



ASM International, Pune Chapter Chapter News Letter

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Secretarial Report

The new Executive Committee, under Chairmanship of Mr B R Galgali, has continued with the high traditions of excellence in chapter activities. Our chapter received the chapter excellence award for the year 2010-11, thus motivating the entire team for an encore in the coming year. The enthusiasm of our members, made the conduct of programs a great pleasure. All activities grew in number, quality, content & member involvement.

Our EC forms the backbone of our Chapter. Although there has been a change in our chapter leadership, our direction & objectives continue to be the same. It is notable that our past chairpersons & many of our past EC members are very actively involved with our chapter activities. We have committees for all major activities but EC members work across all possible committees. This is the key to our success. We look forward to convey our chapter performance as accurately as possible through the para's below.

Student Outreach: Under the chairmanship of Mr Sudhir Phansalkar, we have extended our students outreach program immensely. We have almost 80 student members [Materials Advantage Members] from 3 institutes namely, 1: College of Engineering Pune [COEP], 2] Sinhgad College of Engineering [SCOE], 3] Government Polytechnique Pune [GPP]. We look forward to extend our students outreach program to 2 more institutes in the coming year. We also look forward to have a separate Materials Advantage Chapter in the coming years.

To make our students membership attractive we also supported the student membership financially, by almost 60%.

We arranged 5 industrial visits for the students of SCOE namely to Fiat Auto India Limited & to M/s RSB Transmissions Ltd. We are also facilitating project work for these student members.

The impact of our students outreach was visible during the visit of ASM INTERNATIONAL President Prof Christopher Berndt. Almost 300 students attended this Students Interaction Meet. The Program was conducted over 2 hours. This Program was also supported by COEP & IIM Pune Chapter.

M/s Unitherm Engineers have also supported the students outreach program financially.

Young Professionals: Global challenge of attracting young professionals (< 5 Yrs Exp) is also true for us. We have conducted survey to find out why Young Professionals are away from ASM Chapter activities. We collected data of students passed out in last ten years & sent them survey form. The response is under scrutiny & will help us for introspection. Changes in Chapter working if required will be done in years to come.

Communication: We started communication through Chapter News Letter. We have come out with Four issues & one more will be e-released during Chapter Annual Day. The news letter is in soft form & reaches almost close to 5,000 email ids. This is in line with Green policy of chapter. For effective reach, we choose to print two issues out of five. One student member Priyanka Chinchorkar, took e interview of Prof Chris Berndt & was appreciated by many recipients of news letter.

Member Recognition & Awards: This year Chapter nominated one member for Fellow Nominations. We have identified & nurturing two members under Mentorship of Chairman India National Council, Dr P G Renavikar, these will be nominated for Trustee & Trustee Nominee in a year to come. For outstanding recognition, we will recognize - Supporting organisations: ARAI, COEP, RSB, Unitherm, TML HR dept.

Student volunteers from COEP Shreyas Shingare, Sumit Tikayat, SCOE : Nishant Gupta, Hiten Saklani, Shrinivas Mitragoti, Dwitipriya Bose, GPP Nikhil Padwal, Pranali Bhosale

Supporting individual: Dhananjay Paranjape

Outstanding committee's: Students outreach, Membership, Education, Newsletter, Programs

New sustaining members 9

Long Range Plan: Ambitious plan for our chapter is worked out by long Range Planning Committee Chairman Dr P G Renavikar & Immediate Past Chapter Chairman Chris Dias. The major feature being building our own office cum materials technology center. This

will strengthen our Chapter activities forever from one place.

Strong Membership Retention: We are one of the Chapters in the world who are successful not only in retaining Sustaining Memberships but steadily increasing Sustaining Members. This was possible only because of our focused initiatives like - Introduction of Sustaining member in Monthly technical program & Chapter News Letter, inviting them as dignitaries for our chapter programs, recognition for special contribution in Chapter Annual Day. To attract individual members, many Technical programs are open for potential members. EC members meet potential Individual & Sustaining Member in a planned way. Our efforts towards retaining, Sustaining membership is recognized by HQ & we have shared our best practices to HQ.

Technical Programs: This year we had 12 technical programs on wide ranging topics from speakers the world over. This gave us a great opportunity to network with our members, other professional society members, local industry & material advantage student members.

Materials Camp: This year we successfully conducted our fifth consecutive Students Materials Camp. We had 27 young students participating for this camp. The students got hands on experience in the field of Foundry, Heat treatment, Corrosion, NDT, Metallography, Welding, Injection moulding, Mechanical testing, Hardness testing. We also arranged Industrial visits to Tata Motors Limited, Emitec, TRUMPF & ARAI - Automotive Regulatory Lab. The camp was held in the Materials engineering department of COEP. The camp was also supported by ARAI & other local industries.

Next year we intend to take this camp to the national level & will be proposing a mixed SMC to ASM Education foundation.

Training Programs: This year we conducted three education programs under the chairmanship of Mr KC Gogate. All the programs were on similar lines of "Metallurgy for Non Metallurgist" but tailored to the needs of the local industry. These were presented as PPT. The faculty for the program was mostly from our chapter with all having more than 25 years of industrial experience. One program was jointly held with ARAI & 2 in house programs were conducted, one at Bharat Forge Limited & one at Mahindra Navistar Limited. MNL participants also had 2 industrial visits. For the very first time we have had In-House Training programs. We also plan to have a Gear Conference in Feb 2013.

ASM International Chairman's Visit: Last but not least was maiden visit of ASM International Chairman's visit to our chapter. Prof Chris Berndt was the first Chairman to visit Pune Chapter. His visit was fully used by our chapter for promotion of ASM activities. His visit started from COEP where he interacted with almost 300 students & college faculty. Thereafter he visited ARAI (Automotive Research Association of India). This visit strengthened our ties with ARAI as the Director ARAI Mr Shrikant Marathe indicated his eagerness to work closely with ASM Pune chapter. Later in the evening, our EC had an open session with Dr Berndt & shared our concerns with him. This was followed by a technical talk on "Opportunities in Thermal Spray" to the invited audience comprising of senior executives of various companies, potential & current chapter members. The interaction ended with networking dinner. On the next day Dr Berndt visited Tata Motors Limited & Bharat Forge limited. All these activities were coordinated by Dr P G Renavikar.

Extra chapter & Intra Chapter activities taking the ASM INTERNATIONAL mission objective forward: Our members have participated whole heartedly in all INC Meetings. Mr Y S Gowaikar & Mr R N Gupta visited Nasik region for promotion of ASM, jointly with INC & India Chapter. We promoted Meltmetech [Conference by India Chapter] in our area of influence. **We shared our Best Chapter Practices at Leadership Days 2011.** These are just a few examples of our cooperation with other chapters. We look forward to similar association with all ASM Chapters & look forward for support from HQ in this regard.

We have formed strategic alliances with organizations like ARAI, IIM, IIF, COEP, SCOE & GPP with a view to take the mission objective and our strategic plan forward.

Rahul Gupta
Secretary Pune Chapter

EDITORIAL...

I am glad to present this fifth & last issue of Chapter News letter for the year 2011-12. This issue will reach you in soft copy as well as printed format. This issue will be released on Annual Day of Pune Chapter. We started the news letter for circulation from about 500 members in the form of hardcopy. We switched over to soft copy format and we are now reaching to almost 3000 email addresses available with our Pune Chapter office.

Corrosion is major concern of Automotive OEMs. Emerging stringent laws on end of Life of Vehicle (ELV) and increasing customer expectations are major driving force for lot of innovative work in this area. Technical paper by V. Hariharan, Manjula Panyam & Kanad Karandikar share the various corrosion protection measures underway.

The year was full of activities. Rahul Gupta has presented the chapter activities in Secretary Report. Inspite of your interest, we are aware that many of you could not attend various events; for such members photo gallery at center page will give glimpses, while those who attended the programs it will be a quick recap. Introduction of our members D Gopal of High temp furnaces is included in this issue. Few member announcements are on the last page. As usual we will be recognizing few members & committees for their work in annual day. Please know more about them.

Mr B R Galgali, Chairman ASM International Pune Chapter has already shared his plan in the first issue; starting from this issue, he would like to have regular communication with all of us through new column "From the Chairman's desk".

Our efforts are always directed towards making this news letter more interesting, meaningful & resourceful to you. We are looking forward for your suggestions to achieve this purpose & make it more participative. Please send us technical articles, your profile for inclusion in News Letter & more precisely- your comments & critique of the news letter. Please feel free to write to Mr Louis Vaz, Chairman, News Letter Committee at loufvaz@hotmail.com.

With this issue, I will be completing my responsibility as editor for current year and handing over the charge, to new editor. I sincerely thank all of you who have supported us in every way to make the news letter inclusive & reaching to many interested people.

Editor
Udayan Pathak

Appeal to be Editor of News Letter (Opportunity for Pune Chapter Members Only)

ASM Pune Chapter offers you opportunity to be the editor Chapter News Letter. This is Voluntary position. You will be responsible for release of minimum Six News Letters next year. This year for the First time our Pune Chapter will come out with Six issues. You have an opportunity to make this News Letter better & set it to your own bench mark. As an Editor, you will work closely with Louis Vaz, Chairman, News Letter Committee. Your can avail this opportunity & take responsibility for at least one year starting from July 2012 to June 2013. This can be extended as per your wish. Contact Louis Vaz, Chairman, News Letter Committee at loufvaz@hotmail.com for further details. Please e mail your willingness to Louis Vaz or Rahul Gupta at rahul9463@gmail.com

From Chairman's Desk

It has been exactly one year taking over the Chairmanship of the esteemed organization - ASM (International) Pune Chapter, It was a year full of activities and chasing the dreams! Frankly for me it was a bit exhausting in catching up the pace of activities

Monthly technical programme, Collaboration with ARAI, for technical training, Inhouse training programme for Bharat forge learning centre, visit of Dr. Christopher Berndt, planning for forthcoming heat treat show and a list goes on.

The credit does not go to me, to my entire EC and all the commits members and volunteer who are continuously striving for.

We have kept some promises, some are still to be fulfilled. But will strive hard to serve you, to technical fraternity & community with more vigour and more commitment to serve better

B R Galgali
Chairman



However, at times, depending on the project requirement, it becomes necessary to get the vehicle level corrosion tests carried out in foreign countries. Vehicles developed for domestic market may cater well for domestic conditions but the same vehicle may not sustain the climatic conditions in foreign countries, where the key challenges are high speed, low temperatures, heavy snow and resulting aggravated conditions. Corrosion issues, that can lead to loss of part functionality, or where durability may get affected or where safety concerns are primary, needs to be addressed at top priority.

6. Field survey

The most reliable performance data is obtained by field surveys of vehicles in various geographical areas in years of actual service. However, the time, effort, and sample-size requirements place practical limits on this approach. Field surveys are valuable because of the large number of vehicles that can be visually inspected over a short period of time. In general, a location and time of year is chosen and a team of evaluators survey dealerships, parking lots, etc., with survey sheets. Therefore, corrosion performance is based on inspection and evaluation of actual standard production vehicles exposed to natural environments and normal operating conditions.

Finalizing of surface protection for a specific part / aggregate is a challenge in view of its complexity, functionality, safety, durability and dependability on various external parameters like the geographical area where the vehicle is being driven, road conditions, climatic conditions etc. To modify the surface protection, one goes by field data and the protection is upgraded if related problems are encountered in field, which becomes a trial and error method. The current practice does not take into consideration the geographical factor and may not lend confidence to the designer in choosing the optimum surface protection to be used on components and aggregates. Also it may not take into account the practice followed on competitive vehicles in order

to optimize the required surface protection. The conventional practice has the risk of either over specifying or under specifying [5].

To overcome this, we have developed a methodology for non-destructive corrosion survey of vehicles that have run for a defined period or distance without any major repair or replacement in the target component/s. This is a statistical tool that relates to the survey of the corrosion behaviour on our vehicles and also our competitors' in the same segment, selected across varied geographical regions to study the

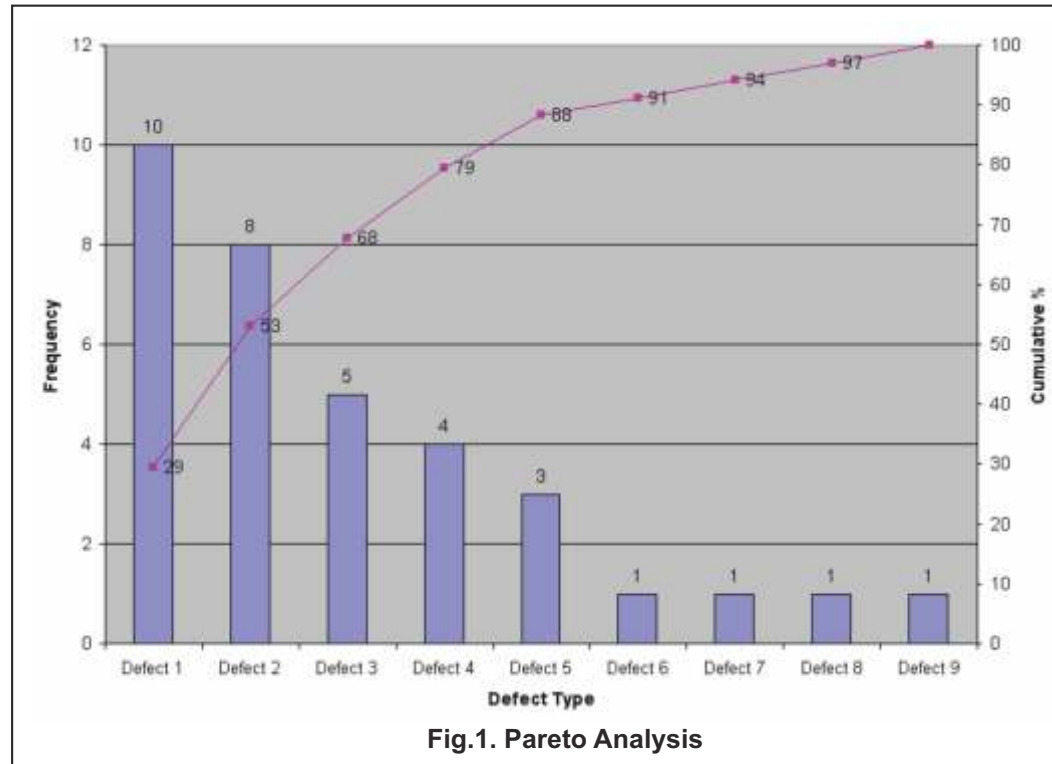


Fig.1. Pareto Analysis

extent levels of surface protection, thereby of corrosion – cosmetic & structural - and decide on the need to redefine and critical areas, understand the current optimize the protection levels where required and introduce cost effective solutions where possible. Data collection, creation of a database, graphical representation of the defects plotted against their degree of severity, Pareto analysis, identifying and prioritizing the parts / aggregates for action, redefine if required the surface protection levels to bring them at par with the competition as shown in Fig. 1.

This survey is done on the vehicles which have completed 2 to 3 years of field running without destructive testing. Due to this, the areas / cavities which are not seen from outside such as A-pillar cavity or cavities in the Sill area remain unnoticed unless there is a visible corrosion from outside or clear perforation is seen. Hence this survey does not help to understand corrosion behavior and potential failure modes of such areas. Endoscopic techniques, if available, can be used to overcome some of the limitations of the naked eye.

7. Virtual simulation

In automotive industry, proprietary CAE codes are being used to solve number of issues related to crash, stamping etc. Commercial codes exist for determining the CED thickness in different sections of BIW. In these codes, there are two main inputs as below:

- 1) Process inputs such as cathode to anode ratio, shape of the anodes in the CED bath, bath size, line speed, type of coating system, conductivity of CED bath at different temperatures etc.
- 2) Geometry Inputs: Vehicle geometry details

After capturing above details, vehicle FEA model is prepared and subjected to virtual painting simulation, which in turn gives the CED thickness in different sections based on which different parameters - process or design, can be varied to get the optimum CED thickness.

Possibility of saving in prototyping cost & avoidance of labor involved in this activity and most importantly field firefighting situations are avoided.

Reference to inaccessible areas, insufficient access holes during vehicle design can result in poor electrocoat coverage in related areas. Simulation softwares help to eliminate these issues by enabling software experimentation with different configurations of access holes until a set gives improved electrocoat coverage in the related areas.

Strategy to eliminate potential air bubbles that gets trapped in the CED tank during vehicle entry can be explored using simulation softwares

Continued on next page....

PHOTO GALLERY





Locations on the vehicle where liquid tends to get trapped during exiting from the tank and time required to drain the vehicle can be predicted.

Temperature and cure rate of the vehicle inside the bake oven can be predicted; also capabilities for designing the oven can be available through simulation softwares.

A combination of simulation softwares can compute optimal operating conditions to reduce use of paint while maintaining required level of electrocoat coverage on both inner & outer body panels.

The software has the potential to save money, improve operations & increase quality of the finished product inside of physical prototypes or intuition and also generate a comparison of the CED baths from different suppliers.

However there are limitations of these codes. They may not give exact thickness at a particular location due to inaccuracies in the actual formed part as compared with CAD model. These inaccuracies arise due to spring back encountered for different high strength steels.

This technique can be schematically represented by a simple flow chart viz.

Input → Processing → Output

Input:

CAD geometry, ED plant layout, Current density, Electrode distance, Voltage, Flow of liquid, Open surface area on vehicle, Close surface areas, Process parameters of pretreatment stage etc.

Processing: Virtual simulation

Output:

CAD data, depicting various zones in various shades, coating access and drainage in various recesses, uniformity of coating thickness in critical areas.

Feedback from the exercise can help designers to fine tune their design, help to strategically locate the openings to ensure adequate coating access, yet preserve structural integrity.

Conclusion:

Specific questions need to be answered early in the development of an underbody structural part to ensure that corrosion concerns are properly addressed. The queries may be based on the learning with respect to material, design, processing, testing and environmental exposure.

Material issues that include substrate material selection, corrosion mechanisms to which substrate material shall be subjected, factors related to substrate material that make it susceptible to specific corrosion mechanisms, whether the substrate material shall be coated, whether the coating shall be applied prior to fabrication or after etc.

Design issues to check whether the selected design shall result in the part or specific areas of the part being susceptible to particular forms of corrosion, whether the design selected facilitates proper processing, whether adequate ingress / egress holes provided for effective e-coat, whether the design selected allows materials to drain properly between process stages, whether the drain holes are oriented to avoid direct road splash, whether poultraps have been identified and minimized, whether sufficient air escapes have been provided for box sections etc.

Processing issues to check whether the design dictates specific processing techniques, whether the proposed processing technique has been utilized before, the impact fabrication processes have on pre-coated material or coatings applied after fabrication etc.

Testing / environmental exposure issues to check whether the corrosion validation tests have been conducted on all parts and sub-systems of an assembly, the intended service life, in-service environmental conditions, any specific design or material requirements dictated by potential field environment, whether customer use have an impact on part performance etc.

Evaluating the environmental attributes of a product requires looking at all stages of a product's life cycle. Observing the complete life cycle of the production, use and disposal of a

product helps obtain a clearer and more complete picture of the product's environmental inventory.

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About the Authors:



V Hariharan is Assistant General Manager, Materials Engineering, Engineering Research Centre, Tata Motors Limited, Pimpri, Pune : 411 018, India. He is alumnus of BHU and completed his B Tech in 1983. Prior to Tata Motors he worked with PAL, Fiat Kurla Plant. He can be contacted on v.hariharan@tatamotors.com;

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Kanad Karandikar is Manager (Development), Materials Engineering, Engineering Research Centre, Tata Motors Limited, Pimpri, Pune : 411 018, India. Alumnus of College of Engineering Pune (COEP) obtained B Tech with first rank. He is reachable on kanad.karandikar@tatamotors.com

Know Our Members



Subhashis Banerjee, DGM (MQC_HT) is corporate sustaining representative member of ASM Pune Chapter representing M/S Kalyani Thermal Systems. An expert in Automotive Metallurgy, Failure Analysis, Heat Treatment, Subhashis has also developed expertise in management systems like CQI-9/ISO / TS /OHSAS.

Subhashis started his career in Hero Honda Motors, Dharuhera as GET in 1987. After completion of training he continued with Hero Honda for 3 years. Later he joined Bajaj Auto Limited Aurangabad. He handled various responsibilities in Metallurgy & Heat Treatment in Bajaj Auto. With 15 years career in Bajaj, he joined Kalyani Thermal Systems as Senior Manager in 2006. He is heading Metallurgical Quality Control & Heat Treatment. Kalyani Thermal Systems, is primarily engaged in manufacturing of forging & machined components for Automotive and Engineering Applications.

Subhashis has travelled globally & visited Germany, Italy, Thailand for developmental activities. He presented paper in FTCON conference organised by ASM International Pune chapter. He is also member of ISNDT – Indian Society for Non Destructive Testing.

Subhashis obtained his BE (Metallurgy) from National Institute of Technology, Durgapur in 1986. Later he pursued MBA (HRD) from IGNOU. Sportsman since his college days, he plays Football & Table Tennis. Subhashis is also fond of Music (Ravindra Sangeet), Reading & Trekking.

He is staying with his family at Magarpatta, Pune. His wife Sheuli is home maker & expert in Bengali Cuisine particularly mishti (Sweets). Arnab, their 15 yrs old son is studying in 10th standard in Bishop's School, Kalyani Nagar.

Subhashis can be contacted on + 91 98905 94093 or at sbanerjee9@rediffmail.com



Duvvuri Gopal is General Manager – Pune plant, Hightemp Furnaces Limited (Dowa Group Company). Dowa Thermotech-Japan is leading Furnace manufacture (Atmosphere controlled sealed quench furnaces) and Commercial heat treating company catering to major automobile industries. Hightemp Furnaces is having furnace manufacturing facility in Bangalore, and commercial Heattreatment facilities at Bangalore, Pune Gurgaon and Chennai.

He joined Hightemp in 1995 as AGM-H/T. As CHT Pune Division head, his responsibilities include Plant profitability, Prepare Sales and cost budgets, CHT Marketing, New product development, new processes establishment, Resource management, Customer interface, Plant expansion and Capex requirements.

Before joining Hightemp, he was with Hero Honda Motors Ltd.,-Dharuhera (Haryana) from 1989 in Heattreatment and vendor development for HT processes.

Graduate in Metallurgy from NIT-Raipur, is born and brought up in Visakhapatnam.

Recipient of "Excellence in Heattreatment Award" for the year 2005 from ASM-Pune chapter for paper submitted on Energy and cost saving atmospheres. Under his leadership, Hightemp Pune division achieved "Self certification status and best supplier award from Godrej-Locks division, Best supplier award from Divgi Warner for three consecutive years, Best vendor award from Kirloskar Copeland.

D. Gopal also acquired additional qualifications by completing certificate course of Lead Auditor-ISO-9001-2000 and Internal auditor based on ISO/TS 16949:2009.

D. Gopal has started his career with Gajra Gears Limited, Dewas in laboratory and later in Heattreatment shop.

HE is Member ASM International since 2004.

Are your contacts updated?

Make sure your contacts (Email, Telephone & Postal Address) are updated on ASM Website. You will receive lot of updates, information, discount details, new publication notices etc from ASM International as well as Pune Chapter.

Difficulty in updating? Contact - Laxman Deshpande, Chairman, Membership Development Committee, Pune Chapter I.d.deshpande@gmail.com or Candace Cunningham, ASM Head Quarter candace.cunningham@asminternational.org for support.

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