135. Timken India Ltd. Bara Agrico Jamshedpur 831 008 Phone: 0657-2210293 Email: subhendu.dhar@timken.com</p>	<p>1 Mr. Kaniska Sthanpati Director - Projects</p> <p>2 Mr. R. S. Kedia Dy. Manager – Projects</p> <p>3 Mr. A. V. Kiran Kumar Dy. Manager – Manufacturing</p> <p>4 Mr. Rajeev Kumar Analyst - Cup Grind</p>
<p>136. Titan Industries Ltd. No. 3, Sipcot Industrial Complex Hosur 635 126 Phone: 04344-554367 Fax: 04344-276037 Email: Sekarn@TITAN.co.in</p>	<p>1 Mr. V. L. Pannir Selvan Manager</p> <p>2 Mr. S. Satish Manager</p> <p>3 Mr. Janarthanan Manager</p> <p>4 Mr. S. Sankar Manager</p> <p>5 Mr. S. B. Swaminathan Manager</p> <p>6 Mr. Ramana Rao Manager</p>
<p>137. Trishul Machine Tools Pvt. Ltd B 8, KSSIDC Industrial Estate Bommasandra, Hosur Road Bangalore 560 099 Phone: 080-7836100 Email: trishulmac@vsnl.com</p>	<p>1 Mr. C. S. Shivashankaraiiah Managing Director</p>
<p>138. Trumac Engineering Co. Pvt. Ltd NIDC Industrial Estate, Lambha Ahmedabad 382 405 Phone: 079-25710608/09/11 Fax: 079-25710617 Email: bssehra@trumacin.com</p>	<p>1 Mr. Earnest Arun Kumar Dy. Manager - Machine Shop</p>
<p>139. Tuskar Trading Pvt. Ltd Gala No. 10 B & 11 B, Goyal Ind. Premises Co-op Ltd J514, MIDC, Bhosari Pune 411 026 Phone: 020-27474439 Fax: 020-27470631</p>	<p>1 Mr. Nachiket Kasarekar Director</p>



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<p>Email: tuskar@vsnl.com 140. Uday Computer Aided Manufacturing Pvt. Ltd B-08, BEL Industrial Estate Jalahalli Bangalore 560 013 Phone: 080 - 23450561/162 Fax: 080-23451097 Email: indradev@ucamind.com</p>	<p>1 Mr. Indradev Babu Managing Director</p> <p>2 Mr. Shivananda G.S. Manager Manufacturing</p>
<p>141. Uma Precision Ltd. B-18, SIDCO Indl. Estate SIDCO Phase - I Hosur 635 126 Phone: 04344 - 276845 Email: anirudhdesai@umaprecision.com</p>	<p>1 Mr. A. Y. Pathan General Manager</p> <p>2 Mr. Anirudha Desai Plant Head</p>
<p>142. V. P. Industries 13 "Chitralaya" 6th Cross 6th Main V V Mohalla Mysore 570 002 Phone: 0821-2516849 Fax: 0821-2411849 Email: vpindustries@rediffmail.com</p>	<p>1 Mr. Sanjay .G Managing Partner</p> <p>2 Mr. Dinesh Kumar T .V Manager</p>
<p>143. VST Tillers Tractors Ltd. P.O Box No. 4801 Whitefield Road Mahadevapura Post Bangalore 560 049 Phone: 080 - 28510805/06/07 Fax: 080-28510221 Email: kodandaram@vttihq.com</p>	<p>1 Mr. V. Ananthakrishna Sr. Manager Machine Shop</p> <p>2 Mr. A. Nanda Kishore Head of Manufacturing</p>
<p>144. Vita Technology Pvt. Ltd. 3/1, Annaiah Road, Yelachenahalli Off 10th K.M., Kanakapura Road, J.P. Nagar Post Bangalore 560 078 Phone: 080 - 26663164 Fax: 080-26641331 Email: viatech1@vsnl.net</p>	<p>1 Mr. H. R. Sreenath Manager - QA</p>
<p>145. Voltas Ltd. MTD, 37, Kasturba Road Bangalore 560 001 Phone: 080-22129201 Fax: 080-22212769 Email: pkaggarwal@voltas.com</p>	<p>1 Mr. Philip Mascarenhas General Manager</p> <p>2 Mr. Pardeep K. Aggarwal Regional Sales Manager</p>
<p>146. Wave Mechanics Pvt. Ltd V-3, 1st Main Road 1st Stage, Peenya Industrial Estate Bangalore 560 058 Phone: 080-28398497/98 Fax: 080-28398498 Email: info@wave-mechanics.com</p>	<p>1 Mr. Reji P. Joseph Dy. Manager Production</p> <p>2 Mr. Unnikrishnan T.P Manager - Design & Engineering</p>



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<p>147. Wheels India Ltd. Padi Chennai 600 050 Phone: 044 - 26234300 Fax: 044-26258511 Email: sundararajan_a@wheelsindia.com</p>	<p>1 Mr. M. S. Swaminathan Manager</p>
<p>148. Wika Instruments India Pvt. Ltd. Plot No. 40, Gat No. 94+100 High Cliff Industrial Estate Village Kesnand, Wagholi Pune 412 207 Phone: 020-27052901 Fax: 020-27051925 Email: pghosh@wika.co.in</p>	<p>1 Mr. P. Ghosh Sr. Production Manager</p> <p>2 Mr. Sudesh Sonawana Dy. Manager - Production</p> <p>3 Mr. V. Majumale Dy. CNC Production Manager</p>
<p>149. Yamazaki Mazak Singapore Pte. Ltd. India Branch Elpro Compound Chinchwad Gaon Pune 411 033 Phone:-020 - 27451417 Fax: 020-2745 1398</p>	<p>1 Mr. Hiroyuki Yamazaki Dy.Managing Director - Singapore</p> <p>2 Mr. Yoshio Ito General Manager - India Branch</p> <p>3 Mr. J. V. Prasanna Dy. General Manager - India Branch</p>
<p>150. Yuken India Ltd Whitefield Road, Whitefield, Bangalore 560 066 Phone: 080-28452088 / 28451929 Fax: 080-28452261 Email: marketing@yukenindia.com</p>	<p>1 Mr. A. Bhaskaran Technical Advisor</p> <p>2 Mr. K. Chamarajendra Special Officer on Duty</p>