

Chapter News Letter


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Nitin Datar

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Dr. Kruttika Apshankar-Kher

EDITORIAL . . . ✍



Dear ASM Pune Chapter Members,

It is with great pleasure that I address you through the May 2023 edition of the ASM Pune Chapter Newsletter. As a platform for sharing technical knowledge and industry insights, this newsletter serves as a valuable resource for the materials

community in Pune and beyond.

ASM International, with its headquarters in Ohio, USA, has established worldwide chapters to connect the materials community across the globe. The Pune Chapter has been actively contributing to this mission, bringing together technocrats and experts from the industry to share their knowledge and expertise with fellow members.

In this edition, we have some fascinating technical write-ups from industry professionals that are sure to interest and inform readers. These articles cover topics such as new generation Low Viscosity & Shorter Vapour Phase Quenching Oils and the role they place in critical automobile parts.

The Pune Chapter has been instrumental in promoting the growth of the materials community in the region. With its various events and initiatives, the Chapter has provided a platform for professionals to connect, collaborate, and learn from each other. I would like to commend the Pune Chapter team for their dedicated efforts in making this possible.

As we move forward, I urge all members to continue to engage actively with the Chapter and contribute to its growth. Let us work together to create a strong and vibrant materials community in Pune.

Finally, I would like to express my gratitude to the ASM Pune Chapter Newsletter team for giving me the opportunity to address our esteemed members through this editorial. I look forward to seeing the continued growth and success of the Pune Chapter.

Best Regards,

Nitin Datar

Senior General Manager

Heat treatment and Metallurgical Laboratory

Carraro India Pvt Ltd

Students Outreach Material Advantage Students Chapter Under American Society for Metals (ASM), Pune Chapter and Inauguration of Dynamech 23

I) Association of PVG's ASM Student Club

Association of PVG's ASM Student Club was reformed in the year 2022 by the group of Second, Third & Final year students of Mechanical branch. The sole purpose in forming this association was to bring students together and to provide them the platform to nurture their talent. The year 2022 was proved to be a breakthrough for PVG's ASM Student Club as the committee was able to form a quite good platform for the years to come. PVG's ASM Student Club is the platform where students as well teachers can interact with eminent industry Persons at a very different level. This platform was formed to promote innovation, talent and skills in a particular student. PVG's ASM Student Club was formed on the grounds of sharing, hard work, loyalty and respect towards knowledge as well as teachers. With the heart of PVG's ASM Student Club being knowledge conducting multiple events to spread the knowledge is the motto of the PVG's ASM Student Club. Finally PVG's ASM Student Club is a platform formed by the students for the students.

Core Committee Members Academic Year 2022-23

Chairman – Mr. Athrva Potnis

Vice-Chairman – Ms. Mrudula Deosthali

Secretary – Mr. Sahil Belekar

Treasurer – Ms. Riddhi Patel

Activities Conducted

1. Inauguration of PVG's ASM Student Club
2. National Level Project Competition
3. Tech Talk on “5S System”
4. Tech Tal on “Heat Treatment Awareness”

.....Continued on page no. 6

From Chairman, News Letter Committee . . . ✍️



Dear Readers,

Another year gone by since I've written and I hope you find our newsletters improved in content and inclusive of all the activities that our cool Pune chapter does despite this sweltering heat!

We have started this year off with a bang with a fantastic interview of Dr. Sarika Phadke-Kelkar who leads the battery development program at KPIT Technologies Ltd. in our February newsletter. The March newsletter was completely done by the girls' team of Cummins College Nagpur under the guidance of Pro. Dandekar. They even did the DTP!

In 2023, we will try and provide more interesting content for our readers. We will try and provide a series of technical lectures which will enlighten you over the span of 3-4 articles and thus give detailed knowledge over a particular subject. Experiences of women in metallurgy, the ones who work hard on the shopfloor will

also be shared.

If you have any new ideas or would like to contribute anything to the newsletters, I'm just a call away! Looking forward to hearing from you.

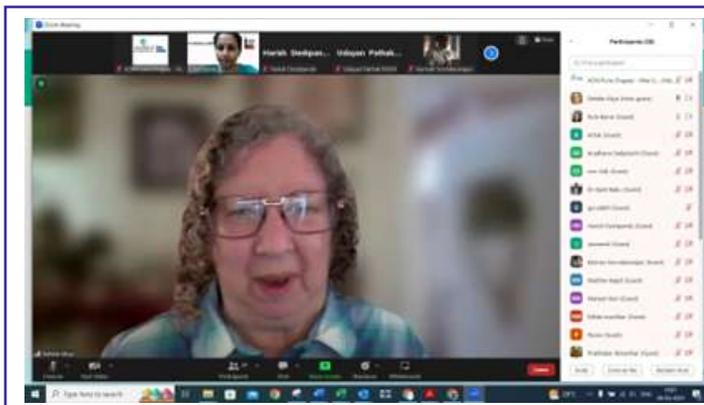
Cheers,

Dr. Kruttika Apshankar-Kher

Technical Talks

A total of four lectures were conducted in March and April 2023. The first 3 lectures were a part of the Women's Day Marathon series and were conducted on 8th, 9th and the 10th of March in an online mode. Another lecture was also held online on the 27th of April.

The series was kicked off with ASM veteran Ms Debbie Aliya's Tech Talk on "The Yoga of Failure Analysis." The owner of Aliya Analytical, Inc., founded in 1994, Debbie Aliya specializes in materials characterization, failure analysis, Identification of unknown materials/contaminants, and training of engineering, quality and manufacturing company staff. She is a Fellow of ASM in recognition of her work in both promoting critical thinking in the failure analysis engineering community, and intercultural outreach to her colleagues in India. To summarise Debbie's talk, she shared that the practice of materials science based failure analysis offers ongoing opportunities to test the accuracy of our perceptions and the quality of our mental constructs against the reality of the physical world, in a way that many other intellectual endeavors do not. Failure analysis of any type offers the sufferers of the consequences of the failure a chance to look for clues in an environment where the driving force for understanding is increased. The more consequential the failure, the greater the motivation to investigate not only basic facts, but the mental structure that facilitates their interpretation.



The second day was graced by Dr Anuya Nisal of Serigen Medical Products. Ontgen tissue repair: powered by silk".

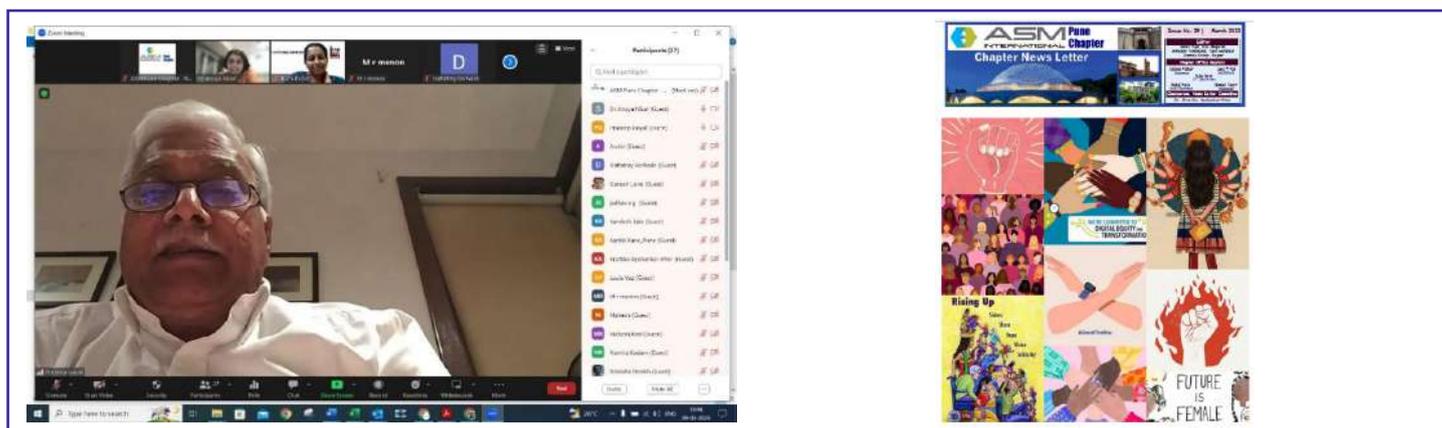
Dr Anuya Nisal is the founder and CEO of Serigen Mediproducts. Serigen is an innovation-driven tissue regeneration products company. Dr Nisal is also the Principal Scientist at the Polymer Engineering and Science

department at CSIR-National Chemical Laboratory (NCL) and leads scientific research in the areas of polymers, biomaterials, medical devices and tissue engineering

Silk is a natural fibrous protein, secreted by more than 1 lakh different species of spiders, insects, moths, butterflies, etc. It has excellent mechanical properties and exhibits superior chemical resistance. It is known for its lustre and shine and finds wide applications in textiles. Silk, interestingly, is also used as sutures and has a long history of safe clinical use. At Serigen, the materials science of natural silk proteins is leveraged to develop unique medical products. The current portfolio includes products that cater to orthopaedics, breast cancer and advanced wound care. Serigen is the world's first company to successfully complete a clinical trial for use of silk in bone repair. Dr. Nisal shared insights about translating a technology from lab and leading a deep-tech innovative start-up.



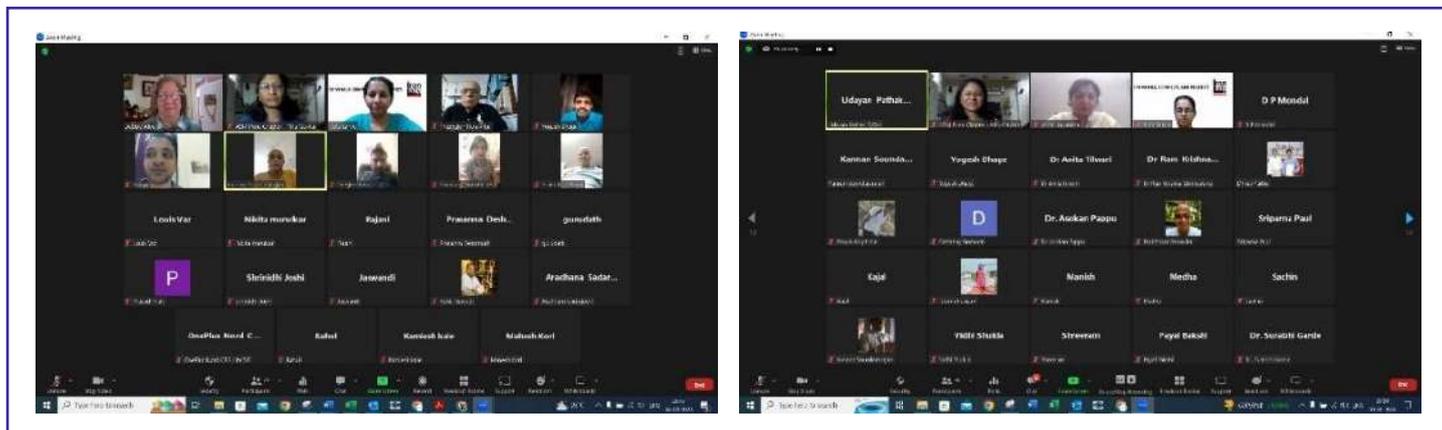
The last pearl in this series was Dr Sarika Verma. She delivered Tech Talk on “AMPRI's Bamboo Baithak from Advanced Bamboo Composite -Towards a sustainable solution”. This Tech Talk was co-hosted by CSIR – AMPRI, Bhopal, India. Dr Sarika Verma is a Ph.D. in Chemical Sciences and has worked in different capacities such as a Research Scientist at Technische universitat, Darmstadt, Germany, Pool Scientist (CSIR-HRDG, New Delhi) and Women Scientist (DST).



She talked about the sustainable House built by using composites of Bamboo and the challenges they encountered in the process and how the challenges were overcome.

On the occasion of International Women's Day, ASM Pune Chapter released the Chapter Newsletter by the hand s of Mr. Pradeep Goyal, Sr VP of ASM International Board of Trustees. The speciality of the newsletter is that this edition was created and edited by the Students from Material Advantage Chapter of Cummins College of Engineering for Women, Nagpur

Photos of Attendees:



These events of Pune chapter have also been showcased in the AM&P magazine.

CHAPTERS IN THE NEWS HIGHLIGHTS

Pune Celebrates International Women's Day

ASM International's Pune Chapter celebrated International Women's Day with an exciting new program this year. A marathon lecture series was conducted online, March 8-10. In addition, a model making competition was organized by the Material Advantage Student Chapter of Cummins College of Engineering for Women (CCOEW) at Nagpur in association with the Mechanical Engineering Girls Association (MEGA). Both events are highlighted here.

The lecture series kicked off with a talk by Debbie Aliya, FASM, owner of Aliya Analytical Inc., on "The Yoga of Failure Analysis." A key point was that the practice of materials science-based failure analysis offers ongoing opportunities to test the accuracy of our perceptions and the quality of our mental constructs against the reality of the physical world, in a way that many other intellectual endeavors do not.

The second day featured a talk by Anuya Nisal, founder and CEO of Serigen Medical Products. She spoke on "Nextgen Tissue Repair: Powered by Silk." Her company leverages the materials science of natural silk proteins to develop unique medical products for orthopedics, breast cancer, and advanced wound care. Serigen is the world's first company to successfully complete a clinical trial for use of silk in bone repair.

The highlight of the closing day was a tech talk on "AMPR's Bamboo Baitrak from Advanced Bamboo Composite: Toward a Sustainable Solution" delivered by Sarika Verma. The lecture was co-hosted by CSIR - AMPRI, Bhopal, India. Verma is an entrepreneur and research scientist with 21 patents to her name. She talked about a sustainable house built by using composites of bamboo, the challenges encountered in the process, and how they were overcome.



Dr. Sarika Verma presented a lecture on sustainable solutions using bamboo composites.

As a bonus, on International Women's Day, the ASM Pune Chapter released the Chapter newsletter, presented by Pradeep Goyal, FASM, senior vice president of ASM International. This special issue was created and edited by students from the Material Advantage Chapter of CCOEW, Nagpur.

ADVANCED MATERIALS & PROCESSES | MAY/JUNE 2023



Participants wait for results from the judges.

EDIFICE, a model making competition for students, was recently organized by the Material Advantage Student Chapter of CCOEW, Nagpur, in association with MEGA. The competition aimed to test creativity, technical knowledge, and problem-solving skills. Participants were expected to prepare models using known geometrical shapes, e.g., sphere, cone, pyramid, and prism. Teams prepared models that were assessed for materials selection, geometrical accuracy, strength, and toughness.

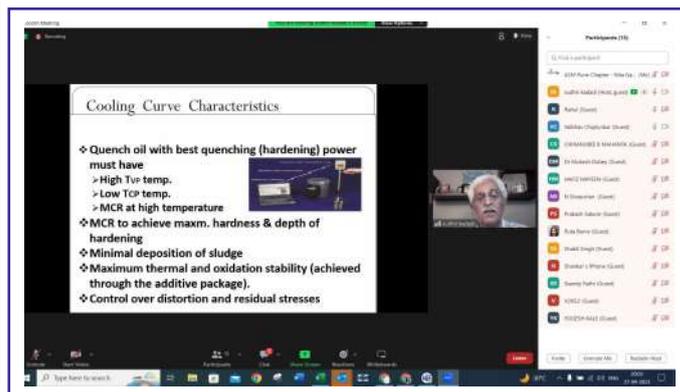
Models were tested through visual inspection, drop test, and impact test to check their durability and stability. The models were then evaluated based on test results along with answers to questions from the judges. The event attracted 75 students divided into 24 groups and the top three entries were awarded cash prizes. EDIFICE was organized by the student team of Swara Tupe, Tanvi Gaikwad, Shruti Suryawanshi, Shrusika Wark, Prityanka Chaudhari, Rina Kohliwagar, Tejaswini Kinkhkar, and Riya Khaparde.

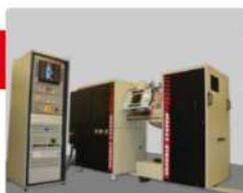
Special thanks to Ritu Gaykar, Ritu Barve, Jaswanti Gokhale, Prof. Yogesh Deneke, and D.G. Chivate for submitting details of these events.



This special issue of the Pune Chapter Newsletter released on International Women's Day, was created by students.

Another lecture on the topic "Quenching Oils - Significant Role & Selection in Heat treatment process" was given by Mr. Sudhir Kadadi. Mr Sudhir Kadadi has completed his M.Sc (Chemistry) from University of Bombay. Currently he is working as Technical Advisor on Freelance Service contracts with Lube Industries. He has 40+ years of experience in lubricant Industries and has worked in reputed multinational companies & heading depts. viz. R & D /Q C and technical services. He has developed and launched products like metal working oils, quenching oils, forming oils and rust preventives to automotive & industrial segments like steel forging & die casting, bearings, gears & other metal industries. The technical talk covered basic types of quenching oils, how to select them based on the type of heat treatment process, the importance of cooling curve characteristics in selection and new trends and scope of quenching oils in the forging industry.





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- Nano-scratch and wear
- Nano-fretting

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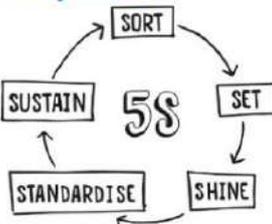


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Tech Talk
on
"The Management of 5s Systems"




Mrs. Mohini Mahesh Modak
Founder Director- Horizon Web Technologies
Computer Networking Professional

Wednesday 17th Aug 2022
11:00 AM to 1:00 PM
Conference hall, T&P Section, PVG's COET, Pune






TECH TALK
ON
HEAT TREATMENT PROCESS AWARENESS



ABOUT SPEAKER :

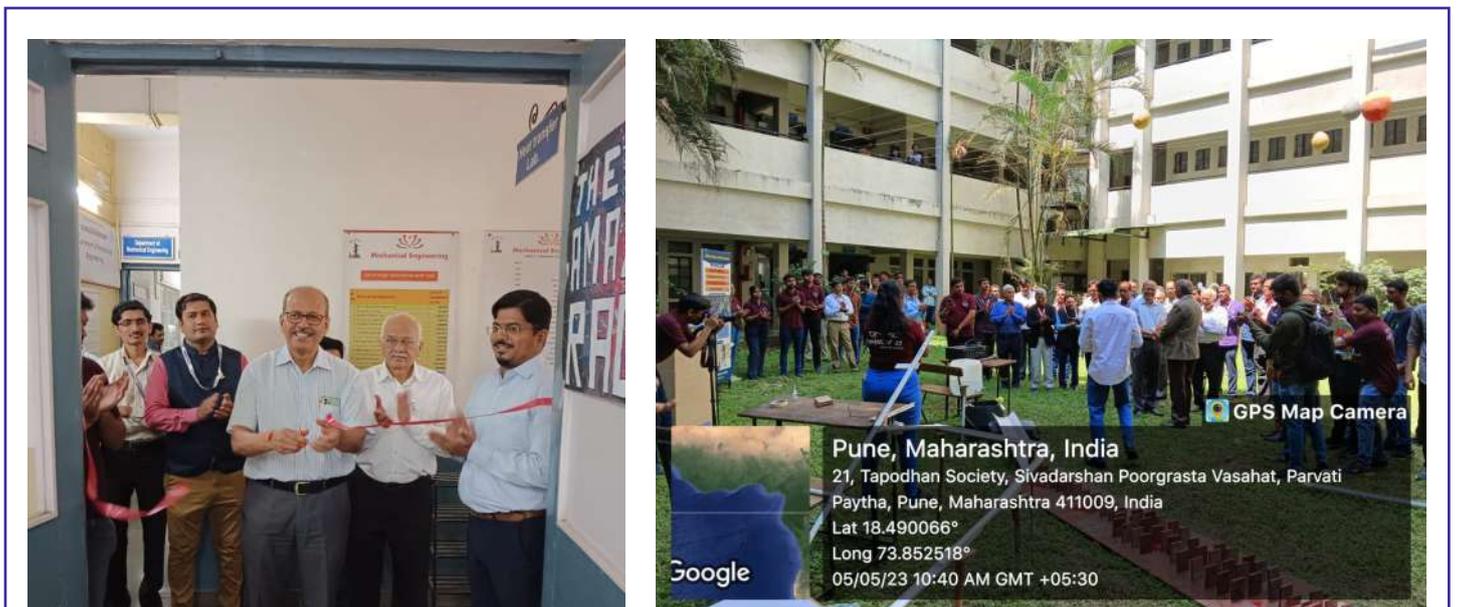
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QA MANAGER - TSUBAKI CONVEYOR SYSTEMS INDIA PVT. LTD

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11 AM TO 1 PM
CONFERENCE HALL T&P SECTION, PVG'S COET, PUNE.



A few more photos of the ceremony are as shown below:





Apart from this, Mr. Chivate from ASM was also invited as the Guest of Honour for 'Dymanech 23 and State level project competition which was held by the Mechanical Engineering Student Association (MESA) in association with PVGs ASM Student Club on the 5th of May.

Title: State Level Project Competition: A project Competition Organized by Material Advantage Student Chapter of Pune Vidyarthi Grihas College of Engineering & Technology & GKPWIOM in association with Mechanical Engineering Student Association (MESA.)

Introduction:

Recently, A state level project competition was Organized by Material Advantage Student Chapter of Pune Vidyarthi Grihas College of Engineering & Technology & GKPWIOM in association with Mechanical Engineering Student Association (MESA.)

The competition aimed to test the student's creativity, technical knowledge, and problem-solving skills. The participants were expected to prepare mini & major projects. The event received an enthusiastic response with many students participating from different engineering college under Savitribai Phule Pune University

Competition Details:

The competition required the participants to fabricate models using known theories of objects. The models were then evaluated on the basis of design, knowledge and the mechanism used . The models were tested through visual inspection to check their durability and stability. Hence using all these parameters the project competition was completed successfully .

Results and Prizes:

The models were judged based on their social exposure, mechanism and their design and working by the judges. Equal weightage was given to all the parameters. The top three models were awarded cash prizes and even a consolation prize was also given so that the students feel encouraged and also improve their project a bit. Event was a successful one with good participation and overall response.

Conclusion:

“STATE LEVEL PROJECT COMPETITION” was an



excellent opportunity for the students to showcase their creativity, technical knowledge, social exposure and problem-solving skills. The event received an enthusiastic response, and the participants prepared the models that were tested. The competition was an excellent platform for the students to test their skills and gain valuable experience.

The student's team: Atharva Potnis, Mrudula Deosthali, Sahil Belekar, Riddhi Patel, Aditi Jebale, Viraj Jadhav.

II) **A Project Based Learning Competition** in collaboration with ASM International Pune chapter was held in Sinhgad College of Engineering, Pune on the 19th of May, 2023.

It received a huge response - 70 teams participated in this along with the poster presentation competition. The Final year project competition was also scheduled in the morning from 9:30 a.m. Many students came up with very innovative projects and ideas and had built the models from scratch.

A few highlights of the Project Based Learning competition




The event had unique mentoring partnerships from Professional Societies like the ASM International Pune chapter. Mr. Chivate, Nitin Datar and Kruttika Apshankar-Kher attended the event as judges. The entire competition was conducted and organized by Sandeep Deshmukh, PBL Coordinator, Inspiring Minds for Innovation 2023 and his team.

FROM CHAIRMAN DESK . . . ✍

Dear Members,

The release of this edition of Chapter Newsletter coincides with two important events- ASM-IIM workshop on “Decarbonization Strategy for the Steel Industry: Challenges, Opportunities and the Way Forward for India” and 4th Edition of AM&M 2023 International Conference & Expo. We are the conceptual sponsors for 4th AM&M 2023 International Conference.

I am glad that our Finance Committee is finalising chapter finance report and balance sheet and am sure that this activity will be completed well before the deadline.

One full page coverage on our activities in work as a team. Special thanks to Nita Prof. Yogesh Dandekar, and D.G. Chivate these events.

Our MA chapter team from PVG College is other MA Chapters in terms of the variety organised by MA Chapter, PVG College of G. Chivate and our other members serving as Jury Members for Project have also taken responsibility of including the online format. Team MA Chapter PVG is appreciated for this.

Our focussed Training Programs are becoming extremely popular. One such tailor-made program- Heat Treatment & CQI - 9 is finalised by our member Jyoti Heat Treaters, Chakan. Also, Mahabal Group, Miraj is finalising four programs – Met for Non-Metallurgists, Basic & Advance Heat Treatment, Failure Analysis and Casting Development. One program will be held per month starting from June 2023.

Many prominent professionals and industries are yet to become our members. Let us work as a team and make concerted efforts to ensure the inclusion of these professionals in our team to make the chapter more vibrant.

Best wishes,

Udayan Pathak FASM



AM&P May-June 2023 issue endorses our Gaykar, Ruta Barve, Jaswandi Gotmare, for submission of the required details of

creating healthy competition amongst of activities. Dynamech 2023 event Engineering with lot of enthusiasm. Mr. D. supported this event by inaugurating and Competition. MA Chapter, PVG College managing ASM-IIM Workshop event



Technical Article

Advance Technology in Low Viscosity & Shorter Vapour Phase Quenching Oils To Control Distortion In Critical Automotive Parts.

ABSTRACT:

Today every automotive industry has been working towards innovation and high precision in heat treatment technology with reduced cost of process. Newly developed the quenching oils with latest additive technology and advance refining technology which can give us the benefit in terms of

- 1) Shorter Vapour phase
- 2) high oxidation stability
- 3) lower evaporation loss- High Noack volatility values
- 4) Dimensional control in critical gears and shafts.

Implementation of the latest technology quenching oil in Heat treatment, we can achieve minimum distortion there by reducing the machining /grinding cost, better microstructure, lower emission and maximisation of production.

QUENCHANT SELECTION CRITERIA:

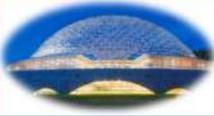
- There are many factors to consider when selecting the most suitable quenchant for a particular application:
- Material composition and component section size
- Specification requirements
- Type of furnace
- Method of quenching
- Quenchant removal
- Quenchant disposal
- Environmental requirements
- Quenching Oils for open quench tanks must have excellent oxidation stability.

PROPERTIES OF QUENCHING-OILS:

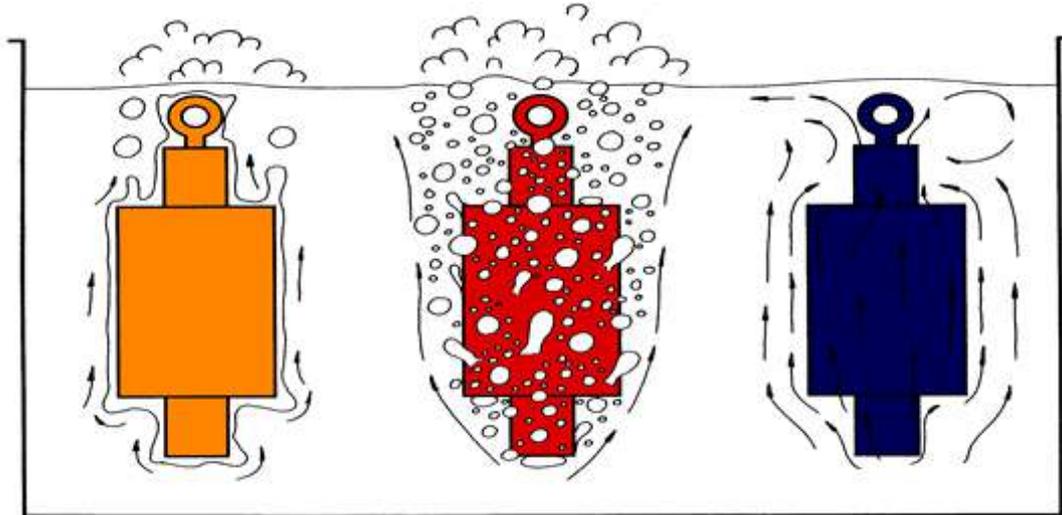
- **The flash point** should be in accordance to the applied oil bath temperature and to the thermal strain in case of batch quenching
- **The stability against evaporation** should be high to avoid a negative influence on the atmosphere in the furnace when a batch is cooled (this is especially important for pusher furnace where one batch after the other is quenched within a short time cycle). Evaporation stability in combination with a short vapour phase is important to reach the cooling properties.
- Oil residues should be easily washable from the surface of the quenched workpieces.

SELECTION PARAMETERS OF QUENCHING OILS:

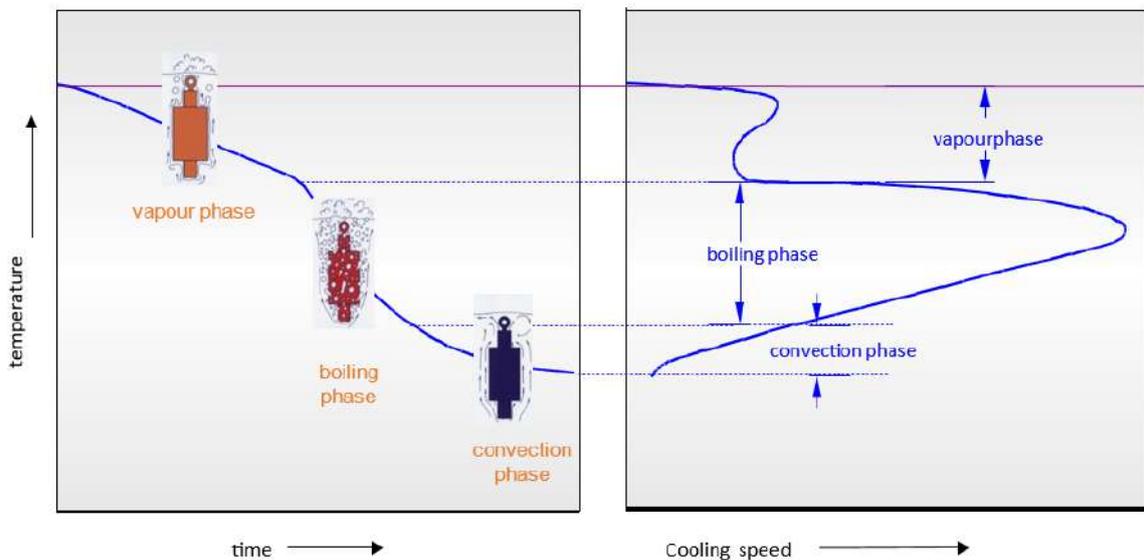
- One additional factor not usually included is the cost of cleaning the parts.
- The oxidative stability of the oil should be considered. If the oil tends to oxidise rapidly, this will increase the cost of cleaning, and require more frequent replacement of the oil.



- Consumption of the oil by drag-out should also be considered in the quench-oil calculations.
- Higher viscosity oil will tend to drag out more, as will high surface area parts.
- The method of racking parts can cause the retention of higher-than-normal quantities of oil. Attention to racking and proper drain times can reduce consumption.



Machenism of quenching :The 3 Phases Of The Quenching Process



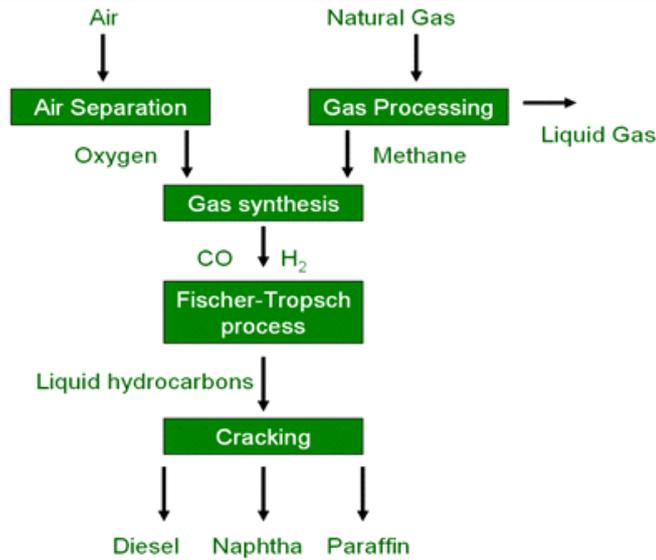
Comparison Of Temperature Vs. Time Quench Curves And Cooling-Rate-Curves

NEW TECHNOLOGY IN QUENCHING -GTL-TECHNOLOGY:

Gas-To-Liquids (GTL) Technology converts Natural Gas – the cleanest-burning fossil fuel – into high-quality liquid products that would otherwise be made from crude oil. These products include transport fuels, motor oils and the ingredients for everyday necessities like plastics, detergents and cosmetics.

GTL products are colourless and odourless. They contain almost none of the impurities – Sulphur, Aromatics and Nitrogen – that are found in crude oil.

GTL production can help countries with natural gas resources grow their economies as new gas supplies come on-stream to satisfy growing global demand for liquid products.

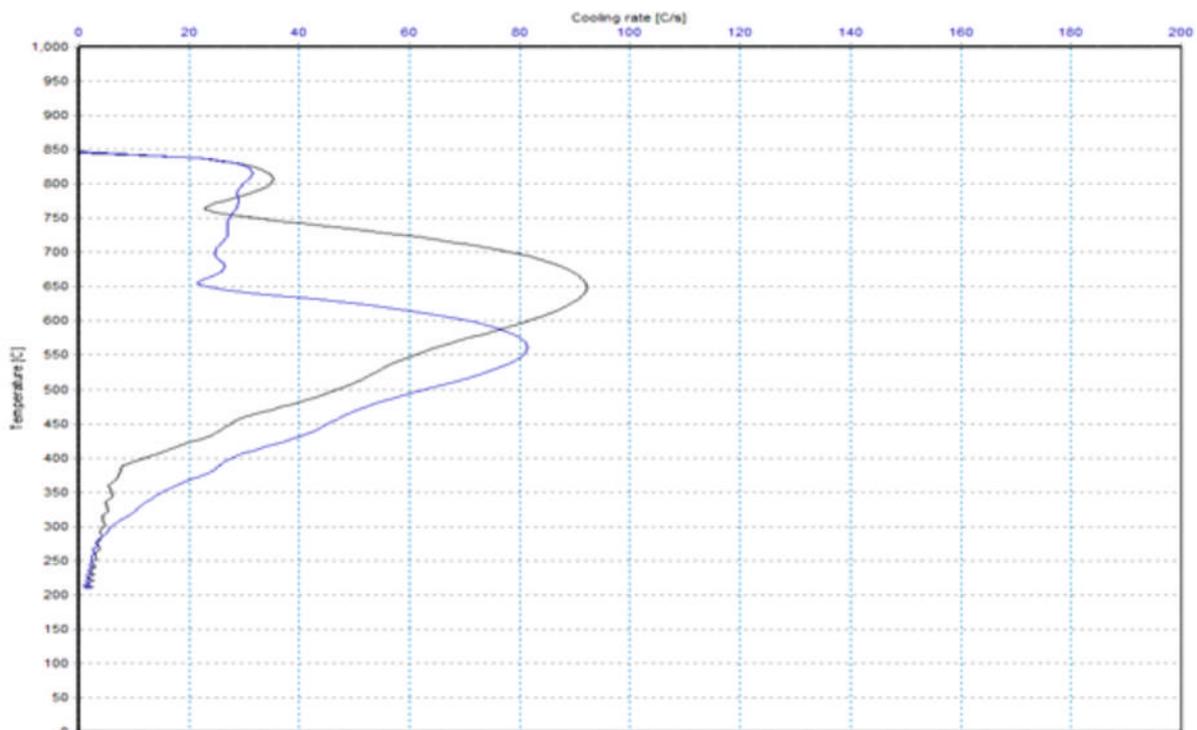


The new generation of quenching technology:

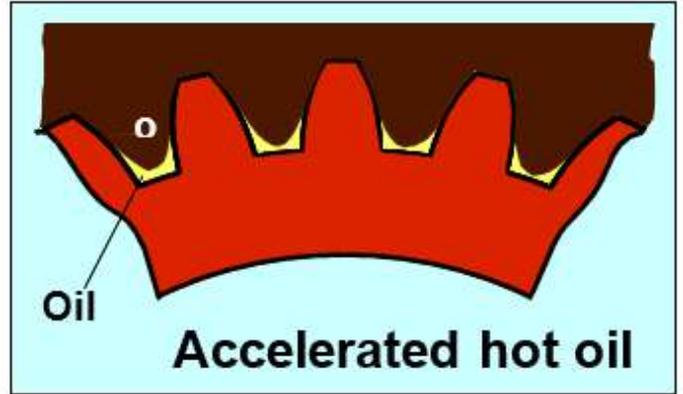
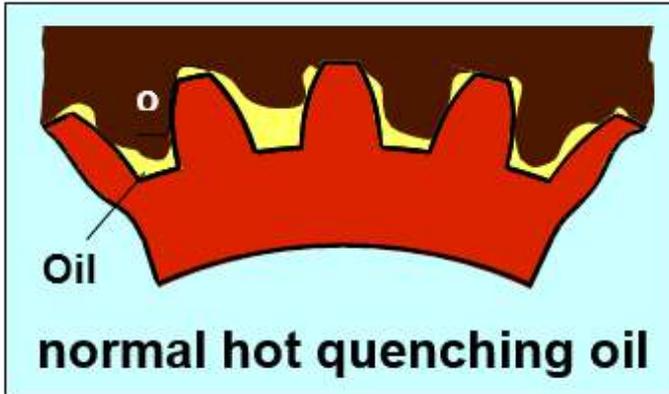
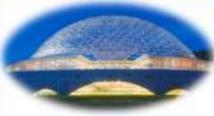
Accelerated quenching oil

Advantages:

- Lower distortion control
- Extremely evaporation stabile
- Homogeneous cooling due to extremely short vapour phase
- Lowest emission
- High quenching stability



Comparison of cooling curve for normal long vapor phase oil Vs shorter vapour phase oil.



CONCLUSION:

Diagram Illustrates that due to shorter vapour phase in the quenching oil heat extraction is uniform across the section and thereby controlling ununiform distortion in the critical parts. Due to its high oxidation stability and lower evaporation rate, the oil consumption is less and thereby lower carbon emission.

Author: Mr. Atul Kamble

General Manager (Heat treatment and Cleaner)

Hardcastle Petrofer Pvt. Ltd.

Know Our Member



Name: Mr. Dilip Shripad Joshi

Designation : Heat Treatment In-charge

Mahabal Auto Ancillaries Pvt. Ltd., Miraj

Function: Quality

Contact Information: Email: dilip.joshi@mahabal.in; Mobile: 9823316023

Education Details: DME

Work Experience: 28 Years

Area of Expertise: Heat Treatment of Steel

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7-8 June:

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Model - CLEAN-EST

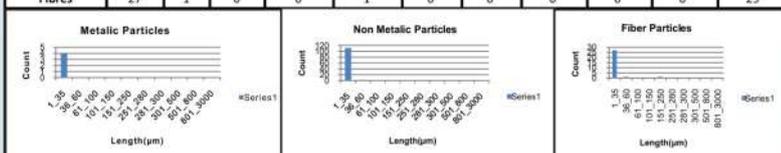
PARTICLE TEST REPORT.

Customer	ABC		
Part No:	A124N	Recd Date:	04-Jun-18
Report No.:	1672	Department :	QA Lab
Sample ID:	ABC	Test Date:	05-Jun-18
Analysis:	Particle	Standard Specification:	As per ISO 16232
Magnification	100X	Filter paper Size:	47 mm
No. of Fields :	5	Scanning Area	30 mm



Particle Size Analysis

Size ranges(µm)	1_35	36_60	61_100	101_150	151_250	251_280	281_300	301_500	501_800	801_3000	Total Count
Metallic	4	0	0	0	0	0	0	0	0	0	4
Non Metallic	111	3	0	0	1	0	0	0	0	0	115
Fibres	27	1	0	0	1	0	0	0	0	0	29



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