ASM INTERNATIONAL Pune Chapter

Chapter News Letter

Issue No. 42 | October 2023

EDITORIAL . . .

Strengthening the roots while reaching the heights.

Welcome, dear readers to the Annual Day,2023 edition of Pune Chapter Newsletter.

At the outset let me thank ASM Pune Chapter for giving me an opportunity to be an editor for this awesome Newsletter.

ASM Pune Chapter regularly has many activities. An in-house Innovative training program on basic and advanced heat treatment and failure analysis was held for 35 delegates of Mahabal Group. Metallurgy for Non- metallurgists on casting developments.

With new Material Advantage chapters, one at GIT, Belgavi and other at PVG, Pune the chapter is strengthening its roots of material science under the guidance & mentorship of Mr Chivate.

Materials Manufacturing technology is the future of India. To align to the goal, Pune chapter has planned M& MT -24 on 'Advances in Heat treatment with focus on surface technology'.

These efforts yielded results in the form of 2 awards won for membership retention and recruitment and other on communications in size 3 category.

Industrial visits arranged by ASM members like the ones arranged by Cummins college, Nagpur and GIT Belgavi help encourage students to learn through observations. More and more such visits will help exploring life, inspiring innovation & in turn make 'Make in India' concept a grand success.

With the juggernaut of IT sector engulfing fresh engineers, manufacturing industry has very little options left. But with such programmes we can 'CATCH THEM YOUNG' & create interest in them.

Best Wishes,

Sandeep Rege, Editor

Dear Members,

We are privileged to lead the Most Dynamic & Vibrant Chapter in the world, ASM Pune Chapter. Indeed, we were supported by an equally dynamic Executive Committee (EC) which is a fine blend of Veterans & Young Blood.

ASM has a vast landscape of activities, but after a series of brain-storming sessions by our EC, four focus areas were identified which were aligned to ASM's Vision & Mission, for our tenure 2019-21 and 2021-23:

- Inclusiveness, Diversity & Enhanced Women Participation,
- Students Outreach,
- Knowledge Sharing &
- Collaborations.

Inclusiveness, Diversity & Enhanced Women Participation: We inducted and mentored three active women members in our executive committee viz., Ruta Barve, Jaswandi Gotmare & Dr. Kruttika Apshankar – Kher. While Jaswandi Gotmare is leading Women@Materials Engineering Committee, Dr. Kruttika is getting ready to be the chairman of News-Letter committee under mentorship of Mr Louis Vaz and Ruta has taken responsibility as Jt. Secretary.

Our focused efforts resulted in Chapter Women membership growing from only 1 in 2019 to 52 in 2023. ASM Pune Chapter is probably the first celebrate Womens' Day since 2020 and acknowledge womens' contribution in this field.

Continued on page 4

During the past 20 years I have had tremendous opportunities to network, learn and grow professionally.
These opportunities came by due to the support of senior ASM members globally and locally, during various events such as

- Leadership days
- Students Materials Camps
- Conferences
- Training programs
- Technical programs
- Students Chapter Activities


Rahul Gupta

And many more such activities which are detailed in our website - ASM Pune Chapter.
Our chapter is one of the most active chapters globally.
Our students' program has grown 5 times in the past 4 years.
We are planning a conference later next year.
All these require Volunteers.
In fact, Volunteerism is one of the pillars of ASM.
Hence it is my sincere appeal to all to get involved.
You will never regret getting involved.

Yours in ASM
Rahul

Patent by our Member

Prof. Sandeep Deshmukh of Sinhagad College of Engineering, Mechanical Dept. was granted a patent titled 'Process for Improving Mechanical Properties of Implements' by the Indian Patent Office, Government of India. Dr C L Gogte, mentor and inventor and Mr D G Chivate from ASM International Pune chapter were instrumental in guiding him. A short description of the patent is given below.

The process narrated in the patent is aimed at improving the Mechanical Properties of Agricultural Implements. The uniqueness of this patent is the improvement in Corrosion and Wear resistance due to an increase in surface hardness while retaining impact toughness and higher tensile strength than as received blade material FE410 steel.

Further reduction in friction and drag force was due to the novel Bio-inspired Design of the blade mimicked by the shape of the bark of the Bamboo tree and analogy of dung beetle surface morphology, for zigzag dimple pattern laser cut on impeller blade.

This blade was further cold rolled and led to an increase in slip for the Cage wheel inside muddy soil.

The scratch and corrosion-resistant CED Coating of Epoxy paint led to engineering the hydrophobic surface for the Cage wheel blade. This bionic surface assisted in an increase in flow velocity in puddling operation during the rice plantation.

The present invention offered a method with a synergistic effect and a blend of contrasting mechanical properties, leading to performance improvement of mechanical implements used in agricultural farm mechanization equipment.

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Chapter Awards

ASM Pune Chapter is proud to announce that we have received two ASM Awards

Membership Retention & Recruitment, Size Category 3 and Communications, Size Category 3

Heartiest congratulations to the entire team for this great achievement!

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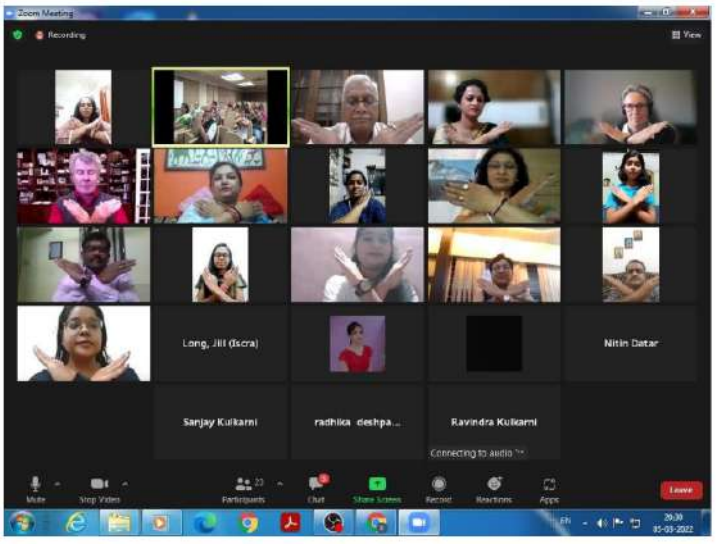
LOOKING BACK MOVING FORWARD

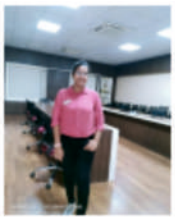
Womens' Day Celebration March 2021



Dr. Rajiv Narvekar from Tata Management Training Centre, Pune helped us to develop unique **'Mentorship Program for Women Materials Engineers'** which encompasses Technical, Managerial & Human Relations aspects of and for career growth. It was formally launched by Mr. Pradeep Goyal on Womens day 2022.

We introduced a Column **'Women Engineer Speaks'** in our Newsletter to highlight the success stories of women engineers. We could reach out to the First woman Student of Metallurgy Department VNIT Nagpur, COEP, Govt. Polytechnic Nagpur – institutes offering Metallurgical (now Materials) Engineering courses. There was a great interview with Dr Sarika Phadke-Kelkar from KPIT on sodium ion batteries published in the February newsletter. We also succeeded in our efforts to connect with Dr. Fahmida Gulshan, HoD – Materials Engineering from BUET, Dhaka.


Swara Tupe


Tanvi Mahankar


Riya Khaparde


Mimanshi Tembhurne

Editorial Team March 2023
(CCoEW Nagpur MA Chapter Members)

Students' Outreach

We were active in students' outreach since the launch of informal students Chapter at Sinhgad College in 2010. However, we were looking for starting formal MA Chapter. Our First MA Chapter was started in MKSS'S Cummins College of Engineering for Women, (CCoEW) Nagpur. Incidentally, this is the world's first Womens' only MA Chapter. This chapter has been organising various activities for members & non-members to popularise Materials Engineering.

This MA Chapter also developed social angle amongst members by taking a community project of watershed management. CCoEW MA Chapter entered into an MoU with the Community Radio Station 'Apna Nagpur FM 90.8' for innovatively spreading Materials & Social information.

MoU Sign off – MA Chapter CCoEW Nagpur & Apana Nagpur Community Radio

With consistent efforts from Students Outrech Committee, we could start five Materials Advantage Chapters viz., CCoEW Nagpur, Govt. Polytechnic Nagpur, PVG College of Engineering & G K Pate Institute of Management Pune, Gogte Institute of Technology Belgavi and D Y Patil College of Engineering, Akurdi. All these MA Chapters are equally active. MA Chapter at PVG College of Engineering & G K Pate Institute of Management was first to MA Chapter to organise one day International Conference on **Smart Materials & Additive Manufacturing** ASM Trustee Dr. Pierpaolo Carlone & ASM Vice President Dr. Navin Manjooran participated in this conference.

One Day International Conference by MA Chapter PVG College of Engineering & G K Pate Institute of Management

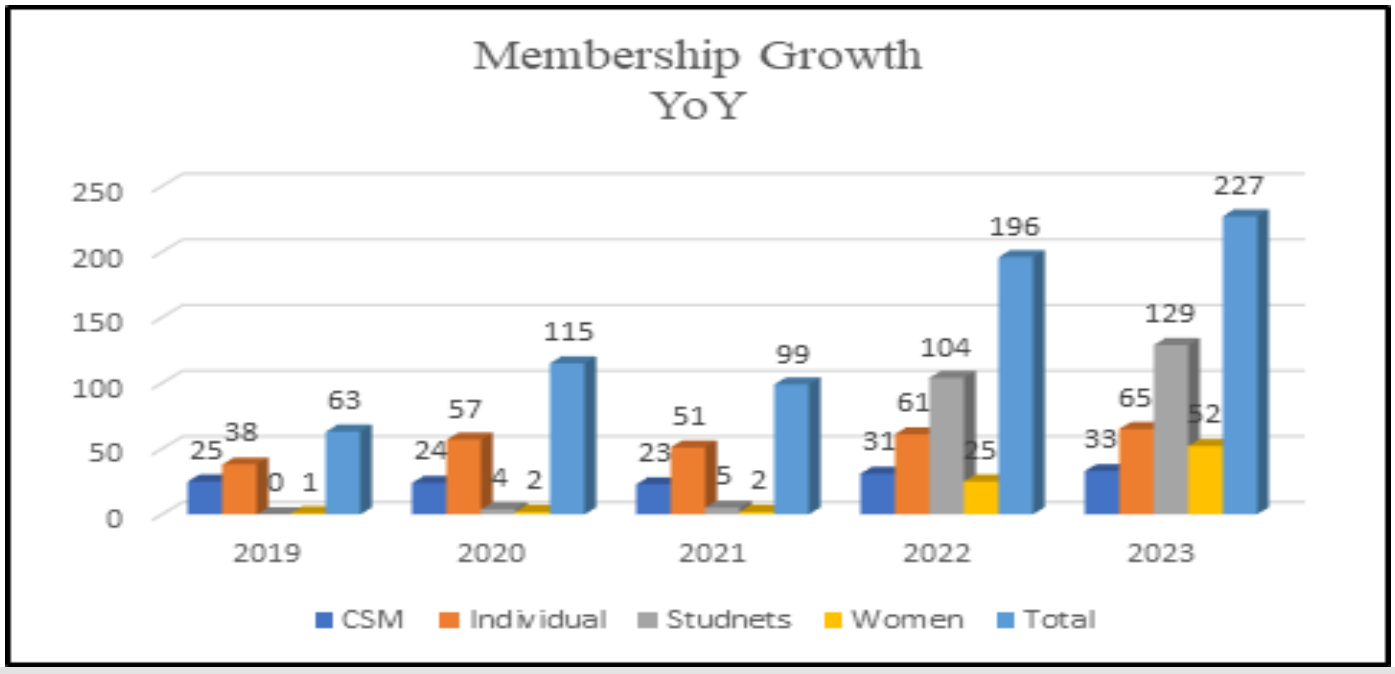
We have organised lot of Workshops, Industry Visits to create interest in them about Core Engineering. Through series of AICTE approved Faculty Development Programs, we updated Faculty from various Engineering Institutes. Our First online FDP at MKSS's CCOEW Nagpur during the pandemic had record break 3500 registrations with at least 2500 attendance in each session.

Knowledge Sharing: Ruta Barve volunteered responsibility of strengthening our Iconic **Monthly Tech-Talk** Series. Keeping in view entire spectrum of membership interest we arranged more than 35 lectures in last four years. Before unexpected & unfortunate outbreak of Covid-19 Pandemic in March 2019 our technical talks were held in offline mode. Our average attendance had gone upto 40 with a peak of 65 members in one lecture. We were amongst the first few ASM Chapters globally to use Ring Central Facility. Even on Ring Central Platform our online attendance was around 40.

Training Programs viz., Metallurgy For Non-Metallurgists, Basic & Advanced Heat Treatment, Failure Analysis were traditionally popular training Programs we conducted jointly with ARAI. Rahul Gupta took specific efforts to add Casting Development. These training programs were one of the major sources for revenue generation for our chapter. During Covid-19 pandemic there was a sharp decline in the number of delegates attending the programs. Response to online programs was also not encouraging. To avoid financial losses to chapter, most of the faculty conducted lectures without taking any remuneration. To recover from this situation, we focussed on tailor-made in-house training programs.

Collaborations: Indeed, we have competition with many similar organisations, for growth and spread of our activities. Since one common purpose of existence of all these organisations is knowledge sharing, we strategically joined hands with these like-minded organisations including Vijnyana Bharati (ViBha). Our monthly Tech-Talks were organised jointly, at IEI Auditorium and were open to members from all three organisations. We organised a seminar on 'Decarbonization Strategy for the Steel Industry' jointly with IIM and CoEP. All 35 Tech talks were organised jointly with The Institution of Engineers (India) & ViBha.

Membership Growth: With our focussed efforts, we could increase our membership from 63 (in 2019) to 227. Students membership from 0 to 129 and women 1 to 129 (both including 27 in process). We also grew from 63 to 98 Professional Members.



Communication with Members: We believe, communication & network with members is key to success for any chapter. Newsletter is very a powerful tool to reach out to our members. We consistently enhanced frequency of Newsletter. This year we will achieve bi-monthly release. Dr. Kruttika Apshankar-Kher is taking over the crucial responsibility as Chairman, Newsletter committee.

We also established interactive WhatsApp groups to enhance communication with members. We organised Brainstorming and Chapter Rejuvenation Discussions. Everyone felt that to strengthen networking, which is one of the strengths of ASM, we should organise at least one dinner meeting quarterly. Also, to inculcate the habit of visiting our website, we decided to send the link of the Newsletter through e-mail instead of pdf.

Chapter Governance: To support the Executive Committee, we formed eight sub-committees. These committees are meeting periodically and discussing their issues and deciding actions. Before each monthly Executive Committee Meeting, we are sending monthly report as pre-read for meeting. This has helped us focussed EC meetings.

We are specifically thankful to our treasurer Mr. Hemant Zaveri. Chapter finance committee took focussed and consistent efforts to re-establish administrative discipline to ensure timely filling all statutory returns. Due to previous delays in compliances, our past IT refund is on hold, we were imposed huge penalties for FCRA. Hemant Zaveri and Office Executive Ms Nita Gyakar stream-lined financial processes very carefully. With support from CA Shete & Co, hopefully we will not be required to pay any penalty in future.

Moving Forward: Though barring one year, we have been consistently getting two to three Chapter Awards, we have challenges too. We are still not able to enter three-digit Professional Members. Our attendance for both online and offline technical programs need improvement. With focussed efforts, we have specifically added younger members in EC. We need to get more & more younger members both as Chapter Members & Executive Committee Members, while leveraging experience of senior members as Advisory committee. An important agenda in our list organizing international conference and exhibition.

We believe the younger team members should get opportunities in chapter governance; hence, we are stepping down with contented minds. We are sure the new team will not only retain our global visibility but also take our chapter to further heights.

Udayan Pathak, FASM & Louis F Vaz

ASM INTERNATIONAL Pune Chapter
ASM International Pune Chapter
Guruprasad, 37/4/A, 6th cross Lane, Prabhat Road,
Pune 411004, Maharashtra, India.
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Students Outreach

Material Advantage Students Chapter Under American Society for Metals

The Materials Advantage or an MA Chapter is a joint program between four professional societies serving the materials community – ASM International, the Association for Iron & Steel Technology (AIST), the American Ceramic Society (ACerS), and The Minerals, Metals & Materials Society (TMS). Students receive membership in all four societies as well as special conference rates, magazine subscriptions, travel grants, publications discounts, and more. ASM Pune Chapter has a total of five MA chapters in Pune, Nagpur and Belgavi.

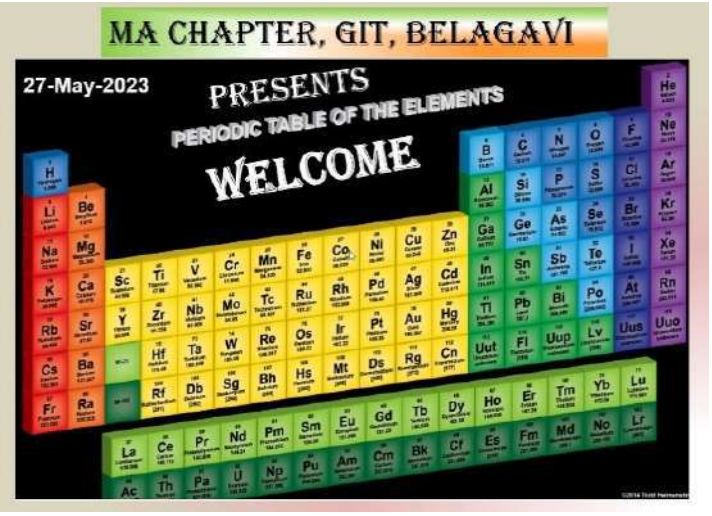
Two new MA chapters – GIT, Belgavi and PVG Pune were started under the guidance and mentorship of Mr. Chivate. His leadership has also been instrumental in guiding faculty to achieve patents, holding mock interviews for students sitting for placement and conducting several technical programs and visits.

The MA Chapter of PVG was very active last year and they held almost seven events in their founding year which included technical talks and lecture by industry experts, a training programme, an international conference as well as a state level project competition.

Not to be left behind, GIT Belgavi also held a 3-day course on 'Metallurgy for Non Metallurgist' in January in which several academicians as well as industry experts were there to guide fresh and enthusiastic students. The MA chapter of MIT Belgavi have started a lecture series on the periodic table where they explain each element in detail. An industry visit was also arranged to a big alloy steel manufacturer, SLR METTALIKS, in HOSPET.

Cummins College, Nagpur held a variety of events including a poster-making competition, a model making competition (EDIFICE) and hosted several technical talks on subjects like HVAC systems and the principles of 5 S and their effect on work environment. They conducted a site visit to Jaiswal Neco Industries LMT in Butibori, Nagpur to understand manufacturing processes and the applications materials science as well as Arin Energy Solutions Pvt. Lmt to study the process of installation of solar panels and calculation of loads on solar panels. In another very interesting competition titled EdgePro, the MA chapter held a weapon making workshop. Over 60 students distributed in 12 groups participated enthusiastically in this competition and each team was provided with a 8 inch Slab of MS Flat and a time duration of 2 hours was given to create a knife out of the raw material. The judges interacted with all the teams and sharpness test was conducted on the knives.

By Kruttika Apshankar – Kher

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SAVE EAR
GIVE EAR
A NEW
JNIL


SAVE WATER
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Technical Article

easyJet & Rolls-Royce Proves A Pearl 700 Engine Could Burn Hydrogen At Take Off

The two British giants announced the key milestone in hydrogen fuel today.

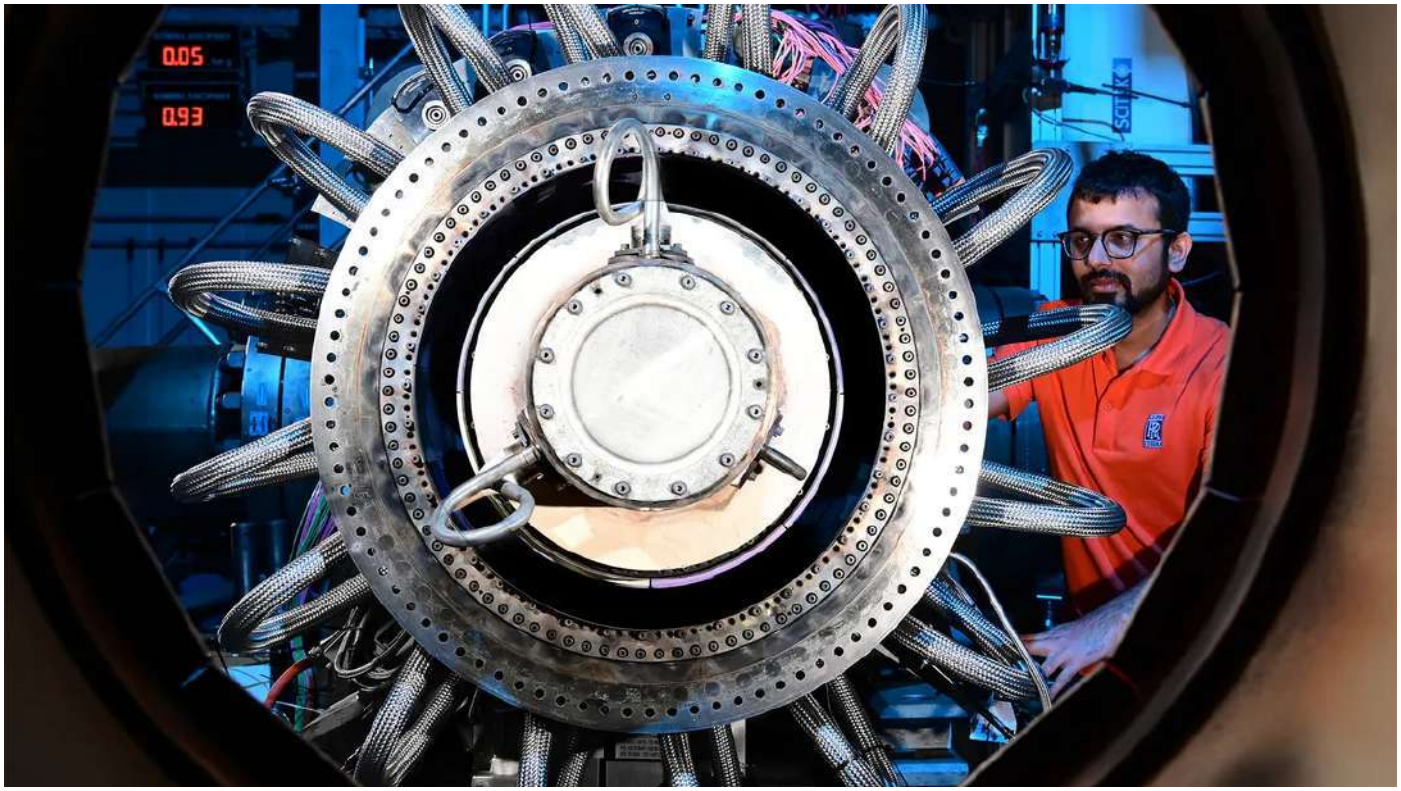

Photo: easyJet

SUMMARY

- Rolls-Royce successfully tested 100% hydrogen fuel on the annular combustor of a Pearl 700 engine, a significant step towards sustainable aviation fuel sources.
- The testing required significant engineering work to design new fuel nozzles to safely deliver hydrogen and control its reactivity.
- Although more tests are needed for fuel delivery and engine integration, progress is being made to achieve emissions-free fuel for aviation by the mid-2030s.

Rolls-Royce (RR) marked a significant milestone in pursuing sustainable aviation fuel sources, namely hydrogen. Partnering with budget carrier easyJet, tests showed that combusting 100% hydrogen fuel on the RR Pearl 700 engine could generate maximum take-off thrust. The testing required significant engineering work to adapt to hydrogen and is another step on a long path to moving away from fossil fuels for aviation needs, with a target of the mid-2030s.

Combustion elements successful

Rolls-Royce partnered with easyJet, Loughborough University, and the German Aerospace Center (DLR) to make this project a reality. Central to the focus was designing new fuel nozzles that could safely and

reliably deliver hydrogen for combustion. Since the element burns far hotter and more rapidly than kerosene (the current jet fuel), the new nozzles were created to aggressively mix in air to control the reactivity.

Following initial tests, a full pressure test occurred at DLR's Cologne facility, with the annular combustor (combustion zones with their fuel nozzles) from an RR Pearl 700, used on the Gulfstream G700 and based on the BR700. The test was a massive success, with the engine maker marking it as a world industry first.

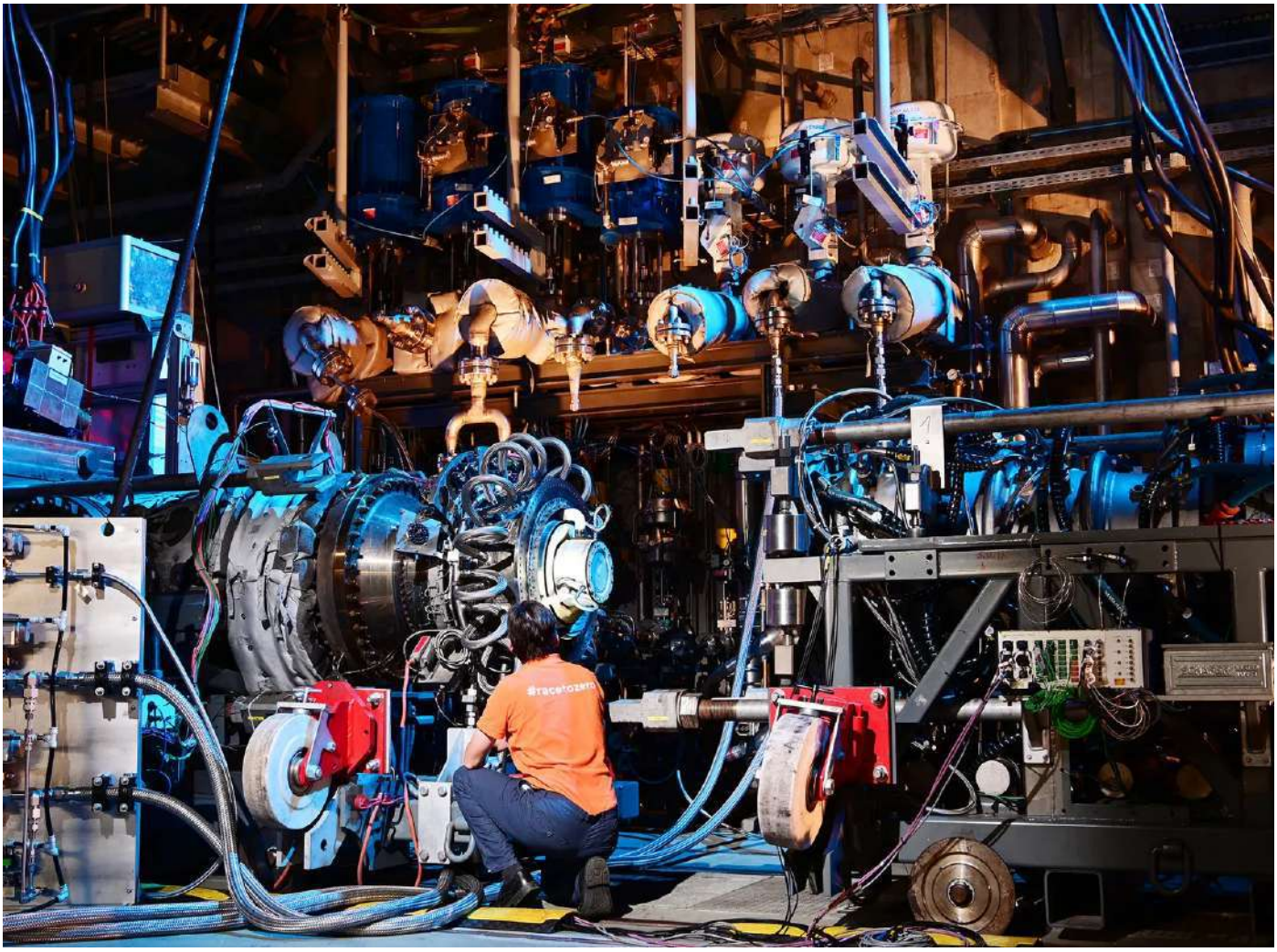

Photo: easyJet

In a statement, Grazia Vittadini, Chief Technology Rolls-Royce, noted,

"This is an incredible achievement in a short space of time. Controlling the combustion process is one of the key technology challenges the industry faces in making hydrogen a real aviation fuel of the future. We have achieved that, and it makes us eager to keep moving forward."

easyJet CEO Johan Lundgren was equally excited about the project, noting,

"We believe hydrogen is the future of short-haul aviation and the success of this test and progress being made demonstrates that this is becoming ever closer. We remain optimistic that it will play a critical role in helping us achieve the ambitious goals we set out in our net zero roadmap."

Many more steps to go

While the combustion step has been successfully completed, fuel delivery and engine integration are the next big questions to answer for hydrogen-based fuel. However, successful ground tests on the Pearl 700 show that the technology is moving forward, following previously successful attempts on the RR AE2100 turboprop fan blade.

The next test will be a gas hydrogen full ground test of the Pearl 700, followed by one with liquid hydrogen. The target remains for emissions-free fuel, and testing is nowhere near complete. But progress is being made, and rapidly, so much so that engine technology powering narrowbodies might just be possible by the mid-2030s, a little over a decade away.

Pearl 700

The Pearl 700 might not be familiar to all aviation enthusiasts, and is a smaller powerplant than those powering modern airliners. Based on the RR BR700, this engine has been adapted for private jets like the Gulfstream G650 and G700 and the Boeing 717. By testing on this base, Rolls-Royce can show how close to airworthy it is getting with hydrogen technology, with easyJet hoping to be the first to make the leap.

Author: Pranjal Pande,

Lead Journalist

(This technical article has been taken from the online article: easyJet & Rolls-Royce Proves A Pearl 700 Engine Could Burn Hydrogen At Take Off (simpleflying.com))

Know Our Member

We would like to welcome all the new members to the ASM Pune Chapter!

New Individual member

Name : Mr Ajay Joshi

Designation: General Manager

Present Organisation / consultant / others: Western India Forgings Pvt Ltd

Function: MQC, HT & NDT

Contact information (Mobile, E-mail) and other details if any: ajoshi@westernindiaforgings.com , Ph - 87939 71656

- **Education details:** DMet
- **Work experience:** 33 years
- **Area of expertise:** Closed die & Open die Forgings, Metallurgical Quality Control & Heat Treatment
- **Business Details If Any:** NA

New Individual member

Name : Ms. Heena Yusuf Shaikh

Designation: Asst. Manager

Present Organisation / consultant / others: CIE Automotive India Limited. | Gears (Formally known as Mahindra CIE)

Function: Metallurgy & Special Process

Contact information (Mobile, E-mail) and other details if any: heena.shaikh.hs91@gmail.com Ph - 83295 47843

- **Education details:** Bachelor of Engineering in Metallurgy. Diploma of Engineering in Metallurgy.
- **Work experience:** 7 years of experience in Metallography, Failure investigation, Material Development, Supplier Development, Heat treatment, Wire drawing tech., Suspension tech.
- **Area of expertise:** Failure Investigation, Metallography, Material Development, Supplier Development.
- **Business Details If Any:** NA

New Individual member

Name : Mr. Ajay Tare

Designation: Team Expert Metallurgists

Present Organisation / consultant / others: CIE Automotive India Limited. | Gears (Formally known as Mahindra CIE)

Function: Metallurgy & Special Process

Contact information (Mobile, E-mail) and other details if any: ajaytare1962@gmail.com Ph - 9820470239

- **Education details:** Metallurgical Engineering, PGDQM from Mahindra Institute of Quality. Six-Sigma Green Belt .
- **Work experience:** 40 years Experience is in all the portfolios of Metallurgical Engineering; R & D, Captive as well as Commercial HT, Field Failures analysis, Forging & Casting HT, Manufacturing Engineering, NPD, Business Excellence.
- **Area of expertise:** Operations, Quality, NPD, Field Failure analysis, Teaching/Training.
- **Business Details If Any:** NA

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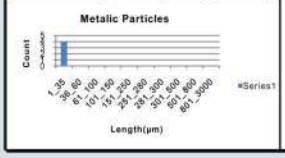
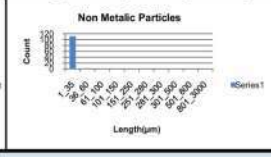
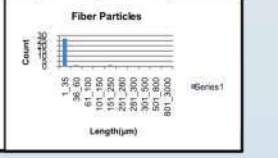
Report No.:	1672	Department :	QA Lab
Sample ID:	ABC	Test Date:	05-Jun-18
Analysis:	Particle	Standard Specification:	As per ISO 16232
Magnification	100X	Filter paper Size:	47 mm
No. of Fields :	5	Scanning Area	30 mm

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
Metalic	4	0	0	0	0	0	0	0	0	0	4
Non Metalic	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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