

FROM THE EDITOR'S DESK

Dear Reader,

It is a great privilege to present this edition of ASM International, Pune Chapter News Letter.

Since the last newsletter, we have seen a lot of turmoil in the world economy, India fortunately was not so badly hit, as compared to the developed world.

With a lot of timely and corrective measures taken by the government and industry, the worst is behind us.

ASM International Pune Chapter on the other hand, has made great strides.

- Pune Chapter of ASM International got the 5 Star Award for the fifth time in succession.
- Our very own Dr. Renavikar, has been elected Chairman of India National Council.
- Our membership has grown by about 20%, even in this slowdown. This was very much appreciated by ASM Headquarters.
- We are the First Chapter in India and the fourth in the world to have a portlet on the ASM International Website.

ASM Pune Chapter has planned an International Conference on Materials & Manufacturing Technologies from 17th to 20th Feb. 2011 at Hyderabad International Convention Center.

This will be a Mega event, which will require a lot of dedicated hard work, on the part of all members and well wishers. Your contributions of your time, expertise, and dedicated hard work will go a long way in making this unique mega event a success.

Yours Truly,

Louis F. Vaz



How to control and ensure Magnetic Particle Testing Process

In this article we are going to discuss the most important test for validating the MPI procedure, methodology for performing this test and some practical tips for controlling Magnetic Particle testing and improving its reliability.

Using artificial Flaw Specimen is most widely used test to check if MPI is done correctly or not. This test, if done correctly, gives a lot of information to ensure reliability of MPI. Pie gauge or ASTM test piece, berthold indicator, shims, MTU block, Permanent Magnet with flaw (Fluxa test bar), Burma Castrol Strip are some of the artificial specimen. Pie gauge, berthold indicator, burma castrol strip and shims tests correctness of magnetic field strength and direction (proper use of current), powder concentration and bath condition, black light intensity while others can give information only on bath condition and powder concentration, black light intensity.

The correct procedure for using pie gauge is as described below :

1. Keep the component on the machine in clamped condition, ready to test.
2. Wipe the pie gauge and keep on the component under test with copper side up. (Some people also do demagnetization of pie gauge before this, but practically it is not necessary.)
3. Pour the bath and apply the current.
4. Stop the bath flow and continue to apply current once or twice.
5. Inspect under black light for fluorescent and in white light for non-fluorescent powder.
6. For testing adequacy in circular magnetization three indications, one horizontal and two 45 to horizontal shall be clearly seen.

For testing adequacy in longitudinal magnetization three indications, one vertical and two 45 to vertical shall be clearly seen.

In combination method all four indication - horizontal, vertical and two 45, shall be clearly seen.

7. Pie gauge shall be placed on most difficult position for magnetization or on lowest and highest field strength. E.g. For coil, pie gauge shall be placed at extreme position away from coil on the part i.e at 9" if part is longer than 18". In case of different diameters pie gauge shall be place on each diameter.

Common mistakes in performing the test and some misconceptions :

- Most serious mistake is placing the pie gauge wrongly on the component, facing copper side down. Although it appears very foolish mistake I have observed about 10 to 15 % inspectors making this mistake.
- Lifting the gauge and taking hurriedly under black light. During this movement, the indications formed get disturbed and indication can not be seen. So it is always preferred to view the indications without moving the pie gauge and if necessary to be moved, move it slowly.
- Test is done only on one location of component. For complex or multi-diameter component this test shall be done by keeping the pie gauge at various

locations and different diameters of component as magnetic field strength will not be same everywhere. For such a component use of 'shim' is better than pie gauge.

- In central conductor technique pie gauge is placed directly on central conductor. We want to test magnetic field strength of the component so the pie gauge also should be placed on component.
- If required indications are not seen on pie gauge current is increased. Before increasing current other parameters like powder concentration, bath condition, black light intensity, contact with the heads need to be ascertained.

Along with the pie gauge it is better to use regular component with natural flaw with size near to largest acceptable or smallest rejected as a reference sample. Such reference specimen should always be tested after demagnetization because indication may be visible because of residual magnetic field.

By using this technique correctly engineer or supervisor or inspector can ensure if the MPI is carrying out correctly or not.

— Sudhir M. Phansalkar

AN INTERVIEW WITH Dr. RENAVIKAR ON HIS BEING ELECTED CHAIRMAN OF INDIA NATIONAL COUNCIL

Dr. Renavikar, congratulations on your being elected the Chairman of India National Council.

Will you please enlighten us of what India National Council stands for?

India National Council was chartered in September 1988 by ASM HQ USA. and is governed in accordance with the Constitution and Rules of Government of the parent body viz. ASM International. It's main objectives are to foster an Indian identity within ASM and to serve the particular interests of the Indian members without conflict with the international position of ASM,

How does it achieve the interest of the Indian members?

To serve as a contact among and common forum for the Indian Chapters of ASM and other technical societies and to foster appropriate interaction, and to serve as the council through which Indian Chapters can act together to achieve goals not attainable by their single effort,

INC is a nodal agency for all Indian Chapters and helps in co-ordination between all chapters in planning their activities like Technical lectures, Conferences, Symposia and Educational programs. It is expected that the Chapters engage in frequent interaction amongst them, for which a quarterly INC meeting is arranged at different chapter locations, by rotation. INC is also

responsible to spread and to expand ASM membership throughout India by establishing new chapters.

How is the Council composed? And what is the duration of the term?

The Officers of the Council are Chairman, Vice-Chairman, Secretary, Treasurer, the immediate past Chairman and Patron. The Officers are nominated by the Nominating Committee which is constituted from the senior members of the Council and is chaired by the Patron who is Dr H.M.Mehta, a Founder Chairman of INC. Each chapter is entitled to nominate one member per 30 members of the chapter, to the INC. Additionally, the Chapter Chairman and the Secretary are the Ex-Officio members of the Council. The term of the office is for two years.

What constrains do you see for the Council? And how would you set it right?

. Although the objectives of INC are laudable, it has not been able to fulfil them to a great extent due to several constraints like indifferent attitude of chapters, paucity of funds, lack of systematic working and weak support from ASM HQ. The rapport amongst the members also need to be strengthened. In the absence of good secretarial support, follow-up on various initiatives does not happen.

I would like to try my best in rectifying the situation by initiating dialogue with Chapter Chairmen and other officers by inviting their comments and suggestions about increasing the effectiveness of INC. A more informal interactions in between the INC quarterly meetings with various chapters would also be initiated to share their experiences with other chapters in dealing with common problems. A 'Strategic Plan' for INC would also be prepared for systematic working.

Efforts are being made to persuade the chapters to share a part of their profits with INC to generate funds for its routine working. ASM HQ is being contacted more

frequently to make them aware of various issues faced by Indian chapters. As a result of these efforts, a 20 minutes slot was allotted by HQ to Indian participants of "Leadership Days" event in Denver USA to make a presentation about India Council and Indian chapters for the first time. I am confident that with a good 'Team Work' we would be in position to make INC more effective and with synergistic efforts of all chapters we would further the mission of ASM in India

Thank You Dr. Renavikar for sharing the information and thoughts with us.

EVENTS OF ASM, PUNE 2008-2009

- AGM & Technical Talk "Quenching Oils" by J R Khona, Savita Chemicals Mumbai.
- India Council Meeting on 19.07.08
- Sponsored Technical Presentation on 27 August 2008 on "Corrosion Prevention - Radical approach to solve the problem" by Mr. Anil Kelkar - CEO, Dimple Chemicals & Services, Pune. Mr. Kelkar, with his vast experience in corrosion prevention, gave us some very valuable insights on cheap solutions for corrosion prevention.
- Seminar on "Emerging Forging Technology to Meet Global Challenges". 100 delegates @ 16 Papers. K C Gogate was Convener. Mr Deepak Dheer, MD, Mahindra Forging inaugurated the conference. 11th & 12th Sept 2008..
- Sponsored Technical Presentation on 24th Oct. 2008 on "Image Analysis in Material Science, Microstructure Characterization, & Steel inclusion rating with respect to different Steel Applications from Leica Microsystems" by Dr. Juergen Paul & Mr. Jozsef Gombos, Leica Microsystems, Germany Hotel Pride Executive.
- Sponsored Technical Presentation on 19.11.2008, at 06.45p.m., in Hotel Le Meridien, RBM Road, PUNE - 411 001, on "Tribology : A tailor made approach for optimizing friction and wear behaviour of Mechanical components." - by Shamba JUMAINE, Senior Tribology Project Engineer. The author gave some very practical applications of tribology in industry.
- Technical Presentation on 16th Jan. 2009 on "Metallurgical Failure Analysis" by Mr. Atul Gokhale, Dayton T. Brown, Inc., Bohemia NY at the College of Engineering, Pune. This meeting was well attended and was very much appreciated by the audience. We may have a more detailed presentation by the same author very soon.
- Technical Presentation on 04.03.2009 at COEP, Department of Metallurgy, Pune - 411 001, at 06.30 p.m. on "Industrial Plasma Processing Technologies for surface Engineering" - by Dr. Milind G. Acharya, Executive Director, Milman Thin Film Systems Pvt. Ltd., This meeting was very well attended even with a short notice, and was given a very attentive hearing. This was evident in the questions and answers session.
- Technical Presentation jointly with Indian Society of Value Engineerign. on 15th April 2009 on "VALUE ENGINEERING" 'BETTER VALUE AT LESS COST' by Mr. Raman Gopalan, Paramount Resources, India & Mr. Dilip Gowaikar, Tata Motors, Pune. This meeting was well attended and appreciated by the audience.
- Special Get-together on 29.04.2009 at 07.00 p.m at Panchshil Club, Club Road, Moshi, Pune for active involvement of members & increasing membership. The Dinner was sponsored by Mr C F Dias.
- Technical Presentation on 9th May 2009 on "Limitations of Fatigue Testing." by Gregory A. Fett, Chief Materials Engineering Dana Holding Corporation, USA.
- "Materials Camp 2009" during 13.05.2009 to 18.05.09 at COEP, Metallurgy & Material Science Department, Pune - 411 001.
- Technical Presentation on 24th July 2009 on "Innovative Applications of Friction Welding " by Yatin Tambe, Director, Friction Welding Technologies Pvt. Ltd., Pune. at Pimpri-Chinchwad Engineering College, jointly with Institution of Engineers PCMC Local Centre.
- AGM & Chapter Annual Day on 29.07.2009 at Hotel President, Prabhat Road, Deccan Gymkhana, PUNE - 411 004. at 07.00 p.m. Chief

Guest Dr. John Chacko, Managing Director Technical, Volkswagen India Pvt. Ltd. Mr. John Chacko in his address gave the audience an insight into the new technologies that are being incorporated at the Volkswagen plant at Chakan, Pune.

- Conference “FORGING TECHNOLOGY IN PURSUIT OF EXCELLENCE“ on 9th & 10th

Sept. 2009 at THE HOTEL PRESIDENT, Prabhat Road, Pune - 411 004. Innauguration at the hands of Mr U K Mishra, V P (ADD & Materials) Tata Motors Limited

- ASM IIM Lectureship Program by Dr Yash Kathuria, Aichi Institute Japan on Laser welding & cladding.

STUDENTS' MATERIAL CAMP - 2009

ASM International – Pune Chapter successfully conducted its second consecutive Students Materials Camp 2009 from 13th May to 18th May 09.

The camp had 37 enthusiastic participants from various Schools & Jr. Colleges of Pune.

The Materials Engineering & Metallurgy Department of the College of Engineering Pune was the host for this camp.

A variety of Experiments were conducted on the following topics :-

1. Heat Treatment: simple experiments like annealing, hardening & tempering on commonly used steel grades, were conducted under the guidance of Our chapter members Mr. S. G. Kulkarni, Mr. D. G. Chivate, and Mr. K. C. Gogate.
2. Material Testing: Prof. Thavale from COEP along with the above members guided the participants in various testing procedures such as tensile testing, hardness testing & impact testing.
3. Metallography: Mr. Y S Gowaikar, our chapter member, took care of the metallography of the above processed samples.
4. Pyrometry: Our chapter member Mr. Hemant Zaveri guided the students on Pyrometry experiments, such as making of simple thermocouples, RTD's & basic principles of Pyrometry.
5. Welding: Our chapter member Mr. Vineet Marathe & his team let the students try their hands at welding.
6. Corrosion: The participants conducted simple corrosion experiments tests & simple protection methods under the guidance of our member Mr. R. N. Gupta. Our student chapter members Ms. Mamta Sharma, Ms. Manjushree, Ms. Sandhya demonstrated polymer deposition.
7. Non Destructive Testing was conducted under the expert guidance of Mr. Sudhir Phansalkar. The students tried their hand at Magnetic Particle Inspection, Ultra Sonic Testing, & Dye Penetrant Testing.
8. Foundry : The participants tried their hand at sand moulding,& metal pouring under guidance of Mr.

Dhananjay Paranjape. They made a logo of ASM, which was later used as a memento.

Industrial visits to 5 industries were arranged by Mr. Chris Dias & Mr. Udayan Pathak.

1. Tata Motors: The students visited the Foundry, HT shop, Assembly Line, & were also given a presentation about automobile manufacturing & testing. The entire visit was hosted & coordinated by the HR department of M/s Tata Motors Ltd., Pune, India.
2. Sertex: This unit manufacturing Composites.
3. Triumph: This is a laser processing unit largely doing laser cutting & machining.
4. Emitec: This catalytic converter manufacturing unit was our host for the day.
5. Automotive Research Association Of India: The students to auto validation & testing procedures here. The students were particularly impressed by their first time exposure to electron microscopy.
6. The industrial visits were co-ordinated by Our chapter members Mr. L. D. Deshpande & Mr. R. T. Kulkarni.

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ASM International Pune Chapter

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