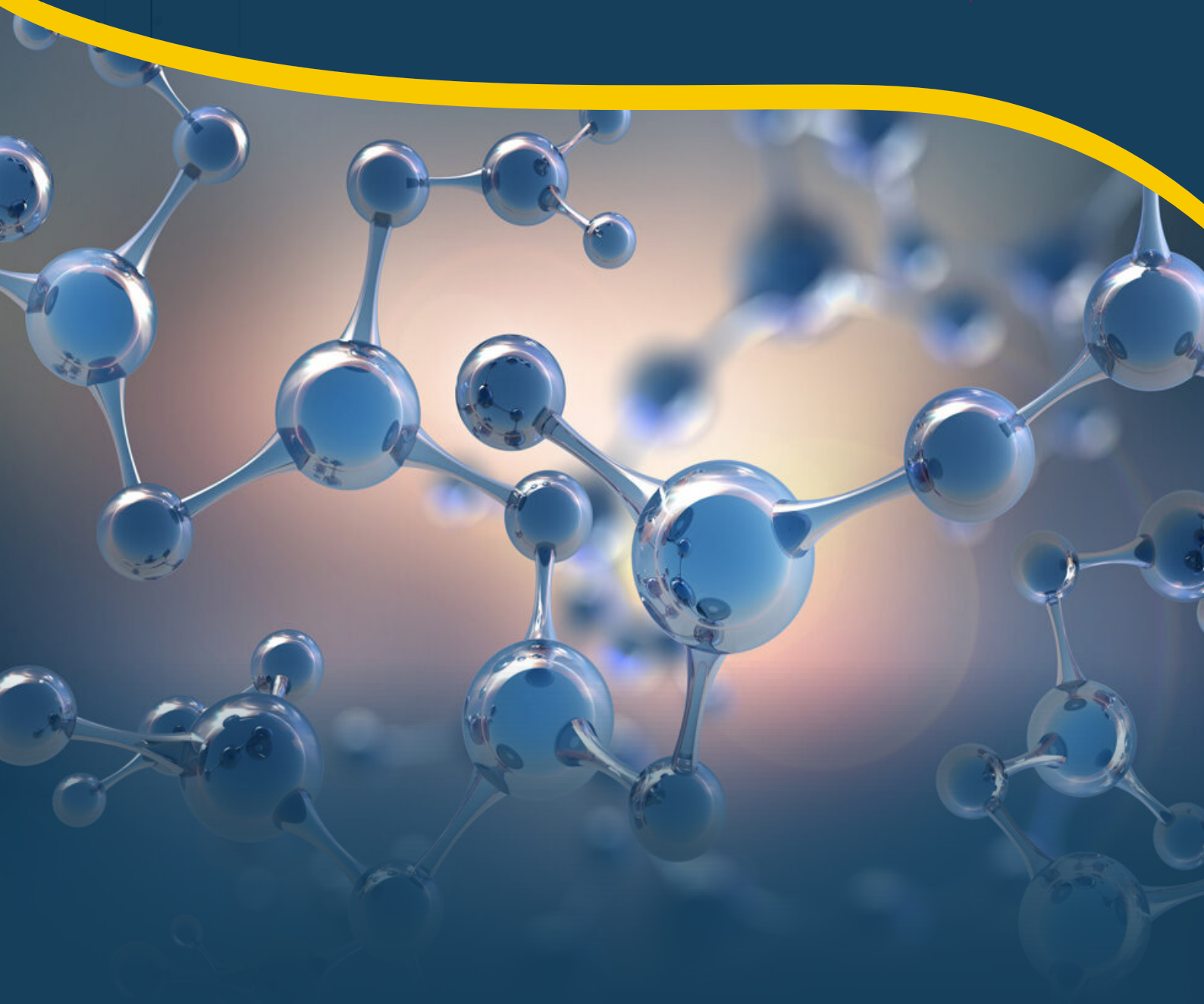
Issue | March 2022

PAWAPULSE



FIRST EDITION

Editorial Board

Office Bearers

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From the Editor's desk

Dear Reader,

I am pleased to announce that we have come out with the first-ever newsletter from PAWA named "PAWApulse". This newsletter would consist of activities conducted in campus of Polymer Technology, Karnataka Polytechnic, Mangaluru, personal and professional achievements of members of PAWA, "ಲಘು ಕವನಗಳು" & an ecological Global news related to Research and technology, information about openings in polymer industries, technical papers published by PAWA members, information about patents issued to PAWA members.

This newsletter has been introduced to give access to information across the globe to all interested members, non-members about PAWA and also to upgrade their knowledge related to polymer technology. The Newsletter would be published quarterly for the first few months and frequency would be increased to monthly based on response.

I am really thankful to the editorial board and PAWA executive committee members for electing me unanimously for bestowing responsibility of coordinating the editorial board as the chief editor. I am sure, with the introduction of this newsletter and ongoing improvement activities of the polymer technology department, the PAWA will achieve newer heights. This would also be a motivation for the Karnataka polytechnic institute as a whole to grow horizontally along with other departments.

I wish all the best to the readers.

Anil Pais

From the desk of PAWA President

My Dear Pawa'ites,

I am pleased to write my message to this first ever magazine of PAWA & it is aptly named as "PAWA Pulse", giving important updates about activities of our Alumni association. In recent days we are all busy with our professional life due to reduced occurrences of demon Omicron Covid 19 variant. Businesses are opening up & travel restrictions are being eased out. But unfortunately, the world political conditions are very in a uncertain & Russia is waging war at Ukraine. This has increased problems directly to the people from that region & indirect cost implications across the world (increased energy costs, Loss of lives, Sufferings Etc).

Happy to mention here that our dream project of Plastic lab set up at KPTDPT going on at a rapid pace. There are several DPT'ians contributed by virtue of Money, Time, Providing technical support, by sponsoring machines. I on behalf of committee members appreciate all these PAWA'ites for their contribution & request all DPTians to come forward to support a noble cause of setting up a quality lab for students. We are coming up fund collection drive with Lucky dip & special Appeal letter for generous contribution. With 80 G registration donors can get income tax benefits.

We on behalf of PAWA congratulate the achievers of our Alumni as Entrepreneurs, Professionals, Teachers & in various other fields. PAWA needs active support from all members & more younger people are needed actively in the organization to carry forward our activities.

We are planning international level conference DPT Con-2022 in December 2022, which is long overdue & has been postponed due to Covid 19 situation. This will be a great opportunity for PAWAites to show case their talent by presenting technical papers, by conducting Job fair & above all good interaction between members of PAWA & Institute.

I will sign off wishing everyone good health, Safe & great year ahead,

Sriganesh U P

Message from the Principal
Karnataka Polytechnic

Dear friends,

Today we live in a society exquisitely dependent on science and technology.

I am very much Privileged and honored to be a part of technocrat and write from prestigious KPT Principals desk over to PAWA because we are the people changing the world with technology.

With so many passionated streams of technology the Polymer technology has made revolutionising changes in the field of electronics, textiles, automobile and more. Yes, Rubber and Plastics might be the most used materials on earth. Polymers are widely used advanced materials, which are found almost in every material used in our daily life. To date, the importance of polymers has been much more highlighted because of their applications in different dominions of sciences, technologies and industry.

Even though The scope of polymer technology in various fields is increasing very much nowadays but the knowledge about polymers is quite low among the population . Specific courses in the field of material science aim to enhance this awareness. One such course is Polymer technology. In this view I hope initiation of this bulletin accentuate the pragmatic impacts of polymers in human daily life. The journey has began, deeya is lit. Let it show the marvelous world of polymers to one and all with touch and feel.

But I wish to end my words with following words...

However advanced the technology may become, Life is impossible without humanity and that's why we need a combination of science of thinking and art of living.

because...

We Can't upload love,

We can't download time

we can't Google all of life's answers.

We must actually live some of our life"

Cheers! and Best wishes.

I will sign off wishing everyone good health, Safe & great year ahead,

Harish Shetty

Principal

Karnataka Polytechnic, Mangaluru

Notes from HOD - Polymer Technology
Karnataka Polytechnic

My Dear PAWA fraternity,

Firstly, it gives me immense pleasure to be a part of PAWA's newsletter "PAWA PULSE"

We as PAWA have achieved many milestones, the primary aim of PAWA was to maintain the relationship between the Institute, Department and its alumni by sharing the saga of development and growth of KPT-DPT.

Together, we have laid on the path to provide the best technical learning experience by conducting technical seminars by our alumni, refurbishing polymer department labs, and providing scholarship, study materials to our present students of DPT and helping them to carve out a successful career.

Presently I am heading Polymer Department since 2016, but a decade ago I was a student of this prestigious Institute KPT-DPT, this always gives me an inner burning desire to uplift the department by joining hands with our KPT-DPT alumni which is proudly named as "PAWA"

Definitely the 'PAWA PULSE' Newsletter will help students in updating themselves to the latest technology/trends in Polymer world and enhance students' technical approach and will guide them in reaching new heights.

"The great Buddha taught that anyone who experiences the delight of being truly generous will never want to eat another meal without sharing it"

PAWA is providing selfless service for the betterment of Polymer Department, long live the bond between KPT-DPT and PAWA.

"Tiny Drops of Water Make the Mighty Ocean''

On behalf of "Department of Collegiate and Technical Education", Respected Principal-KPT, Polymer Department- Staff and students I heartily thank the entire team of PAWA for always supporting our department and encouraging our students in reaching new heights.

I wish Good Luck for this great beginning.

Santhosh Kumar

HOD of Polymer Technology Department

Karnataka Polytechnic, Mangaluru

Current affairs

Current trends in Automotive vehicles sales in February 2022: PV, CV sectors to look up; two-wheeler market is lethargic, good turn around likely in tractors. Chip shortage and supply chain constraints have improved over the past months. However, the passenger vehicle OEMs have a lot of catching up to do. The commercial vehicle segment has been looking up. The stagnant demand for two wheelers is a major concern. Tractor sales are expected to gain momentum. Major passenger vehicles sales are declined in last 2 months. Newer models have longer waited period.

Commercial vehicles are being a direct reflector of the state of economy, this segment is slowly coming into pace with the improvement in freight utilization and all the OEMs have reported their wholesales in green.

The country's rubber industry has urged the government to correct the inverted duty structure on rubber products to minimize import and boost exports. Import of raw materials such as natural rubber and latex attract import duties of as high as 25%, while that on finished goods is much lower, which impacts the local rubber goods-producing industry

Domestic demand growth in volumes estimate for the Indian tyre industry at 13-15 per cent for the ongoing fiscal year and 7-9 per cent for the FY22-25 period. While the stable demand from replacement and export segments support industry revenues, earnings have been affected by elevated input prices. The tyre industry is relatively better protected from any potential impact of Omicron due to its large dependence on the stable replacement market and learnings from earlier waves.

Production across tyre and Non tyre segments shown improvement by 5 - 10% up during Feb 2022 due indicated improvement in demand from the replacement and OEM markets in the coming months.

Exporters face high freight charges, order delays and payment issues amidst Russia-Ukraine crisis.

Oil prices extended their rally, with Brent rising above $125 a barrel as trade disruption and shipping issues from Russian sanctions over the Ukraine crisis sparked supply worries, while U.S. crude stocks fell to multi-year lows.
Carbon Black availability is improved with a price further increase by 6-8% due to high input/freight costs from 01 Mar 2022 onwards.

-Sriganesh U P

Fundamentals In Mixing Process (PPT)

- Rubber Mixing Process
- Stages in Rubber Processing
- What is mixing?
- Solid-Solid dispersive mixing
- Three stages in mixing process
- Rubber Mixing Equipments
- Typical recipe of rubber compound
- Theory of Mixing
- Different Regimes of mixing process
- Illustrative Rubber mixing

-Suratkal Vasudeva Rao

Click Here

Nadedu Banda Daari - PAWA

PAWA "Polymer Alumni Welfare Association", What we proudly call as PAWA. After untimely demise of Sushant in the year of 2015 who was then the head of the department of polymer technology, Karnataka polytechnic, A thought process came into the mind of many senior members of the alumni of Diploma Polymer Technology, Karnataka polytechnic that they should contribute something back to the polymer technology department from where they had started their career after completing diploma.

The main purpose of the Polymer technology alumni was that whatever they had gained during their work experience should be shared back to the department so that the students pursuing diploma in Rubber / Plastic Technology would get the maximum benefit by exposure to the existing updated technology in the field of polymer, professional experience gained, and also uplifting of polymer department.

With this in mind, fifteen number of alumni came together, donated /contributed predetermined amount of funds and Polymer Alumni Welfare Association came into existence in December, 2015. The initial members not only started contributing to the department by meetings, training and interaction with the students, but also

started gathering contact information of all students who had passed and had completed diploma in polymer technology to increase strength of PAWA. After getting sufficient strength of members, PAWA was officially formed on 14th July of 2017 at office of Assistant commissioner for associations, Dakshina Kannada District, Mangaluru.

With the 15 Members in 2015, now the PAWA has shown the full-fledged growth to 280 members within a span of six years and is growing exponentially.
in last 2 months. Newer models have longer waited period.

During these years, PAWA has contributed mainly in terms of investment on time/Money & other resources:

- Library enhancement, many members donated Rubber Technology, Plastic Technology Books, Polymer Technology Magazines, Soft Copies of Polymer technology articles. This helped the students to get access to the books which are unavailable in the main library, and gained knowledge.
- Infrastructure like table, chairs and book shelfs.
- Renovation of Polymer Technology class room by painting, and procurement of furniture.
- Restored old non-operational machines, equipment in lab, by hiring specialized personnel in the mechanical and electrical field. PAWA borne expenses incurred for restoration of laboratory. The restoration of machines helped students to actually learn practically by operating machines in the lab.
- One LCD projector donated to the department so that students can get the benefit with knowledge from the power point presentations during work shop and or training programs.

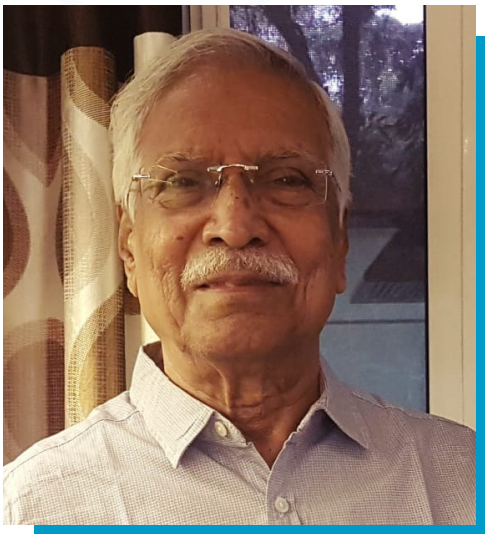
- Polymer Technology conference named DPT Con conducted successfully in Karnataka Polytechnic Auditorium in the year of 2018. The students got the chance to interact with delegates from various polymer industries and got exposure to their technical talks. The main purpose of conference was to raise fund and interaction of students with industrialists and delegates.
- Polymer Technology Alumni who have experience in the field of Rubber, Plastic, Fibre, Adhesives industries visited college on regular basis and shared their experience and knowledge with the students by interaction and training sessions from 2016 to 2021. The current pandemic situation also did not deter determination of PAWA, the members of PAWA continued training and interaction with the students in virtual mode.
- As a special gesture during COVID 19 pandemic, PAWA donated two temperature sensors to the college.
- The building which is allocated to run the Polymer Technology Department is old and in bad shape in college. PAWA with interaction with Head of the department and Principal, coordinated for the assessment of stability of building with the external agencies.
- With the information of discontinuation of plastic technician course in adjacent ITI institution, and auction of old plastic machines and equipment, Core members of PAWA met related authorities in Bengaluru and persuaded for the approval to transfer the machines/equipment to polymer technology department. The machines are tentatively planned to be shifted and commissioned in September, 2021. The cost of transfer, restoration by repair shall be borne by PAWA.

- Based on requirement of the college, and request from the principal, PAWA donated 6 desktop computers to the department.
- In order to encourage meritorious and financially backward students, PAWA started Scholarship program from 2017 onwards. Three students are selected for each year and rupees 5000 shall be given to the students in the form of scholarship. So far Six students have been awarded with scholarships (Topper from each academic year)
- In order to have easy access to the webinars, contacts with the alumni, research publications, openings in the industry, a website (www.kptpawa.org) is specially designed and successfully launched in February, 2021. The students who are pursuing polymer technology course and students who have just completed the course shall definitely get benefitted by the direct access to the required information from website sitting anywhere in the world.
- Apart from this, PAWA is getting unstoppable with the commitment, dedication and never die attitude of many of the core members. The PAWA has planned a full-fledged conference DPT Con program in Feb, 2022.

In short, PAWA is a non-profit organization having received 12 A approval from IT dept. mainly formed to have connection between all the students, alumni of polymer technology from Karnataka polytechnic.

-Anil Pais

Gratitude to the creators of DPT at KPT



It was during 1975 that Karnataka Polytechnic, Mangalore introduced it's 6th branch of Diploma course viz.Diploma in Polymer Technology. It was a special 3.5 years course wherein 2 semesters in second and third year were dedicated for Industrial training. This was, in fact, the brainchild of Dr. Shiva M. Shetty, better known as the Convener of Polymer Technology course at KPT.

He had taken it as a mission and managed to bring out the first batch of about twenty students of which nine had completed the course successfully by early 1979. While he himself took the responsibility of lecturer for most of the Rubber Technology subject- visiting KPT at 5.30 p.m. after his office duties and guiding the students till 8.30 p.m. He had also managed to get the services of Professor Pranatheertha Haran and Dr. Nagaraj to teach the students more about Polymer science and also Mr. Damodar, local industrialist to teach mould making.

Polymer Technology course has undergone changes over the years with value added subjects & teaching methods. However, our course always had shortage of full-time lecturers and we are extremely grateful to contributions from many capable guest lecturers over the years.

It is really a great pleasure for all of us PAWAites to note that the new DPT students also still are blessed with his zealous presence and encouraging inputs as and when possible.

Thank you so much **Dr. Shetty sir**

-M Gopalakrishna Bhat

Warm memories

Pondering over the origin of PAWA, our mind immediately goes back to the mercurial Late Sushanth, HOD of the Polymer Technology Branch from year 2010 to 2016. That was the period in which this department has started showing some spark. After taking over the reins from Mr. Babu Devadiga, the overworked HOD who got promoted as the principal, late Sushanth has brought about a sea-change in curricular and extracurricular activities. Year August 16th 2015 was the day when he showed his organising skills at 69th year celebration of KPT alumni -Reunion-69 wherein many of the erstwhile DPTians could also gather along with almost 1500+ alumni of different streams. However, fate had other plans for him as he met with a fatal accident in the next year and succumbed to injuries on 18th April.

It is his memory that inspired few of us to initiate this union of DPTians from first batch till latest batch. Needless to add that a scholarship to the meritorious students has been started in his fond memory.

At this juncture, we all should be equally thankful to the present HOD Mr. Santhosh kumar who has been continuing in the same footsteps treaded by **late Mr. Sushanth.**

Long live, DPT and PAWA.

-M Gopalakrishna Bhat

Few Memories of activities carried out by PAWA – Upgradation of Labs, Library, delivering technical talks to the students

Lead Kindly Light - PAWA Achievers

Suratkal Vasudeva Rao

Suratkal Vasudeva Rao is well-known in Indian tyre industry as a tyre technocrat. It is very difficult to find out any person in Indian tyre industry who is not aware of Mr. Rao. And his contributions to Indian tyre industry or Rubber Technology institute, be it Indian Rubber I institute or SJ College of Engineering or Karnataka Polytechnic.We are very proud to say that Mr. Rao is an alumnus of Karnataka Polytechnic, Mangalore, who had completed his diploma in Polymer Technology – specialization in Rubber Technology in 1978.

Mr. Rao, who is a continuous learner, attained his further degrees in rubber technology such as LPRI (London) in 1982 from Institute of Materials, London.

He also completed his Master's degree in Sociology in 1993 from University of Mysore.

Mr. Rao is a dynamic person, committed in his work and always had been a supporting hand to his juniors in college who completed Diploma in Polymer Technology. He has guided and trained several DPT students of KPT by giving guest lectures and helping them in job placements in tyre and allied industries. He played an active part in Indian Rubber Institute in national level as well as in local Karnataka branch level as an Honorary secretary of IRI and guided more than 684 students from IRI Karnataka branch. He has compiled a course material in Rubber Processing as study material to help PGDIRI & DIRI students of IRI.

He has also been awarded as fellow member of IRI (FIRI) in 2015 by Indian Rubber Institute. He was a crucial supporting member to develop Polymer Science Department and IRI in SJ C college of Engineering in Mysore and he played a vital role as a founder member in constructing Dr D Banerjee Centre of Excellence, inside the premises of JSS Science & Technology, Mysuru.

Mr. Rao also played a role of strong pillar in establishing PAWA and served as a Founder President of PAWA in its first term. It is his untiring efforts along with other members due to which PAWA is Standing high and strong now with more than 300 active members.

Mr. Rao has thirty-nine years of rich experience in tyre industry from Vibrant and JK tyre & Industries Ltd and superannuated as Head – Bias Tyre Technology in the year of 2016. Presently he is a consultant for Tyre & Rubber industries.

PAWA and DPT is indebted to Mr. Rao for his huge contributions made to the Association and also department.

Mr. Babu Devadiga

We all at PAWA are extremely elated to proclaim that one of the earliest passout, in fact 4th / 5th batch, Mr. Babu Devadiha has achieved the Dream come true of any KPTian, pinnacle of Karnataka Polytechnic, Mangaluru towards the end of his career. Further, he has made it all the more memorable by donating this Flag Hoisting Stand to the coveted institution as his retirement gift.

We all wish him all the very best.

ವಿಶ್ವಗುರು

ಉದಯಿಪ ರವಿ ತಂಗದಿರಿನ ಚಂದಿರ
ಉದಕದೊಳಲೆಯಲೆಯುಂಗುರದಿ!
ಹುದುಗಿಹ ಕೌತುಕವೊಂದನು ಪೇಳುವೆ
ಮುದದೊಳು ನೀವಿದನಾಲಿಸಿರಿ!

ಬಿಂದುವದೊಂದದು ಹೊಂದಿರೆ ಕೇಂದ್ರದಿ
ಮುಂದಕೆ ವಿಸ್ತರಿಸುವ ರೇಖೆ
ಚೆಂದದಿ ತಿರುಗುವ ಪರಿಧಿ ಪಥದ
ಸಂಬಂಧದ ವಿಸ್ಮಯವೀ ಶಾಖೆ!

ವೃತ್ತದೊಳೆಲ್ಲಕು ಪಿರಿದದು ವ್ಯಾಸವು!
ಸುತ್ತಳತೆಯೊಳಿದ ಭಾಗಿಸಲು!
ಸುತ್ತುವ ಕಣಕು, ಮಹತ್ತಿಗು,
ವಿಶ್ವದೊಳತ್ತಿತ್ತಾಗದ ಲಬ್ಧವಿದು!

ಬೌಧಾಯನನೆಂಬುವ ವಿಜ್ಞಾನಿಯು
ಶೋಧಿಸಿ ತೋರಿದನೀ ಬೆರಗ!
ರೂಢಿಯೊಳಿದನುಂ ಮರೆತಿಹ ವಿಶ್ವವು
ಬೋಧೆಯೊಳಿರಿಸಿದೆ ಪೈ(pi) ಯೆನುತ!

ರತಿಭಾವದಿ, "ಭಾ" ಎನ್ನುವ ಬೆಳಕನ್ನತಿ
ಗಾಢದಿ ಹುಡುಕುವ ಪಥದಿ!
ಗತದೊಳು ಮೆರೆಯುತಲಿದ್ದಿಹ ನೆಲ
ಭಾರತವಿದು ವಿಶ್ವಕೆ ಗುರುವೆನಿಸಿ!

ಸರಿಸುತ ಕತ್ತಲ, ಬೆಳಕದು ಹರಿಯಲಿ,
ಮರಳಲಿ ಸತ್ಯವು ಮತ್ತೊಮ್ಮೆ!
ಮರೆತಂತಿರುವವು ನೆನಪಲಿ ಸುಳಿಯಲಿ!
ಭರತರ ಮಣ್ಣಿನಿಸಲಿ ಹೆಮ್ಮೆ!

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ಎಲ್ಲರಿಗೂ ನಮಸ್ತೇ,

ಇದೊಂದು ನಾವೆಲ್ಲ ನಮ್ಮ ಶಾಲಾ ಕಾಲದಲ್ಲಿ ಕಲಿತ ಪೈ ಎಂಬ ಸ್ಥಿರಾಂಕದ ಕುರಿತು ಬರೆದ ಕವನ. ರೇಖಾಗಣಿತ (Geometry) ಮತ್ತು ಭೌತಶಾಸ್ತ್ರ (Physics) ಅಲ್ಲಿ ಯಥೇಚ್ಛವಾಗಿ ಬಳಕೆಯಾಗುವ ಸ್ಥಿರಾಂಕವಿದು. ಆದುನಿಕ ಕಂಪ್ಯೂಟರ್ ಮೂಲಕವೂ ಇದರ ನಿಖರವಾದ ಬೆಲೆಯನ್ನು ಇನ್ನೂ ಕಂಡುಹಿಡಿಯಲಾಗಿಲ್ಲ. ಇಂತಹ ಕೌತುಕ ಪೈ ಎಂಬುದು. ಆದರೆ ಇದನ್ನು ಮೊತ್ತಮೊದಲಬಾರಿಗೆ ಕಂಡುಕೊಂಡುದು ಭೌಧಾಯನನೆಂಬ ನಮ್ಮ ಭಾರತೀಯ ಗಣಿತಜ್ಞ ಎಂಬ ನಿಜ ನಮ್ಮೆಲ್ಲರ ಹೆಮ್ಮೆ

ಮಾನವ (inside core i5- Next generation)

ಇದೇನೆಪ್ಪ ವಿಚಿತ್ರವಾಗಿದೆ ಎಂದು ಎಲ್ಲರೂ ಭಾವಿಸಿರಬಹುದು ಅಥವಾ ಇರಲಿಕ್ಕಿಲ್ಲ.

ಮಾನವ ನಿರ್ಮಿತ ಧೂಳಿನ ಹೊಡೆತಕ್ಕೆ ಮುಖವೂ ಬಾಡಿದೆ.
ಮಾನವ ನಿರ್ಮಿತ ಅದೇನೋ,
ಅದೇ ಧೂಳನ್ನು ಒರೆಸಿದೆ.
ಮಾನವ ನಿರ್ಮಿತ ಹೊಗೆಗೆ ಅಸ್ತಮಾ ಜೋರಿದೆ.
ಆದರೂ ಪ್ರಕೃತಿಯೇ ಬೇಡವಾಗಿದೆ.

ಹೌದು, ಇದು ನಮ್ಮ ಈಗಿನ ಸ್ಥಿತಿ. ನನಗಂತೂ ಭಯವಾಗಿದೆ,
ಕೆಲವೇ ವರ್ಷಗಳಲ್ಲಿ ಮಾನವನ ಹೊಸ ಜನರೇಷನ್ ಒಂದು ಆರಂಭವಾಗಲಿದೆ... ಹೌದು ರೋಬೋಟ್ಗಳ ತಯಾರಿಕೆಗೆ ಬಹಳ ಖರ್ಚಾಗುತ್ತೆ, ಅದಕ್ಕೆ ಮಾನವನನ್ನೆ ರೋಬೋಟ್ಗಳಾಗಿಸಿದರೆ?, "ಅದರೆ ಏನು ಬಂತು, ಆಗಿದ್ದೇವೆ ಈಗಾಗಲೇ"!!! ಅಂತ ಕೆಲವರು ಉತ್ತರಿಸಬಹುದು. ಹೌದು ಬಂಡವಾಳಶಾಹಿ ವ್ಯವಸ್ಥೆ ನಮ್ಮೊಳಗೆ ಕಂಪ್ಯೂಟರಿನಲ್ಲಿ ಸಾಫ್ಟ್ವೇರ್ ಅಳವಡಿಸಿದಂತೆ ಒಂದಷ್ಟು ವಿಷಯಗಳನ್ನು ಹೇರಿದೆ.

ಅದೇನು? ಅಂತ ಕೇಳ್ತೀರಾ...

ಪ್ರೀತಿ, ನೆಮ್ಮದಿ, ಸಹ ಜೀವನ ಹಸಿರೊಂದಿಗೆ ಉಸಿರಾಗಿ, ಮಾನವೀಯತೆ ಮೌಲ್ಯಗಳೊಂದಿಗೆ ಬದುಕುತ್ತಿದ್ದ ನಮ್ಮಲ್ಲಿ ಉದ್ದವಾದ ಅಗಲವಾದ ರಸ್ತೆಗಳು (ವೇಗವಾಗಿ ಹೋಗಲು/ದೊಡ್ಡ ದೊಡ್ಡ ಕಂಪನಿಗಳ ಸರಕು ಸಾಮಾನುಗಳು ವೇಗವಾಗಿ ತಲುಪಲು)

"ವ್ಯವಸ್ಥೆ ನಿನಗೆ ಲೇಟ್ ಆಗಿದೆ ಅನ್ನುತ್ತಿದೆ" ಅಂತೀನಿ...,

ಇನ್ನೂ ಹೆಚ್ಚಿನ ಹಳ್ಳಿಗಳಲ್ಲಿ ವಿದ್ಯುತ್ ಸರಬರಾಜೂ ಯಾವತ್ತೂ ಇರಲಿಕ್ಕಿಲ್ಲ (ಮರಗಳು ಬೀಳುತ್ತವೆ, ಕಂಬಗಳು ಉರುಳುತ್ತವೆ),

ಅದಕ್ಕೆ ವ್ಯವಸ್ಥೆ ಹೇಳುತ್ತೆ ಪೇಟೆಯಲ್ಲಿ ನೋಡಿ ಸ್ವಾಮಿ ಎಲ್ಲಾ "under ground" 24 ಗಂಟೆ ಕರೆಂಟ್ (ಹಳ್ಳಿಯವರ ಬಳಿಯೂ ಹೇಳುತ್ತೆ ಒಮ್ಮೆ ಅತ್ಲಾಗಿ ನೋಡಿ ಅಂತ),

ಬಸಿಲಿಗೆ ಮನೆಯ ಹೊರಗೆ ಬರಬೇಡಿ ಮುಖದ ಕಾಂತಿ ಹೋಗುತ್ತೆ ಅಂತ ನಾವು ಹೊರಗೆ ಹೋಗುವ ಮುಂಚೆಯೇ ಅವರೇ ಹೇಳ್ತಾರೆ... (ಅಪ್ಪಿ ತಪ್ಪಿ ಹೋದರೂ ಅವರಿಗೆ ಅನುಭವ ಬರುತ್ತೆ, ಯಾಕಂದ್ರೆ ನಮ್ಮ ಸಿಟಿ ಯನ್ನು ನಾವು ಹಾಗೆಯೇ ನಿರ್ಮಿಸಿದ್ದೇವೆ) ಹೊರಗೆ ಹೋಗುವ ದುಸ್ಸಾಹಸ(?) ಮಾಡ್ಬೇಡಿ, ಮನೆಯ ಬಾಗಿಲಿಗೆ ಬರುತ್ತೆ ಏನು ಬೇಕು ಅದು...

ವ್ಯವಸ್ಥೆ ಹೇಳುತ್ತೆ ಹಳ್ಳಿಯಲ್ಲಿ ನೋಡಿ ಎಷ್ಟು "ಕಷ್ಟ" ಅವರಿಗೆ ಆ ಅಂಗಡಿ, ಈ ಅಂಗಡಿ ಅಂತ ಅಲೆದಾಡಬೇಕು... ಇನ್ನು ರೋಡ್‌ಗಳು ಸರಿ ಇಲ್ಲವೇ? ಚಿಂತೆಯಿಲ್ಲ ಈ ಗಾಡಿ ಉಪಯೋಗಿಸಿ...

ಗಾಡಿಯಲ್ಲಿ ಅಷ್ಟು ವೇಗ ಕೊಟ್ಟವರಾರು (ಹಂಪುಗಳನ್ನು ಇಟ್ಟವರಾರು)?

ನಮಗೆ ಸೂಟ್ ಬೂಟ್‌ಗಳನ್ನು ಕೊಟ್ಟು ಇದ್ದ ಬದ್ದ ಮರಗಳನ್ನೂ ಕಡಿದವರು ಸೆಕೆ ಆಗುತ್ತೆ. ಅಂತ ಫ್ಯಾನ್, ಎಸಿ ಗಳನ್ನು ಕೊಟ್ಟವರಾರು... ಯೋಚಿಸುತ್ತಾ ಹೋದರೆ ಯಾವುದು ನಮ್ಮ ಸ್ವಂತ ಯೋಚನೆ, ಯೋಜನೆಯಲ್ಲ ಎಲ್ಲವೂ "ಬಂಡವಾಳಶಾಹಿ ವ್ಯವಸ್ಥೆಯ ಚಿಂತನೆ" ಈಗಲೂ ನಮ್ಮನ್ನು ಅದರಿಂದ ಹೊರ ಬರಲು ಬಿಡುತ್ತಿಲ್ಲ" ಹೊಟ್ಟೆ ಬಟ್ಟೆಯ" ತೋರಿಸಿ, (ಎಲ್ಲಿ ವಿರುದ್ಧವಾಗಿ ನಡೆದರೆ ಬದುಕಲು ಕಷ್ಟ ಎಂಬ ಪರಿಕಲ್ಪನೆ ಮೂಡಿಸಿದೆ).

ಕೋರೋನ ಬಂತು...

ಹೌದು, ನಮ್ಮ ಒಡ ಹುಟ್ಟಿದವರನ್ನೂ ಮೊಬೈಲ್ ಸ್ಕ್ರೀನ್ ಮೂಲಕ ನೋಡುವ ಸ್ಥಿತಿ ಎದುರಾಗುತ್ತಿದೆ... ಆನ್‌ಲೈನ್ ಲೋಕವನ್ನು ಅನಿವಾರ್ಯ ಮಾಡಿ ಬಿಟ್ಟರು...

(ಇದು next generation ಗೆ ನಮ್ಮನ್ನು ಸದ್ದು ಇಲ್ಲದೆ ರೋಬೋಟ್‌ಗಳನ್ನಾಗಿ ಪರಿವರ್ತಿಸುವ ತಯಾರಿ) ಇದು use and throw ಇದರಿಂದ ಇನ್ನೂ ಲಾಭದಾಯಕವಾಗಲಿದೆ ಎಂದು ನಂಬಿಸಿ ಬಿಟ್ಟಿದ್ದಾರಿದೆ... (ಹಾಗೆಯೇ ಅನಿವಾರ್ಯ ಕೂಡಾ). ಕೆಲವೇ ವರ್ಷಗಳಲ್ಲಿ ಬಂಧು ಮಿತ್ರರನ್ನು ಪರಸ್ಪರ ಭೇಟಿಯಾಗುವ ಪ್ರಕ್ರಿಯನ್ನೇ ಮರೆತು Zoom ಮೂಲಕ ಸೇರುವ ಕಾಲ ದೂರವಿಲ್ಲ, ಅದಕ್ಕೆ ಈಗಿಂದಲೇ ಅಬ್ಬರದ ತಯಾರಿ (ಅದು ಸರಿಯೇ ಸಮಯದ ಅಭಾವ, ದೂರದ ಪ್ರಯಾಣ ಅಲ್ಲಿ ನಮಗೆ ಬೇಕಾದ ವ್ಯವಸ್ಥೆ ಇದೆಯೋ ಇಲ್ಲವೋ ಗೊತ್ತಿಲ್ಲ, Social media ಕ್ಕೇ ಇಷ್ಟು ಹಣ ಹಾಕಿದರಾಯಿತು ಹಣಾನೂ ಉಳಿತಾಯ ಎನ್ನುತ್ತೆ ವ್ಯವಸ್ಥೆ)

ನಮ್ಮ ಸಮಯನ್ನು ಅದುವೇ ನಿಗದಿ ಮಾಡುತ್ತೆ ಅಂತೀನಿ?

(ಹಾಗಾದರೆ ನಾವು ?)

"More options"

ಮುಂದಿನ ದಿನಗಳಲ್ಲಿ ವ್ಯವಸ್ಥೆ ಹೇಳುತ್ತೆ ಕಾಡು ಹೋದರೆ ಏನು? ನೀರು, ಗಾಳಿ ತಾನೇ, ಅದನ್ನು ನಾವು ಕೊಡುತ್ತೇವೆ ಸುಮ್ಮನೇ ನದಿ, ಕಾಡು ಅದಕ್ಕೆ ಅಷ್ಟು ಜಾಗ ವೇಸ್ಟು, ಇಲ್ಲಿ ಮನುಷ್ಯನಿಗೆ ಜಾಗವಿಲ್ಲ ಅಂತೀನಿ (ಜನ ಸಾಮಾನ್ಯರಿಗೆ ಅನ್ವಯವಾಗುತ್ತದೆ) ನದಿ ಅಲ್ಲಿಂದ ಇಲ್ಲಿ ಬರುವಾಗ ತುಂಬಾ ಆವಿಯಾಗುತ್ತೆ, ನಷ್ಟಾನೂ ಆಗುತ್ತೆ ಹಾಗಾಗಿ ನಾವು ಅದು ಎಲ್ಲಿಂದ ಹುಟ್ಟುತ್ತೋ ಅಲ್ಲಿಂದಲೇ High speed ಮೂಲಕ ನೀರು ಸರಬರಾಜು ಮಾಡುತ್ತೀವಿ... ಇನ್ನು ಗಾಳಿ ತಾನೇ, ನಮ್ಮ ವಿಜ್ಞಾನಿಗಳು artificial leaf ಕಂಡು ಹಿಡಿದಿದ್ದಾರೆ... ಇನ್ನೇನು ಭಯ "ಶುದ್ಧವಾದ ಗಾಳಿ" ಅಂದ ಮೇಲೆ "ಮರಗಳಿಗೆ ಏನು ಕೆಲಸ"? ಅಯ್ಯೋ ವ್ಯವಸ್ಥೆ, ಪ್ರಾಣಿ ಪಕ್ಷಿಗಳನ್ನೂ ಏನು ಮಾಡುತ್ತಿ? ಅದಕ್ಕೆ ತಾನೇ ಝೂಗಳು... (ಕಾಡುಗಳಿಗಿಂತ ಇಲ್ಲಿ ಸುರಕ್ಷಿತ ಏನಂತೀರಿ? ಆಹಾರ ಇದ್ದಲ್ಲಿಗೆ ಬರುತ್ತೆ ಇದಕ್ಕಿಂತ ಇನ್ನೇನು ಬೇಕು?)

ಈಗಾಗಲೇ ಪಶ್ಚಿಮ ಘಟ್ಟ, ಅಮೆಜಾನ್, ಕ್ಯಾಲಿಫೋರ್ನಿಯಾ, ಆಸ್ಟ್ರೇಲಿಯಾದಲ್ಲಿ ಕಾಡುಗಳು ಹೊತ್ತಿ ಉರಿದು ಹೊಗೆಯಾಗಿ ಮೋಡವ ಚುಂಬಿಸಿ ಮರೆಯಾಗಿವೆ, ಮೋಡವು ಬರಿದಾಗಿದೆ...

ವ್ಯವಸ್ಥೆ ಹೇಳುತ್ತೆ, ಹೆದರಬೇಡಿ, ಭೂಮಿಯೇ ಹೊತ್ತಿ ಉರಿದರೆ ಏನಾಯ್ತು? ಸೂರ್ಯನ ಶಾಖ ಬಳಸಿ ತೇಲುವ ಮನೆಯ ನಿರ್ಮಿಸೋಣ... ನೀರಿಗೆ ಕಷ್ಟವಾದರೆ ನೀರನ್ನು ಇನ್ನೂ ಮುಂದೆ ಕುಡಿಯಬೇಕಿಲ್ಲ ನುಂಗಿದರೆ ಸಾಕು (ಸಾಲಿಡ್ ರೂಪದಲ್ಲಿ), ಆಹಾರ ಯಾಕೆ? ಬದುಕಲು ನಮ್ಮ ಬಳಿ ಇವೆ ಮಾತ್ರೆಗಳು "ನಿಮಗೆ ಬೇಕಾದ ಎಲ್ಲಾ ರೀತಿಯ ಪೌಷ್ಟಿಕಾಂಶ ಯುಕ್ತ ಮಾತ್ರೆ"

ಅಯ್ಯೋ ನಮಗೆ ಸಮಯವೇ ಇಲ್ಲ, ಮಕ್ಕಳನ್ನು , ವಯಸ್ಸಾದ ಅಪ್ಪ ಅಮ್ಮನನ್ನು ಏನು ಮಾಡೋದು..?
ವ್ಯವಸ್ಥೆ ಹೇಳುತ್ತೆ, ನಮ್ಮ ಬಳಿ ರೋಬೋಟ್‌ಗಳಿವೆ, ಮಕ್ಕಳಲ್ಲಿ ಆಟವಾಡುತ್ತೆ, ಹಿರಿಯರನ್ನು "ನೋಡಿಕೊಳ್ಳುತ್ತೆ" doctor ನ ಅವಶ್ಯಕತೆಯೇ ಬರುವುದಿಲ್ಲ... ನಮ್ಮ ನಿಮ್ಮಂಥವರು ಎಲ್ಲಿದೆ ಪ್ರೀತಿ ಎಂದು ಕೇಳಿದರೆ... ಅದಕ್ಕೂ ವ್ಯವಸ್ಥೆ ಹೇಳುತ್ತೆ ನಮ್ಮ ಬಳಿ Love ರೋಬೋಟ್‌ಗಳು ಇವೆ ಎಂದು!?... (ಈ ❤ symbol ಇದ್ದರೆ ಪ್ರೀತಿ ಹುಟ್ಟುತ್ತೆ ಅಂತ ಇಡೀ ಜಗತ್ತೆನ್ನೇ ನಂಬಿಸಿದೆ ಇನ್ನೂ ಇದೇನು ಮಹಾ ಕೆಲ್ಸ ಬಿಡಿ)

ಕೇಳುವಾಗ ಭಯವಾಗುತ್ತದೆ, ಹೌದು. ಇದು ನಮ್ಮ ಮುಂದಿನ ತಲೆ ಮಾರಿನ ಸ್ಥಿತಿ, ನಮ್ಮದೂ ಆಗಬಹುದು ಎಚ್ಚರ!! ಪ್ರೀತಿ, ನೆಮ್ಮದಿ, ಪ್ರೇಮ ಸಹಜ ಜೀವನದ ನಮ್ಮ ಬದುಕು ನಶಿಸಿ ಬಂಡವಾಳಶಾಹಿ ವ್ಯವಸ್ಥೆಯ ಜಯಕ್ಕೆ ಮುನ್ನುಡಿ ಬರೆಯುತ್ತಿದ್ದೇವೆ.

ಒಮ್ಮೆ ತಿರುಗಿ ನೋಡಿ ನಮ್ಮ ಅಜ್ಜ ಅಜ್ಜಿಯಂದಿರನ್ನೂ. ಅಂತಹ ಜೀವನ ಈಗೆಲ್ಲಿದೆ??
ನಾವು ಎಷ್ಟು ಹೇಳಿದರೂ ಅದರ ಸುತ್ತವೇ ಸುತ್ತುತ್ತಿದ್ದೇವೆ... ಆ ಪಂಜರವ ಬಿಡಿಸಿಕೊಳ್ಳುತ್ತಾ ಮನದ ಮೂಲೆಯಲ್ಲಿ ಗಟ್ಟಿಯಾಗಿ ಮನೆ ಮಾಡಿಹ ಬಂಡವಾಳಶಾಹಿ ವ್ಯವಸ್ಥೆಯನ್ನು ಕಿತ್ತು ಹಾಕಲೇ ಬೇಕು, ಅದರಿಂದ ಹೊರ ಬರಲೇ ಬೇಕು. ಇಲ್ಲವಾದರೆ 10 ವರ್ಷಗಳಲ್ಲಿ ಮಾನವನ ಜೀವನ ಕ್ರಮವೇ ಬದಲಾಗಿ ಹೇಗೆ ನಾವು ಆನ್‌ಲೈನ್‌ಗೆ ಅಂಟಿಕೊಳ್ಳುವ ಸ್ಥಿತಿ ಬಂತೋ ಹಾಗೆಯೇ ಆ ವ್ಯವಸ್ಥೆಗೆ ತಲೆ ಬಾಗುವ ಸ್ಥಿತಿ ಬರುತ್ತೆ (ನಾವು ಈಗಾಲೇ ನಮ್ಮನ್ನು ನಮಗೆ ಗೊತ್ತಿಲ್ಲದೇ ಅದಕ್ಕೆ ತಯಾರಾಗುತ್ತಿದ್ದೇವೆ) ಕೋರೋನ ನಮಗೆಲ್ಲಾ ಎಚ್ಚರಿಕೆ ಗಂಟೆ...!!!!

ಬನ್ನಿ, ಒಮ್ಮೆ ಈ ಹುಚ್ಚು ಕಲ್ಪನೆಯಿಂದ ನಮ್ಮನ್ನು ನಾವು ರಕ್ಷಿಸಿಕೊಳ್ಳೋಣ. ನೆಮ್ಮದಿಯ ಸಹಜ ಜೀವನ ನಡೆಸೋಣ...

ಇತೀ ನಿಮ್ಮ,
ಪ್ರಾಣೇಶ್, 4th generation

ಪ್ರಕೃತಿ ವಿಕೃತಿ

ಹಚ್ಚ ಹಸಿರಿನ ಭೂ ಪ್ರದೇಶ, ಮೋಡವನ್ನು ಚುಂಬಿಸುವ ಬೆಟ್ಟಗಳ ಸಾಲು, ವಿಶಾಲವಾಗಿ ಹಬ್ಬಿರುವ ಮಳೆ ಕಾಡುಗಳು, ವರ್ಷವಿಡೀ ಹರಿಯುವ ಅದೆಷ್ಟೋ ನದಿಗಳು, ಉಪನದಿಗಳು. ಇವಿಷ್ಟೇ ಅಲ್ಲ, ಲೆಕ್ಕಕ್ಕೆ ಸಿಗದ ಜೀವ ಸಂಕುಲಗಳ ತಾಣ, ದಕ್ಷಿಣ ಭಾರತದ ಆಕ್ಸಿಜನ್ ಬ್ಯಾಂಕ್ ನಮ್ಮ ಪಶ್ಚಿಮ ಘಟ್ಟ.

ಬನ್ನಿ, ಒಂದಷ್ಟು ಹೊತ್ತು ನಮ್ಮೆಲ್ಲರ ಜೀವನಾಡಿ ಘಟ್ಟಗಳ ರೋಚಕ ಸತ್ಯವನ್ನು ತಿಳಿಯೋಣ,
ಹಿಮಾಲಯಗಿಂತಲೂ ಹಳೆಯದಾದ ಈ ಪಶ್ಚಿಮಘಟ್ಟಗಳನ್ನು ಸಹ್ಯಾದ್ರಿಯ ಪರ್ವತಗಳೆಂದು ಕರೆಯಲಾಗುತ್ತದೆ. ಘಟ್ಟಗಳ ಸಾಲು ಗುಜರಾತಿನ ತಪ್ತಿ ನದಿಯಿಂದ ಆರಂಭವಾಗಿ ಮಹಾರಾಷ್ಟ್ರ, ಗೋವಾ, ಕರ್ನಾಟಕ, ಕೇರಳ ಸಮುದ್ರ ತೀರಕ್ಕೆ ಸಮಾನಾಂತರವಾಗಿ ಸಾಗಿ ತಮಿಳುನಾಡಿನ ಮರುಂಥಯುವಾಜ್ಹ್ ಮಲೈ ಅಲ್ಲಿ ಕೊನೆಗೊಳ್ಳುತ್ತದೆ. ಸುಮಾರು 1600 km ನಷ್ಟು ಉದ್ದವಾಗಿ ವ್ಯಾಪಿಸಿದೆ, ಪಶ್ಚಿಮ ಘಟ್ಟಗಳು ಯುನೆಸ್ಕೋದಿಂದ ಪಾರಂಪರಿಕ ತಾಣವಾಗಿ ಮಾನ್ಯತೆ ಪಡೆದಿವೆ. ಹಾಗೂ ಇವು ಜಗತ್ತಿನ ಅತಿಹೆಚ್ಚು, 8 ಸಕ್ರಿಯ ಜೀವವೈವಿಧ್ಯತೆಯ ತಾಣಗಳಲ್ಲಿ ಒಂದಾಗಿದೆ.

ನದಿಗಳು

ನಮಗೆಲ್ಲಾ ತಿಳಿದಿರುವಂತೆ ಮಳೆ ಮಾರುತಗಳನ್ನು ತಡೆದು, ಮಳೆ ಬರಲು ಘಟ್ಟಗಳು ಪ್ರಮುಖ ಕಾರಣವಾಗಿವೆ, ಹಾಗೆಯೇ, ಈ ಘಟ್ಟಗಳಿಂದ ಅದೆಷ್ಟೋ ನದಿಗಳ ಉಗಮವಾಗಿವೆ. ಸುಮಾರು 28 ಕೋಟಿ ಜನ ಈ ಘಟ್ಟಗಳು ಹಾಗು ಅಲ್ಲಿನ ನದಿಗಳನ್ನು ನೇರವಾಗಿ ಅಲ್ಲವೇ ಪರೋಕ್ಷವಾಗಿ ಅವಲಂಬಿಸಿದ್ದಾರೆ. ಘಟ್ಟಗಳ ಪ್ರಮುಖ ನದಿಗಳು ಇಂತಿವೆ **ಕಾವೇರಿ, ಕೃಷ್ಣ, ಗೋದಾವರಿ, ನೇತ್ರಾವತಿ, ಫಾಲ್ಗುಣಿ, ತುಂಗಾ, ಭದ್ರ, ಅಘನಾಶಿನಿ, ಕಾಳಿ, ತಾಪಿ, ಪೆರಿಯಾರ್, ಚಲಿಯಾರ್, ಶರಾವತಿ, ಭೀಮ, ಪಂಪ, ಮಲಪ್ರಭಾ ಚಿತ್ತೆರ್, ಜೋಗ, ಝುವಾರಿ** ಇತ್ಯಾದಿ. ಹಾಗೂ ಈ ನದಿಗಳಿಗೆ ಅದೆಷ್ಟೋ ಉಪನದಿಗಳೂ ಇವೆ.

ಜೀವ ವೈವಿಧ್ಯತೆ

ಕೇವಲ ಮರಗಳು ಇದ್ದರೆ ಅದನ್ನು ಕಾಡೆಂದು ಕರೆಯಲಾಗದು, ಮರಗಳು ಇದ್ದು, ಅಲ್ಲಿ ಜೀವ ಸಂಕುಲ ಇಲ್ಲವೆಂದರೆ ಏನರ್ಥ? ಮಾನವ ಮಾತ್ರ ಇರಬಲ್ಲ ಪಾರ್ಕ್ ಎಂದು ಕರೆಯಬಹುದು, ಕಾಡೆಂದರೆ ಅಲ್ಲಿ ವಿವಿಧ ರೀತಿಯ ಜೀವಿಗಳು ಇರಬೇಕು. ಕೇವಲ ಒಂದು ಸಮೂಹಕ್ಕೆ ಸೇರಿದ ಜೀವಿಗಳಲ್ಲ. ಬನ್ನಿ, ಘಟ್ಟಗಳ ಜೀವ ವೈವಿಧ್ಯತೆಯ ಬಗ್ಗೆ ತಿಳಿಯೋಣ. 140 ರೀತಿಯ ಸಸ್ತನಿ ಜೀವಿಗಳು, 260 ರೀತಿಯ ಸರೀಸೃಪಗಳ, 180 ರೀತಿಯ ಉಭಯವಾಸಿ ಜೀವಿಗಳು ಇಲ್ಲಿ ನೆಲಸಿವೆ. ದೇಶದ 25% ಶೇಕಡಾ ಜೀವ ವೈವಿಧ್ಯತೆಗಳು ಇಲ್ಲಿ ಕಾಣಸಿಗುತ್ತವೆ. ಪ್ರತಿ ವರ್ಷ ಹೊಸ ಹೊಸ ಜೀವಿಗಳನ್ನು ಕಂಡು ಹಿಡಿಯಲಾಗುತ್ತದೆ.

ಅಭಿವೃದ್ಧಿ ತಂದ ಅವಾಂತರ

ಮಾನವನ ಅವೈಜ್ಞಾನಿಕ ಪ್ರಕೃತಿ ವಿರೋಧಿ ಚಟುವಟಿಕೆಗಳಿಂದ ಘಟ್ಟಗಳ ಮೇಲೆ ವಿಪರೀತ ಪೆಟ್ಟು ಬಿದ್ದಿದೆ. ಇದರಿಂದ ಸಾಲು ಸಾಲು ಗುಡ್ಡೆ ಕುಸಿತ ಉಂಟಾಗಿದೆ. ಅದೆಷ್ಟೋ ನದಿಗಳು ಬರಡಾಗುತ್ತಾ ಬಂದಿವೆ. ನದಿ ತಿರುವು ಯೋಜನೆ, ರಸ್ತೆ ಅಗಲೀಕರ, ವಿದ್ಯುತ್ ಉತ್ಪಾದನೆ, ಟನಲ್ ಪ್ರಾಜೆಕ್ಟ್ ಎನ್ನುತ್ತಾ ಇಡೀ ಘಟ್ಟಗಳ ಅದೆಷ್ಟೋ ಜೀವಿಗಳ ಹಾಗು ಲಕ್ಷ ಘಟ್ಟಗಳೇ ಮರಗಳ ಮರಣ ಹೋಮ ನಡೆದಿದೆ, ಇವು ಯೋಜನೆ ಉಳ್ಳವರ ATM machine ಆಗಿದೆ, ಪ್ರಾಣಿಗಳು ನೀರಿಲ್ಲದೆ, ಆಹಾರ ಇಲ್ಲದೆ ನಾಡಿನತ್ತ ಲಗ್ಗೆ ಇಟ್ಟಿವೆ. ಕಳೆದ ವರ್ಷದ ಲೇಖನದ ಪ್ರಕಾರ ಘಟ್ಟಗಳ ಮಳೆ ಕಾಡಿನಲ್ಲಿ ಒಣ ಹವೇ ಬರುತ್ತಿದೆ. ಇದು ಎಚ್ಚರಿಕೆ ಗಂಟೆ. ಹೀಗೆಯೇ ಮುಂದುವರಿದರೆ ಮಳೆಯಾಗದೆ ನದಿಗಳು ಬರಿದಾಗಿ, ಕಾಡು ಬರಿದಾಗಿ ಇಡೀ ದಕ್ಷಿಣ ಭಾರತ ಬರಡಾಗಿ, ನಾವು, ನಮ್ಮ ಮುಂದಿನ ಪೀಳಿಗೆ ನರಳಾಡಿ ಸಾಯುವ ದಿನ ದೂರವಿಲ್ಲ. 2 ವರ್ಷದ ಹಿಂದೆ ಮಂಗಳೂರಿನ ಅರಬ್ಬೀ ಸಮುದ್ರಕ್ಕೆ ಸೇರುವ ಜಾಗದ ಪಕ್ಕದ ತೀರಕ್ಕೆ ಹೋಗಿದ್ದೆ. ಈಗ ನೋಡಿದರೆ ಆ ತೀರವೇ ಇಲ್ಲವಾಗಿದೆ.

ಪಶ್ಚಿಮ ಘಟ್ಟಗಳಲ್ಲಿ ಮಾತ್ರ ಕಾಣಸಿಗುವ ಸಿಂಗಳೀಕಗಳು ಆಗುಂಬೆ ಘಾಟ್ನಲ್ಲಿ ಆಹಾರ ಇಲ್ಲದೆ ಭಿಕ್ಷೆ ಬೇಡುತ್ತಿವೆ. ಇನ್ನು ಕೆಲವು ವಾಹನಗಳ ಅಡಿಗೆ ಬಿದ್ದು ಸಾಯುತ್ತಿವೆ. ಆಯ್ಕೆ ನಮ್ಮ ಕೈಯಲ್ಲಿದೆ. ಪ್ರಕೃತಿಯ ಒಂದಿಗೆ ಸಾಗೋಣ, ಇದನ್ನು ಬಿಟ್ಟು ನಮಗೆ ಬೇರೆ ದಾರಿಯೇ ಇಲ್ಲ. ಎಲ್ಲದಕ್ಕೂ ಮೂಲ ಪ್ರಕೃತಿಯೇ ತಾನೇ?

ಕೊನೆಯದಾಗಿ ಒಂದು ಮಾತು ನಾವೇ ಇಲ್ಲವೆಂದರೆ ಈ ಜೀವಕ್ಕೆ ಕುತ್ತು ಬರುವ ಅಭಿವೃದ್ಧಿ ಯಾರಿಗಾಗಿ?

Voice of the western ghats

ಒಂದು ವರ್ಷದ ಹಿಂದೆ ಯುವಿಗಳೇ ಸೇರಿಕೊಂಡು ಕಟ್ಟಿರುವ ಆಂದೋಲನ, ನಮ್ಮ ಉಳಿವಿಗಾಗಿ. ಅಭಿವೃದ್ಧಿ ಆಗಲಿ ಆದರೆ ಅದು ಪ್ರಕೃತಿಗೆ ಪೂರಕವಾಗಿ ಇರಲಿ ಎಂದು ನಮ್ಮ ಅಭಿಪ್ರಾಯ, ಮತ್ತೆ ಕಾಡುಗಳನ್ನು ಅದರಷ್ಟಕ್ಕೇ ಬಿಟ್ಟು ಜೀವ ತುಂಬೋಣ. ಆಶಯದೊಂದಿಗೆ, ಯಾರೋ ಮಾಡಿರುವ ತಪ್ಪಿಗೆ ನಾವು ಶಿಕ್ಷೆ ಅನುಭವಿಸ ಬೇಕೆ? ಬನ್ನಿ, ನಮ್ಮೊಂದಿಗೆ ಕೈ ಜೋಡಿಸಿ. ನಮ್ಮ ನೀರು ಗಾಳಿಯನ್ನು ರಕ್ಷಿಸೋಣ... ಜೀವಸಂಕುಲ ಉಳಿಸೋಣ, ನಾವು ಉಳಿಯೋಣ ನೆಮ್ಮದಿಯಾಗಿ...

-ಪ್ರಾಣೇಶ್ ನೆಲ್ಯಾಡಿ

Blended wax as a protecting layer to the Elastomers against O3

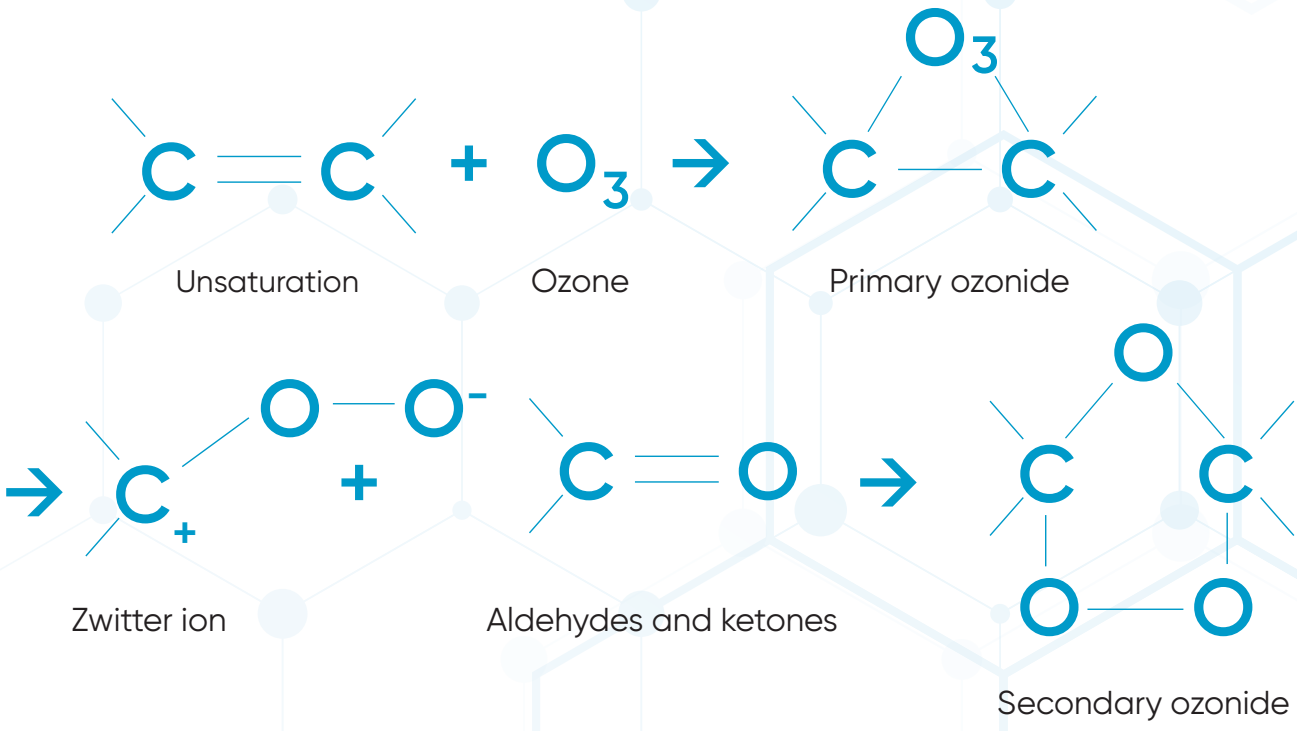
Unsaturation or double bond between carbon atoms of a polymer back bone is site identified for well-known sulphur cross links. But at the same time, it is a cause for formations of "cracks" during its expose to the weather in its intended life.

The cause:

The UV emission from the sun will reach to our native planet along with visible normal wavelength light and it will release the oxygen atom (Reactive oxygen O –) from different reactions with Nitrogen Dioxide, Carbon Dioxide, Carbon monoxid etc. This reactive oxygen atom will induce the formation of ozone by reacting with existing oxygen molecules.

$$O_2 + O^- \rightarrow O_3$$

This O_3 molecule is very much interested with double bond sites and will break one bond to form a new molecular structure which is called as ozonide.



The steps of formation of ozonide is as above. The finally formed ozonide structure is brittle in its nature and it causes the crack during application of strain.

We all might have observed a series of cracks on the Rubber beading used for the window glasses of KSRTC buses in earlier years. After a few years we again might have realized the reason behind this. There are two methods to prevent the ozone cracking. One is to facilitate a formation of physical film to avoid contact of ozone with Rubber matrix. Second one is by incorporating some chemical Antiozonant.

In this paper we will have a discussion on the process of forming a physical layer of waxes to avoid the contacts of ozone with Rubber molecule. There are several kinds of waxes on the basis of its molecular weight.

Paraffin wax

Consist of linear hydrocarbon chain structure of greater tendency to crystalize, Lower molecular weight, and Lower melting temperature.

Microcrystalline wax

Consist of amorphous branched hydrocarbon chain structure of lower tendency to crystallize, higher molecular weight, and Higher melting temperature.

Concept of blended wax

When paraffin wax comes to the surface of a rubber part, it forms a highly crystalline, inflexible, poorly-adhering film. The pure paraffin forms an oversized crystalline structure that permits “holes” to be present in the barrier such that the wax is actually permeable to gas (air). Thus ozone can still reach the rubber surface. By disrupting the microcrystalline structure of the paraffin wax with as little as 4% branched wax (microcrystalline), a more amorphous, very fine crystalline

-Krishnaprasad K

Author's introduction

Krishnaprasad K

A Residing at Kadaba Dakshina Kannada.

Occupation Consulting Engineer for Rubber technology and Pre lance Lead auditor for QMS (ISO9001 2015)

Hobbies writing Kannada poems, Kannada spiritual literatures.

The Use of Composites in Aircraft Design

History

In 1200 A.D, the Genghis Khan began to engineer composite bows which were incredibly effective at the time. These were made out of wood, bamboo, bone, cattle tendons, horn and silk bonded with pine resin.

Following the industrial revolution, synthetic resins started to take a solid form by using polymerisation. In the 1900s this new-found knowledge about chemicals led to the creation of various plastics such as polyester, phenolic and vinyl. Synthetics then started to be developed, Bakelite was created by the chemist Leo Baekeland. The fact that it did not conduct electricity and was heat resistant meant it could be widely used across many industries.

The 1930s was an incredibly important time for the advancement of composites. Glass fibre was introduced by Owens Corning who also started the first fibre reinforced polymer (FRP) industry. The resins engineered during this era are still used to this day and, in 1936, unsaturated polyester resins were patented. Two years later, higher performance resin systems became accessible.

The first carbon fibre was patented in 1961 and then became commercially available. Then, in the mid-1990s, composites were starting to become increasingly common for manufacturing processes and construction due to their relatively cheap cost compared to materials that had been used previously.

The unrelenting passion of the aerospace industry to enhance the performance of commercial and military aircraft is constantly driving the development of improved high performance structural materials. Composite materials are one such class of materials that play a significant role in current and future aerospace components. Composite materials are particularly attractive to aviation and aerospace applications because of their exceptional strength and stiffness-to-density ratios and superior physical properties.The composites on a Boeing 787 Dreamliner in the mid-2000s substantiated their use for high strength applications.

The Use of Composites in Aircraft Design

Among the first uses of modern composite materials was about 40 years ago when boron-reinforced epoxy composite was used for the skins of the empennages of the U.S. F14 and F15 fighters.

Initially, composite materials were used only in secondary structure, but as knowledge and development of the materials has improved, their use in primary structure such as wings and fuselages has increased. The following table lists some aircraft in which significant amounts of composite materials are used in the airframe. Initially, the percentage by structural weight of composites used in manufacturing was very small, at around two percent in the F15, for example. However, the percentage has grown considerably, through 19 percent in the F18 up to 24 percent in the F22. The image below, from Reference 1, shows the distribution of materials in the F18E/F aircraft. The AV-8B Harrier GR7 has composite wing sections and the GR7A features a composite rear fuselage.

Composite materials are used extensively in the Eurofighter: the wing skins, forward fuselage, flaperons and rudder all make use of composites. Toughened epoxy skins constitute about 75 percent of the exterior area. In total, about 40 percent of the structural weight of the Eurofighter is carbon-fibre reinforced composite material. Other European fighters typically feature between about 20 and 25 percent composites by weight: 26 percent for Dassault's Rafael and 20 to 25 percent for the Saab Gripen and the EADS Mako.

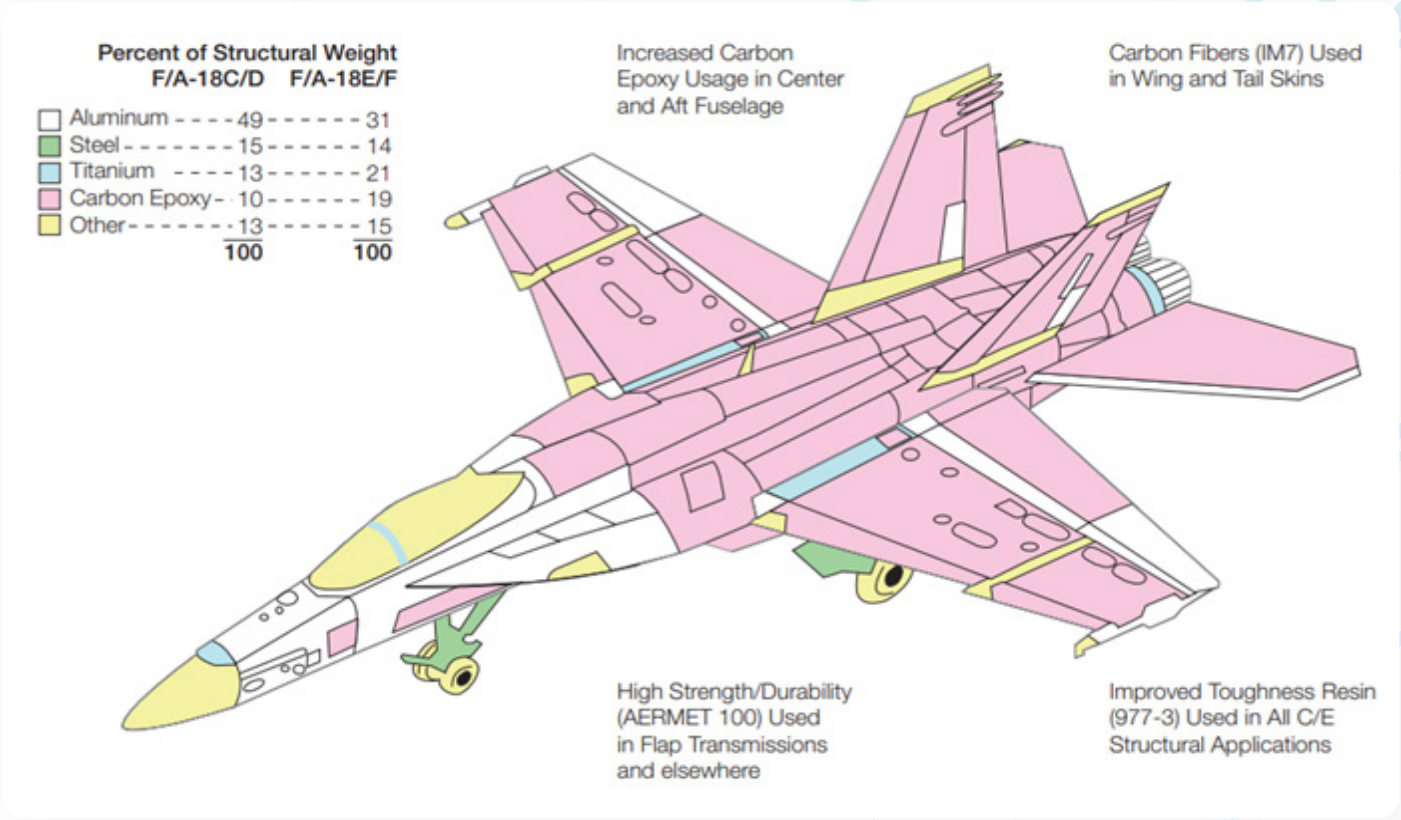
The B2 stealth bomber is an interesting case. The requirement for stealth means that radar-absorbing material must be added to the exterior of the aircraft with a concomitant weight penalty. Composite materials are therefore used in the primary structure to offset this penalty. The use of composite materials in commercial transport aircraft is attractive because reduced airframe weight enables better fuel economy and therefore lowers operating costs.

The first significant use of composite material in a commercial aircraft was by Airbus in 1983 in the rudder of the A300 and A310, and then in 1985 in the vertical tail fin. In the latter case, the 2,000 parts (excluding fasteners) of the metal fin were reduced to fewer than 100 for the composite fin, lowering its weight and production cost. Later, a honeycomb core with CFRP faceplates was used for the elevator of the A310. Following these successes, composite materials were used for the entire tail structure of the A320, which also featured composite fuselage belly skins, fin/fuselage fairings, fixed leadingand trailing-edge bottom access panels and deflectors, trailing-edge flaps and flap-track fairings, spoilers, ailerons, wheel doors, main gear leg fairing doors, and nacelles. In addition, the floor panels were made of GFRP. In total, composites constitute 28 percent of the weight of the A320 airframe.

The A340-500 and 600 feature additional composite structures, including the rear pressure bulkhead, the keel beam, and some of the fixed leading edge of the wing. The last is particularly significant, as it constitutes the first large-scale use of a thermoplastic matrix composite component on a commercial transport aircraft. The use of composites enabled a 20 percent saving in weight along with a lower production time and improved damage tolerance.

The A380 is about 20-22 percent composites by weight and also makes extensive use of GLARE (glass-fibre reinforced aluminium alloy), which features in the front fairing, upper fuselage shells, crown and side panels, and the upper sections of the forward and aft upper fuselage. GLARE laminates are made up of four or more 0.38 mm (0.015 in) thick sheets of aluminium alloy and glass fibre resin bond film. GLARE offers weight savings of between 15 and 30 percent over aluminium alloy along with very good fatigue resistance. The top and bottom skin panels of the A380 and the front, centre and rear spars contain CFRP, which is also used for the rear pressure bulkhead, the upper deck floor beams, and for the ailerons, spoilers and outer flaps. The belly fairing consists of about 100 composite honeycomb panels.

Fighter Aircraft	U.S. Europe Russia	AV-8B, F16, F14, F18, YF23, F22, JSF, UCAV Harrier GR7, Gripen JAS39, Mirage 2000, Rafael, Eurofighter, Lavi, EADS Mako MIG29, Su Series
Bomber	U.S	B2
Transport	U.S. Europe	KC135, C17, 777, 767, MD1 1 A320, A340, A380, Tu204. ATR42, Falcon 900, A300-600
General Aviation		Piaggio, Starship, Premier 1, Boeing 787
Rotary Aircraft		V22, Eurocopter, Comanche, RAH66, BA609, EH101, Super Lynx 300, S92



The Boeing 777, whose maiden flight was 10 ten years ago, is around 20 percent composites by weight, with composite materials being used for the wing's fixed leading edge, the trailing-edge panels, the flaps and flaperons, the spoilers, and the outboard aileron. They are also used for the floor beams, the wing-to-body fairing, and the landing-gear doors. Using composite materials for the empennage saves approximately 1,500 lb in weight. Composite materials constitute almost 50 percent of the Boeing 787, with average weight savings of 20 percent.

The excellent strength-to-weight ratio of composites is also used in helicopters to maximize payloads and performance in general. Boeing Vertol used composites for rotorcraft fairings in the 1950s and made the first composite rotor blades in the 1970s. Composites are used in major structural elements of many modern

helicopters, including the V22 tilt-rotor aircraft, which is approximately 50 percent composites by weight. The formability of composites has been used to particular advantage in helicopter manufacture to reduce the numbers of component parts and therefore cost.

Conclusion

So-called 'conventional' metallic materials and their derivatives continue to be developed and improved to offer ever increasing performance, and there is no doubt that they have a fundamental role in aerospace structures and the myriad applications in which they are employed. At the same time, there is little doubt that the considerable benefits offered by composites have yet to be fully exploited and as knowledge and understanding grow, composite materials will play an increasingly significant role. This role will expand not only as a result of improved material performance, but also as human ingenuity finds more and diverse areas where composite materials can be beneficially and advantageously employed

-Er. Ashwin L Shetty | ME MBA DPT (LLB)

Ex Engineering Manager Airbus

Author's introduction

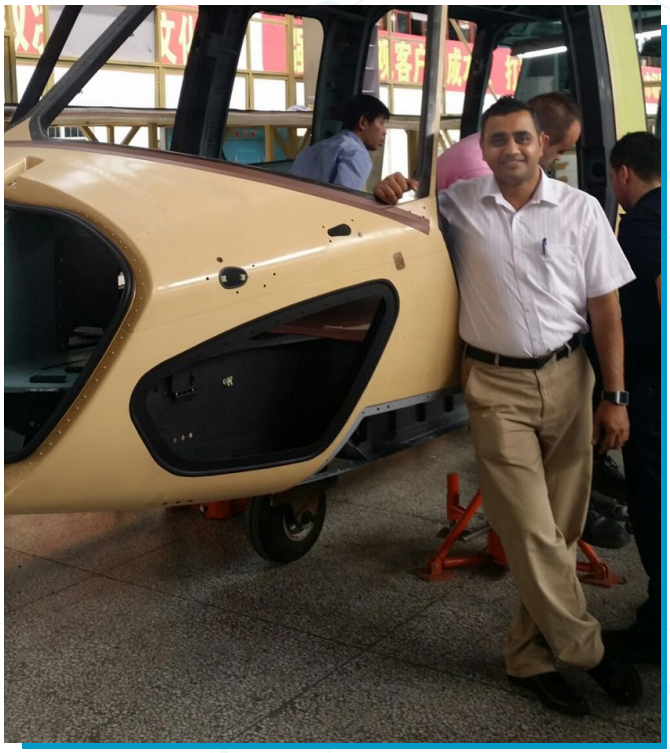
Ashwin L Shetty

Ashwin Shetty is a globetrotter, Rotarian, Toastmaster, social worker, educationist, Soft skill developer and now a gentleman farmer. He has worked in 8 different countries for over 15years.

He was a Technical Manager with Airbus Military. Currently he is an Administrator of a non profit educational institution called Vidyarashmi in Savanoor, Puttur taluk. He has an Masters in Materials Engineering and Aerospace structures.

His MBA in Project Management from University of Queensland, Australia was sponsored by Airbus.

He is Family man with wife Rashmi and two kids Atharva and Avi.



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