

The House Magazine of the Thermax Group Volume 52 No. 1 January - March 2022

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Mr.P. Participation





Correspondents:

Nikhil Saya

Mukeshh Ghodke

Abhishek Bhave Anand Antarkar

Avinash Kulkarni Shruti Pathak Kaustubh Dharmadhikari Anubhuti Gupta Meenal Rao Saswati Kar Bakhtawar Battiwalla Connie Fernandes Saheblal Shaikh Sujata Deshpande

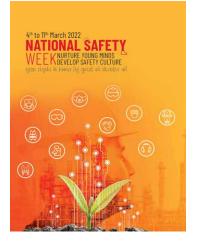
Meenakshi Pagar

Absorption Cooling & Heating Steam Engineering TBWES TBWES Services P&ES Enviro WWS Chemical HR TOESL Administration Finance Corporate HSE Thermax Foundation CBG



About the Cover

An important thing you learn from the camera is focus. In life, you get to choose what to focus on and what should be intentionally blurred. Perspective matters! Once you know your focal point, everything else distractions - will fade out, and you will be left with the clear picture you desire. - Photo by Vijayananthan A. S. N., P&ES - MPP



Back Cover

Observance of the National Safety Week

WORDS OF WISDOM

"It always seems impossible until it's done."

- Nelson Mandela

Editor Priyanka Sarode

Editorial Team Samina Khalid Anuja Mulay Akansha Choudhary

Design Sameer Karmarkar

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Email: corporate.communications@thermaxglobal.com

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What's New?

Introducing FlexiSource^{™®} a solution to all energy challenges!

s an energy solution provider, Thermax has been partnering with industry users to provide indigenised and cost-effective solutions and has pioneered some notable breakthroughs over the years. Our focus is to enable a switch from a conventional portfolio to a sustainable and green one to ensure clean air, clean energy and clean water.

As a substantial step in this direction, Thermax's subsidiary, Thermax Babcock & Wilcox Energy Solutions (TBWES), introduced a unique multi-waste solution -FlexiSource^{™®}, on 5th April via a live virtual event. The customised solution aims to provide energy input flexibility to our customers while addressing their clean and green energy demands. FlexiSource^{™®}, importantly, overcomes the challenge of availability of fuels caused due to the geopolitical developments and other costs and environmental factors. It efficiently combusts waste fuels like non-recyclable solid waste (NRSW), refuse derived fuel (RDF), agricultural waste, biofuels, biomass and other waste fuels that are available with the customer. The combustion expertise of handling 140+ different fuels off and on-field has been adeptly moulded

in an automated and digitallyenabled combustion technology. This ensures better controllability and efficient combustion of multiwaste fuels.

The product is a result of years of experience and research that has led to a unique solution that shall add value to customers.

Pravin Karve, CEO, TBWES, during his keynote address at the launch event, elaborated on how the product will prove to be a win-win in the current market dynamics.

The solution was launched by MD and CEO Ashish Bhandari. Addressing the attendees, he said, "Our responsibility is not just towards energy sustainability but also energy availability. 'Waste to energy' is central to our efforts." He informed, "Very little biomass waste comes back to the organised sector or useful supply chain, and most of it is incinerated, causing pollution. This is where our FlexiSource^{™®} solution fits perfectly. It promises flexibility, optimisation, high availability and uptime of the boiler."

This was followed by a product presentation by Abhishek Bhave, Product Manager - Waste to Energy.

The event was witnessed by 250+ attendees joining globally from India, Southeast Asia and the Americas.

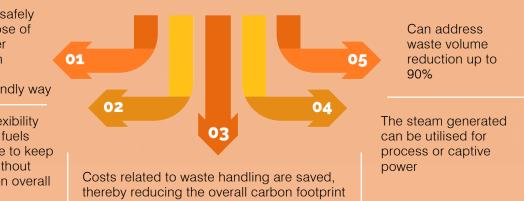


A sketch of Flexisource™®

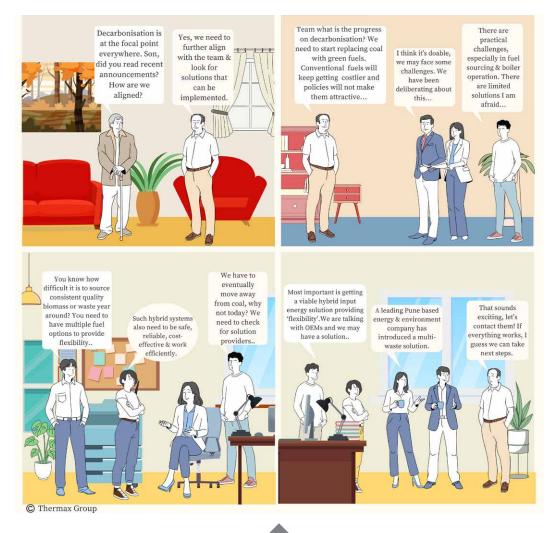
Benefits

Helps clients to safely utilise and dispose of wastes and other available fuels in their areas in an environment-friendly way

Provides high flexibility to source green fuels that are available to keep up availability without compromising on overall efficiency



The Wasteboard series



Thermax bags **RS. 1,176 Crore** order for a sulphur recovery block



hermax recently concluded an order of Rs. 1,176 crore from an Indian public sector refinery to set up their sulphur recovery block on lump sum turnkey basis.

The sulphur recovery block includes two units of 240 TPD sulphur recovery unit along with tail gas treatment unit (TGTU), 690 TPH amine regeneration unit (ARU), 200 TPH sour water stripper (SWS) – phenolic and 95 TPH sour water stripper non-phenolic.

Reducing the sulphur content in fuels produced by the refinery is important for emission control. The sulphur recovery unit converts the hydrogen sulphide gas generated during the process to elemental sulphur, thus decreasing the amount of sulphur compounds

The sulphur recovery block will be a part of the customer's ongoing

released into the atmosphere.

refinery expansion project. This landmark project is being pursued as a part of the Government of India's North East Hydrocarbon Vision 2030.

Talking about the project, B. C. Mahesh, EVP and BU Head, P&ES, said, "We are proud to have bagged this prestigious order for setting up the sulphur recovery block. This landmark project will help us diversify our EPC business into new segments in the coming years."

The scope of supply includes project management, engineering, procurement, manufacturing, construction, and commissioning of the sulphur recovery block. The project is slated to be completed in 28 months.

TOESL executes its first solar energy project



The 1.6 MWp rooftop solar PV plant commissioned for a pharma packaging major

arking its entry into the solar energy space, Thermax Onsite (TOESL) commissioned its first solar PV plant for a pharma packaging company under the Build-Own-Operate model. The 1.6 MWp rooftop solar PV plant is installed at the customer's plant located in Shirwal, Maharashtra. As part of the contract, TOESL has invested the capital and is responsible for comprehensive operations & maintenance, in addition to supplying power to the customer on a longterm basis.

With this initiative, TOESL facilitated the customer to improve their power mix with renewable solar energy, thus providing potential CO_2 reduction of 2,080 tonne annually along with yearly cost savings of Rs. 87 lakh.

Worker Facilitation Centre: A ray of hope in the PCMC cluster

s a substantial step in the Social Compact (SoCo) initiative, Thermax and Bajaj Auto jointly launched the 'Worker Facilitation Centre' (WFC) in Pimpri Chinchwad Municipal Corporation (PCMC), one of the major industrial clusters in Pune, recently. The event was held in collaboration with NGO partners – Dasra and Aajeevika Bureau.

The Worker Facilitation Centre is envisioned as a safe space for workers to access information, counselling and linkages to various government schemes and entitlements which they may not be aware of.

The inauguration was presided over by the leadership team of Thermax – Chairperson Meher Pudumjee and MD and CEO Ashish Bhandari, along with Chandrakant Indalkar, Deputy Commissioner, Labour Welfare (PCMC) and Pankaj Ballabh from Bajaj Auto. The event highlighted the importance of the Social Compact drive, the overall goals of the WFC, and how the centre will be instrumental in voicina the issues of the migrant labourers and working towards their upliftment.



Meher Pudumjee and Ashish Bhandari, along with other dignitaries, inaugurate the Worker Facilitation Centre

Meher Pudumjee, in her address, said, "COVID brought the sufferings of the migrant labourers to the surface. It is disheartening to know that many workers do not have access to basic entitlements and ration when it is their right." She also stressed the importance of supporting the education of the children of migrant workers, which is often hampered by frequent

relocations. She added, "The inauguration of WFC is a beginning, and I am hopeful that the initiative will grow into a larger project that will address the comprehensive needs of these informal workers."

Ashish Bhandari shared, "The plight of the migrant workers struck a chord with everyone. It is a small step but a giant leap in many ways – it brings hope to the 200 million people to have access to basic facilities like healthcare, insurance and other government schemes. This place has the ability to make a huge difference and take the country forward in a significant way."

Considering the substantial presence of informal migrant workers in and around the PCMC industrial cluster, the WFC will play a vital role in facilitating services and other outreach programmes that are essential to workers.



The attendees on the occasion

From inception to the present: the story of **FEPL**



FIRST ENERGY

Brand building and positioning of FEPL

Establishing a brand identity is crucial to register a brand in the minds of the customer. To position the First Energy Private Limited (FEPL) brand appropriately and establish its distinguished identity, Interbrand, a consulting agency, was on-boarded. The Interbrand team then held brainstorming sessions and design thinking workshops with the FEPL leadership team to understand the thought process and conceptualise the brand.

The Corporate Communications team collaborated with Interbrand to build the brand assets for FEPL that comprised the FEPL logo, brand promise, vision, mission and values, corporate stationery, and brand guidelines.

Creating icons as part of the asset library for a renewable energy provider has always been a challenge, and this was no exception. The team identified keywords that describe FEPL's business and coordinated with the agency to design an iconography that would succinctly and effectively convey the company's offerings.

Being active on social media and having an online presence is imperative in today's digital world. The FEPL website was thus created to propagate the ideologies and purpose of the brand. Likewise, the social media pages were also designed to serve as a vehicle for brand messaging.

It was ensured that the look and feel of the brand were consistent on all the communication touch points.

Click here to visit the FEPL website

Click here to follow the FEPL LinkedIn page

FEPL: With You, For Good

Fostering our presence in the renewable energy segment, Thermax's group company, First Energy Private Limited (FEPL), is uniquely placed to help its customers in their energy transition journey. With this new infrastructure being set, Thermax will be diversifying its sustainable offerings with solar hybrid farms and storage batteries, catering to customers in the commercial and industrial space.

The Narrative



Repowering industry for a greener future

Climate change is real. And at First

Energy, we believe that industry can make a big difference in the fight against climate change. It can do so by adopting cleaner energy and making a transition to more sustainable manufacturing practices.



First Energy is the world's leading renewable energy manager

The transition to sustainable manufacturing is a long-term commitment that requires a holistic approach, including creating a complete ecosystem that enables that transition. First Energy, the world's leading renewable energy manager, is uniquely placed to navigate our customers' journey to greener manufacturing.



Custom solutions for our customers

First Energy has the expertise and the

experience to understand our customers' unique energy matrix. That gives us the ability to design a solution that's custom-made to their industry, application, and energy management goals.



24x7 access to reliable, uninterrupted energy

Unlike some of the independent power producers, First Energy doesn't stop at just generating (or even distributing) green power. We control the entire energy corridor – from behind the meter to beyond the meter. This assures our customers of dependable, reliable green power, round-the-clock.



Long-term partnership

At First Energy, we look beyond

making a sale to the value of partnerships. Hence, we enter into long-term contracts with our customers that are backed by significant investments in building the power infrastructure. That way, our customers are always assured of the support of a solid, dependable, and long-term partner that stays invested in their transition to green energy.

WHAT DRIVES FEPL

PURPOSE

Accelerating the journey to carbon-neutrality through decentralised RE-power

VISION

To become a leading organisation that facilitates the commercial and industrial energy ecosystem decentralise and decarbonise through RE-power

MISSION

- Build and operate bespoke and flexible energy assets to customer needs
- Innovate to deliver best in class solutions with optimal asset lifecycle management
- Establish and nurture customer relationships for sustainable development

VALUES

- Inclusiveness
- Excellence
- Discipline
- Integrity
- Collaboration
- Innovation

To new beginnings!

Inauguration of the FEPL office

The FEPL office was conceived to have a fresh outlook and a start-up feel. An initial recce of the office space was conducted to understand the space requirement, logistics and setup.

The Corporate Communications team partnered with a consultant to finalise the branding and design elements for the office, and executed them in a timely manner.

Located at Fergusson College Road, the office was inaugurated on 2nd February. A puja performed at the hands of Navjit Gill, CEO, FEPL, was held in the presence of Ashish Bhandari, MD and CEO, Thermax, and Hemant Mohgaonkar, EVP, New Energy, along with staff members from Thermax and FEPL.

The office today features green shoots lining the cubicle areas, a milieu of vibrant colours decorating the interiors and caricatures adorning the pantry area. The office environment thus depicts flexibility and gives a refreshing experience to any visitor entering the premises.

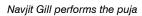


Ashish Bhandari addresses the staff on the inauguration day



Office culture







The office entrance

"Our differentiated solution aims to provide round-the-clock green power."

Navjit Gill, CEO, First Energy Private Limited, shares insights on the FEPL business, trends in the renewable energy space, and the future outlook for the company.

Can you elaborate on the FEPL business?

First Energy is a company that is focussed on supporting the energy transition journey for commercial and industrial customers – helping them move from the present fossil-based power generation to renewables-based power generation. We aim to offer bespoke solutions, moving up the value chain from providing traditional solar mounted solutions to hybridised solutions that can deliver uninterrupted clean power on a daily basis as per the customer's requirements.



FEPL will continue to focus on both the capex (EPC) and opex offerings. As far as the geographies are concerned, FEPL will cater to predominantly India, while our EPC business will span across Africa to ASEAN geographies. Once we have a track record in India, we will look at expanding our opex business overseas where the regulatory policies are conducive.

What is the key value proposition for FEPL?

Our differentiated solution aims to provide round-the-clock (RTC) green power, which, so far, has not been achieved in India or even in the continent! Firstly, we are trying to create a value proposition for the customer that can give them an option to transition fully to green power. Secondly, we are readying ourselves for different contract structures that will essentially be a financial settlement with our customers. For instance, the power that we generate in Rajasthan can be consumed by our customer in Tamil Nadu under the respective regional power DISCOM. This will help to overcome the challenge of locational constraints and provide flexibility to set up projects beyond the customer's premises.

What does the current energy landscape look like? Is it favourable to switch to renewable energy?

The commodity and fuel prices are rising incessantly, causing volatility in the thermal space. On the contrary, we are offering a single-part tariff that will remain unchanged for the next 25 years! This results in a lot of savings with no risk of volatility of fuel as the energy source is renewable. There is volatility in the pricing of the renewable products too, but we are offering an entire packaged solution. The key is to tie up the various ends, allow for some flexibility in the law provisions, and only then move forward with pursuing orders.

Also, being an environmentally conscious organisation, we will be developing zero water projects wherein we will be installing robots for cleaning the solar panels at night, making use of the power from their dedicated battery packs, which will be charged during the day.

What kind of partnerships with customers are we looking at?

As far as India is concerned, we will structure the projects in line with the Electricity Act, 2003 and

its provisions. Through such a partnership, the customer(s) will make a partial equity investment in the project at the development stage, and First Energy will design, execute, commercialise, operate and maintain the project for a period of 25-30 years. This is in line with Thermax's philosophy of long-term partnership with its customers. Supplying one of their most important requirements i.e. electricity, we are offering them beyond-the-meter solutions.

What is the expected capacity expansion with FEPL?

We plan to set up 1,000 MW of captive solar for C&I customers over a period of five years. Though RTC projects involving solar and battery storage are capital intensive projects, the nameplate capacity remains low. For example, a simple 20 MW solar PV installation would cost around Rs.125-130 crore, but a 20 MW RTC project will result in a capital outlay of over Rs.1,000 crore.

The major difference here is that the plain solar project will generate only about 50 million units of green power annually, whereas an RTC hybrid model will generate 160 million units of power per annum. Such power will be available 24x7 at least for 350 out of 360 days, for 25 years!

Thus, RE-power is well positioned against the conventional model, and matches or exceeds in terms of its quality and reliability.

How do you perceive the growth trajectory for FEPL in the coming years?

The objective is to build and strengthen Thermax's relationship, especially with the existing customers in the commercial and industrial space, through long-term partnerships. We look forward to catering to various types of industries like textiles, chemicals, steel, tyre, cement etc. In the near future, we wish to accomplish multiple small projects all over the country, explore new technologies and bring in a lot of learning that will help us grow. We wish to position the company on the country's map as a reliable, RE developer for the C&I sector.

Transitioning towards a better tomorrow

In 1995, at the United Nations intergovernmental panel on climate change, a group of 2,000 of the world's leading scientists concluded that global warming is real, serious and accelerating. Industrial development and human intrusions, however, continued to cause environmental damage to such an extent that it is now crucial for organisations to adopt viable business practices to mitigate the impending crisis.

Thermax has always believed that by integrating the management of the environment and energy, companies can become more competitive and green. This belief is reaffirmed in the company's brand promise of 'Conserving Resources, Preserving the Future'. The business proposition is valued today more than ever before with the mounting intensity of climate change.

To highlight Thermax's strengths as a leading provider of energy and environment solutions and position it as a clean air, clean energy and clean water company, the Corporate Communications team has launched a year-long campaign called 'Thermax For A Better Tomorrow'.

The campaign that started in January this year is complemented by 12 sub-themes – one for each month (refer to the graphic below), aligned to some of the SDG goals and topics that need urgent attention. It addresses the larger purpose of creating awareness for a better tomorrow for us all and our future generations.

#ThermaxForABetterTomorrow



The content is developed in various formats – social media banners, creatives, videos, blogs, success stories etc. These are published as social media posts every Tuesday, with a precursor on the first day of the month. For high recall, the campaign has a defined visual appeal.



Today, #ThermaxForABetterTomorrow, which started as a social media campaign, has evolved into an integrated communications campaign. More updates will follow in future Fireside issues.

Be a part of the campaign

Search for the hashtag #ThermaxForABetterTomorrow on any of our social media platforms, and you will see a plethora of information about the campaign.

Follow the hashtag and share the posts in support of saving the planet. Also, do share stories aligned to the theme of the month, and we shall be happy to feature them.



Expressions

I'd like to compliment all of you since not so long ago, half or more of our business came from burning coal. However, you have seamlessly managed to bring this to less than 20% of our revenue today.

In my last Expressions, I had touched upon climate change, COP 26 and India's net zero target by 2070. I had also mentioned that I would elaborate on what this means for Thermax.

Thermax is very fortunate to have deep knowledge about energy, whether heating, cooling, power or converting waste heat into some form of useful energy for industry. With regard to our environmental products, we have been successful in reducing both particulate and gaseous emissions, producing clean drinking water, recycling water from dirty industrial effluent to clean water; using our chemicals for treating water and a vast variety of applications, as catalysts, in the pharma sector and so on.

I am amazed at the plethora of applications we've developed over the years in all our product categories – thank you all. Many of these help our customers move towards a cleaner and greener outcome. Hence replicating and scaling each of these applications presents a massive opportunity for our country, for climate change and for Thermax.

At our last Board retreat, we continued our discussion on decarbonisation, both within the company and Scope 3, which includes the products we manufacture and sell to our customers. In our last Annual Report, we spoke about our own decarbonisation roadmap, outlining a 25% emission reduction by 2025 from 2019 levels. This will be done through additional renewable energy generation and procurement, fuel switch and operational efficiency improvements.

For our customers, we have been a 'supplier of choice' for many of our products and services. If we are innovative, continue developing some of our own technology, partner with others wherever needed and are able to connect the dots, we could be of great value to our customers in their journey of reduced emissions and water consumption.

In doing so, apart from all the good work each of our businesses is doing, TOESL (Thermax Onsite Energy Solutions Ltd), our Build-Own-Operate business began over 10 years ago and has picked up considerably in the recent past. It's wonderful to see them working together with the industry in providing green steam or water as a service, so that our customers can focus on their business, helping them reduce their input costs.

Expanding our portfolio of green offerings as a service, First Energy Private Limited (FEPL) has been reborn as a 100% subsidiary of Thermax. They will work closely with customers in the commercial and industrial space, providing renewable power through solar and solar hybrid farms, as also storage batteries on a capex or opex model. This will facilitate our customers in their decarbonisation iourney, helping them switch or optimise their clean and green energy needs, which could be made available 24x7. The intent is to become a companion to industries, both large and small, that want to transition to a greener future but don't know how.

As mentioned in my last Expressions, I'd like to compliment all of you since not so long ago, half or more of our business came from burning coal. However, you have seamlessly managed to bring this to less than 20% of our revenue today. Each division has helped in doing their bit to transition to what our customers are looking for. Increasingly, we are seeing our customers, especially those that have parent companies overseas, or are large suppliers to overseas customers, being pressurised to move over to manufacturing without burning coal. Some of our forward-looking Indian brands are working hard to do the same. Investors have started taking ESG (Environment, Social, Governance) seriously and rightly so. The world is already beginning to talk about green steel, green cement and green chemicals. Europe is considering a tax for imported steel, unless it is green. Of course, the Ukraine crisis hasn't helped the

situation – nonetheless, all this will happen over time. Hence a lot of companies (many of whom are our customers), are thinking through and trying out innovative methods to reduce their carbon emissions and move to gas, green hydrogen and renewables.

I spoke about green steel – but there may be a case for 'blue' steel before moving to green for India. Many steel companies overseas have moved some of their processes from coal to natural gas. In India, since natural gas is uneconomical and not readily available (since most of it has to be imported in the form of LNG). coal gasification (which is carbon capture ready) could be a solution for the steel industry and also help with energy security for our country. As most of you are aware, Thermax has been successful in coming up with a solution for coal gasification of high ash coal available in India. Gasification reduces the amount of emission as compared to a thermal plant. Although at a small pilot stage, if we can scale this in phases to prove that the technology works economically, India could save a lot of money used for importing LNG and reduce emissions. However, over time, we will need to find a solution for carbon capture and utilisation, making the overall package economical. Simultaneously, wherever customers are ready, we would like to partner with them to produce hydrogen through electrolysers using solar energy.

Our Board member, Valentin, often narrates the story of the gold rush when talking about what Thermax can do to partake in the energy transition opportunity. During the gold rush in California, when gold was discovered in the mid 1800s, hundreds of thousands of people moved to the State, hoping they would make a lot of money. However, it was not the miners (fortune seekers) who made money; it was people who sold goods and services to the mining companies that made 'sustainable profits'. So, the question we need to ask ourselves in this vast milieu of opportunity is, where should a company like Thermax play in order to genuinely add a 'differentiated value' to our customers? How does each division look to see where we can use our existing knowledge to enhance our application and product basket in the new energy space?

How we replicate and scale our application base, find adjacencies to keep up with the changing environment, develop certain technologies, partner with others and our customers on their energy transition journey is entirely in our hands.

I'd like to end by saying that Thermax is in a sweet spot presently, with a lot of opportunities coming our way. How we replicate and scale our application base, find adjacencies to keep up with the changing environment, develop certain technologies, partner with others and our customers on their energy transition journey is entirely in our hands.

Wish you the very best.

Warmly,

Meher

Up Close

"Be the Yoda in the room!"

Jasmeet Bhatia, CHRO, Thermax, in a conversation with Priyanka Sarode, gives an overview of the HR function, the upcoming initiatives and his vision to build a culture of innovative practices. Providing a glimpse into his life, he tells us about his love for reading, passion for cycling and adventure.



One of the traits of Jasmeet Bhatia, Chief Human Resources Officer, Thermax, that strikes a chord instantly is that of being a 'persistent seeker'. During a candid chat with him, we tried to decipher his personality and his vision for the organisation and his life.

The discussion began on a lighter note with the topic of 'diet coke' - thought to be his favourite drink, but apparently not! (Hot water is his go-to drink).

Being an outdoor person, Jasmeet has been an avid trekker and cyclist and also enjoys running. That he owns two cycles – a mountain bike and a road cycle tells us of his passion for cycling. He fondly remembers his cycling expedition from Manali to Ladakh in 2018, where he had fractured his toe but still completed the planned trip. It is one of his coveted experiences. Giving a sneak peek from his travel diaries, he recalls, "My most memorable trek has been the one to Mount Rinjani in Indonesia, where we summited the old volcano mountain that was surrounded by black ash. Indeed, it was a breathtaking sight! This trip with the right friends made it all the more interesting. The next one on my list is Vietnam, which was missed due to COVID."

His other passion is reading, and always has 2-3 books ready to be read whenever he has time.

Jasmeet had moved to Pune from Delhi in November 2020

with his wife Rasneet and two children – Ranvir (13) and Maahira (3), to join Thermax.

When it comes to working at Thermax, 'culture' is the one aspect he is really proud of. Having worked across MNCs, he infers that the culture at Thermax is something that leading MNCs aspire to have.

As a leader of the HR function, Jasmeet focusses on building people-centric practices. He says, "Thermax has been known for its HR practices, and we wish to carry on this legacy. My vision is to position Thermax HR as a team where innovation is the way to work".

Jasmeet joined Thermax in 2020 during the peak of the COVID wave when the HR function was coping with many unprecedented challenges. Remembering the testing phase, Jasmeet shares, "It was a time when the entire organisation stood united. All of our managers and business leaders came together to provide support to our employees and their families, whether it was for hospitalisation, financial aid, or any other need. It's Thermax's culture to put people first."

Another initiative he looks forward to and is proud to be associated with is the Social Compact drive, focussing on the well-being of the informal workers, who get the least attention but need the most help. "Social Compact will redefine the way we run our factories, sites and manage our contract workforce," he notes.

Talking about the new TPMS and the CLOCC behaviours, he quotes them as 'industry leading behaviours' that are strategic steps towards building a performance culture in the organisation. He adds, "Our flexible working policy is a big step forward. Work is not a building you go to; work is what you do, so the focus is on the outcomes and not the number of hours."

Informing about the switch to the recently launched Darwinbox. Jasmeet shares. "Darwinbox is part of a larger HR transformation. We are redefining success as we shift towards a new HR operating model. For example, success measures need to shift from -'number of employees hired or number of trainings conducted' to 'accelerating the hiring process, creating an experience for candidates and empowering employees with avenues to own their learning plans and career progression in the organisation'. This shift enables employees to have the power of decision



making. A lot of transactional work that HR does today will be automated, and we will free our bandwidth for more strategic business partnerships."

Moving forward, Jasmeet intends to identify and do away with the obsolete practices within the organisation, introduce process optimisation and reduce bureaucracy. He informs, "We are soon coming up with HR Shared Services that will work on providing operational support to the HR functions. The business HR function can focus on business priorities and valueadded support."

Being in an ever-evolving role, Jasmeet is constantly on the lookout for best industry practices. He relies on the law of diffusion of innovation which helps with change management. "We have to keep pace with the fast-changing world. To introduce any new idea, I try to assess the acceptance and capabilities of people in the organisation. The key is to find the 5% innovators/ champions and the 20%-30% early adopters. This is the tipping point for any change to take place," he elaborates.

Amid the new working policies and initiatives, the HR function has a major challenge to deal with - 'The Great Resignation'. When asked how the company is dealing with attrition and what measures are being taken at the management level, Jasmeet says, "I strongly believe that when a person leaves a job, more than the organisation, he/ she leaves the manager. We are definitely working towards correcting compensation levels in Thermax and ensuring that high performers get higher rewards. Apart from this, we are also considering other factors such as the manager-employee relationship and setting up forums where employee concerns can be addressed in a transparent way. The recent Pulse survey was an effort to understand these unknown problems of employees."

He signs off quoting one of his favourite analogies - "Be the Yoda (Star Wars character) in the room!' In meetings, we use this analogy to encourage everyone to share the topics that are on everyone's mind, but are not spoken of. It helps to create a culture of open communication and gives everyone a chance to express themselves."

Roundup

Desalination orders contribute significantly to **IPG's order base**

he Industrial Project Group (IPG) of Water and Waste Solutions division has increased its revenue share from desalination projects. IPG's most significant contribution for FY 2021-2022 came from the booking of the desalination orders of 60 MLD capacity, totalling Rs. 220 crore. These plants for leading corporate houses of the pharmaceutical and chemical industries will be located in Andhra Pradesh and Gujarat.

A pioneer in the area, Thermax is the first company to install a desalination plant in India in the early 90s and has since set up more than 20 plants in the country.



IPG celebrates the success with cake cutting



Ultra low temperature hot water chiller

reputed petrochemical player from South India commissioned Thermax's latest innovation, ultra low temperature hot water chiller, to produce chilled water for propylene vapourisation.

The petrochemical industry produces various byproducts while processing raw crude oil. Propylene is one such byproduct that is further converted into propylene oxide by undergoing four stages of processing viz. vapourisation, chlor-hydrination, saponification and purification.

Thermax's hot water chiller helps petrochemical major save energy

This propylene oxide is further used as propylene glycols/polyurethane materials. In the above four processes, waste heat can be found in abundance. One such waste heat source at low temperature levels (73°C-77°C) is found in the form of a solution at the end of the saponification process. Thermax's ultra low temperature hot water chiller can repurpose this low-grade heat to produce the required cooling and heating utilities for the plant.

The machine helped the customer to achieve 777 MW of energy savings and 650 tonne of carbon savings annually.

order from a refinery and petrochemical complex

n a major win, Thermax recently concluded an order of Rs. 522 crore for utility boilers and associated systems for a grass root refinery and petrochemical complex in Rajasthan, India. The order included two units of 260 TPH high pressure utility boilers along with allied auxiliaries to be designed and manufactured by Thermax Babcock & Wilcox Energy Solutions (TBWES), a wholly-owned subsidiary of Thermax. The package will be a part of the customer's captive power plant (CPP), and will facilitate their steam and power requirements.

"The new financial year started on a high note with this order, secured through an international competitive bidding process.

The award of the contract is a testament to our demonstrated product expertise, compliance with quality standards, manufacturing capabilities and execution of complex turnkey projects," said MD and CEO Ashish Bhandari.

The scope of supply included project management, engineering, procurement, manufacturing, construction, and commissioning of the package.

The project is slated to be completed within 16 months on a lumpsum turnkey (LSTK) basis.



Representative image

TOESL supplies green energy to FMCG and textile majors

hermax Onsite (TOESL) commissioned an 8 tonne/hour biomass fired boiler for an Indian multinational consumer goods company at their plant in Jalgaon, Maharashtra, where the customer produces edible oil. TOESL collaborated with the customer to support their sustainability goals by building the boiler plant along with fuel storage in a constrained space.

Thermax

TOESL also commissioned a biomass based boiler and heater facility of 20 tonne/hr and 4 million kcal/hr capacities respectively, for a textile major in Tamil Nadu, providing them with a modern, state-of-the-art biomass based utility facility.



Biomass boiler and heater plant commissioned at Tamil Nadu

Both the customers were existing users of biomass fuels for boiler operation. They chose to opt for the Build-Own-Operate (BOO) model for their expansion and outsourced the responsibility of delivering green steam and heat to TOESL under a long-term utility supply agreement.

R. S. Jha's research paper finds place in international journal

R. S. Jha, Head – Innovation, Heating division, has published his first research paper on digital twins of the boiler.

Titled 'Predictive modelling of grate combustion and boiler dynamics,' this research paper has been published in the international journal – 'Mathematical modelling of engineering problem'. The objective of this work is to develop a predictive



model for fuel combustion, air to fuel ratio, heat transfer, pressure and water level. This dynamic simulation model is based on a hybrid modelling concept, which integrates the data-driven model and physics-based model. The model is further being upgraded to devise a new data driven artificial intelligence-based control strategy in boilers.

This work by R. S. Jha is directed towards the development of a smart boiler that identifies changes in fuel and combustion characteristics, slagging, fouling and ambient conditions in real-time. These parameters captured in real-time act as inputs for fine-tuning the control parameters in order to achieve the best performance of a boiler.

To access the research paper, click here

P&ES synchronises cogen plants for fertiliser majors

Thermax Projects and Energy Solutions, the EPC arm of Thermax, successfully completed the commissioning of cogeneration plants for two fertiliser majors recently.

The team successfully completed the performance guarantee test for the 25 MW GTG based cogeneration plant for a customer's manufacturing facility located in Trombay, Maharashtra, India, The s



25 MW cogeneration plant commissioned at Trombay, Maharashtra



20 MW cogeneration plant at Panipat, Haryana

facility located in Trombay, Maharashtra, India. The scope included two units of 65 TPH heat recovery steam generators, cooling tower, distributed control and electrical systems. This was a repeat order from the customer after the successful commissioning of a similar 25 MW cogeneration plant at Alibag, Maharashtra.

The second project was the synchronisation of the 20 MW natural gas based cogeneration plant in Panipat, Haryana. The heat recovery steam generator (HRSG) of 70 MTPH used to utilise the heat from the exhaust of the GTG was an important scope of the project, executed on EPC basis. This was the third project from the Rs. 503 crore order bagged by the division to set up three cogeneration plants (each of 20 MW capacity) at the leading fertiliser manufacturer's facilities in Haryana and Punjab. Record quarter and a record year for CBG!

aking in 165 crores in this quarter, the Channel Business Group of Thermax ended the year FY 2021-22 with an all-time high of 645 crores of business, registering a growth of 43% over last year.

This feat was achieved through the resilience of all the TCAs and team members who worked towards implementing, promoting and wholeheartedly accepting all the novel initiatives put in place by the CBG team.

With the markets just beginning to open, the result of the digital activation programme was seen through the generation and maintenance of a healthy opportunity pipeline in SFDC as well as creating the TCA presence on all social media platforms. TCAs appreciated the power of digital space and have now proactively embarked on this journey of digital transformation. Along with divisions, CBG successfully executed virtual launch of various channel range of heating, water and steam products and solutions like SWAYAM – an automated proposal generation system for Enviro products.

GROWTH OF

Apart from this, the steps taken to reduce manual intervention, increase efficiency, and faster response time has laid the foundation for various initiatives. The channel finance support, National Automated Clearing House (NACH) programmes, Dealer Management System have contributed to the resounding success of the group. Currently, 95 dealers have been onboarded on our DMS.

With the drive towards achieving success, coupled with the transformational initiatives being undertaken across Thermax, CBG is confident to continue tracing its growth trajectory.

Thermax's solution enables faucet manufacturer to recycle kitchen wastewater

Introduction

An American faucet manufacturer approached Thermax to enhance the performance of its existing sewage treatment plant of 50 KLD. With utmost compliance to National Green Tribunal (NGT) norms, the customer was looking for recycling 100% of sewage containing kitchen waste. The existing plant was based on FMR (Fluidised Media Reactor) technology, which was facing many challenges while operating, and the system was unable to meet the desired outlet parameters.

Challenge

Wastewater stream was getting added from the kitchen where cooking and washing utensils were being carried out. Wastewater containing emulsion of oil and water was earlier separately collected in a drum; however, there was no defined pre-treatment for this wastewater. A punch-hole screen was provided for the kitchen drain to minimise the passage of food grains into wastewater. The solids retained by this screen were collected and separately disposed of along with other food waste. But the screen could not restrict the entry of all solids; hence the efficiency of pre-treatment was very low. The treated sewage was fed to a centralised ETP instead of being reused. This led to the daily consumption of 50 KLD of freshwater.



Site image of the sewage treatment plant

Solution

A fine mechanical screen was recommended for the removal of floating solids and food particles. A slotted oil collector and oil skimmer were also added for the pre-treatment to minimise the passage of oil content into the drain.

An MBBR (Moving Bed Bioreactor) based STP was designed for the treatment. An equalisation tank and anoxic reactors were also provided. After secondary treatment, an ultrafiltration unit was added.

Result

The offered solution contributed to a lesser footprint, eco-friendly and user-friendly operations, as well as optimised opex cost. Other benefits to the customer included compliance to NGT norms, 100% recycling and reusing of treated sewage and no clogging of the underground drainage system for kitchen waste. The treated sewage is being used for gardening and toilet flushing.



The revamped plant to upgrade and improve performance

Green Initiatives at Sri City Veggies and fruits cultivated on factory premises

In an exemplary move under the 'Thermax Cares for Environment' initiative, Vigneswar Samireddy, Admin and General Executive, Sri City, and Raja P., Group Head, HR, Cooling, came together to cultivate a vegetable and fruit garden on the factory premises at Sri City. Since one third of the land is to be kept green as per the statutory requirement, a piece of wasteland was converted into a garden in December 2021.

In addition to this, the team has also grown a small nursery in the same landscape. As a part of a complete green initiative, only water from the rainwater collection tank is used to water these gardens.

The efforts of the internal landscaping team have resulted in a surplus yield from these fields.

Homegrown watermelons served to employees

Watermelons from the fruit garden were recently served to all the employees and operators in the factory's canteen. Moreover, vegetables from the garden were distributed to a nearby government school, where they cooked a meal for 100 students. The thoughtful gesture was highly appreciated by the school principal.



Vegetable distribution drive in a nearby government school



The nursery in factory premises

Plantation drive on Zero We Go Day

Zero We Go, a sustainability campaign initiated by Thermax Cooling has received widespread attention since its inception. As another milestone of this campaign, Thermax Cooling has marked 28th January as 'Zero We Go Day', inspiring eco-lovers all over the globe to join our

sustainability journey.

On this special day, many Thermaxians from the Cooling manufacturing unit at Sri City came together and planted saplings on the factory premises, giving impetus to the campaign and contributing to a greener and better tomorrow.







A webinar to address water challenges of pharma manufacturers

With a focus on 'reduce, reuse and recycle water', Thermax Chemicals organised a technical webinar for the pharmaceutical industry on 10th February, which saw a massive participation of key stakeholders from the industry.

#WaterDoctor i.e. our subject matter expert, Harish Valsangkar, Senior Product Manager, Cooling Water Chemicals, who holds an experience of over 29 years in cooling water treatment, discussed various water-related challenges faced by pharma manufacturers, and how they can achieve water positive goals through sustainable solutions. During the highly interactive session, he addressed the queries of participants related to the subject.



Conference and expo on water and wastewater treatment

The Water & Waste Solutions division of Thermax participated in a conference and exhibition organised by KLS Gogte Institute of Technology, Belagavi, Karnataka, from 24th to 26th March. The same was attended by industry patrons around Belagavi and researchers across India. At the event, we gave a presentation on advanced

materials used for water and wastewater treatment.

The conference helped us explore research opportunities for adopting 'Make-in-India' membranes for water treatment, modifying resins with advanced materials, and recycling the used membranes to contribute to a clean environment.

Virtual conference on 'Managing Difficult Waters'

The Water & Waste Solutions division of Thermax participated in a virtual conference on 'Managing Difficult Waters', organised by EverythingAboutWater (EA Water) on 11th March.

A detailed presentation on toughto-treat effluents showcasing the alternatives, challenges and Thermax solutions for high COD, high TDS, low biodegradability, toxicity and other emerging constituents was delivered. Vishal Mehra, SBU Head, Water & Waste Solutions, who was invited as the guest speaker for the event, elaborated on the topic of discussion.

The conference that was attended by over 400 participants included water experts from Chennai Metropolitan Water Supply and Sewerage Board, Municipal Corporation of Greater Mumbai, Aditya Birla Group, Qua Water Technologies and consultants.

Limelight

Anushka wins first prize in mural making



Anushka Kulkarni, daughter of Anand Kulkarni from TBWES -Finance, along with her team, bagged the first prize at the mural making competition jointly organised by the Indian Women Scientists' Association and Indian Institute of Architects recently.

Anushka is a third year B. Arch student of MKSSS's Dr. Bhanuben Nanavati College of

Architecture for Women. A cash prize of Rs. 15,000 was awarded to the winning team.

The theme of the mural was 'Wings of Hope'. It gave the message that women inherently have wings within themselves with which they can soar to great heights.

The face in the mural depicts a woman who is trying to break free through the age-old norms and fly towards a better future.







Veerendra secures spot in full marathon

Veerendra Rasela of TBWES - EXIM participated in 'Apla Pune' marathon held recently in Pune and secured the seventh position in the age category: 31 to 45 years, clocking a time of 04:02:52 hours; with elevation gain of approximately 650 metre.

The event was supported mainly by Indian Police Services and Maharashtra Police with the motto - 'Celebrating Civilian - Soldier & Cop Camaraderie'. Organised to bridge the gap between the cops and the civilians, in this marathon, civilians run with the policemen in the city as a gesture of gratitude, love and fellowship.

The full marathon (42.195 kilometre) was Veerendra's third official marathon run and first one in Pune. He had also been a runner up (age category: 35 to 42 years) at Indore's Full Marathon 2020, where he received prize money of Rs. 10,000.

Diversity and Inclusion

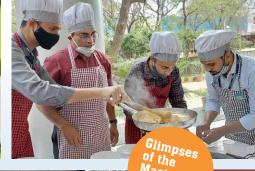
Women's Day with a twist!

Thermax lived upto the theme of the International Women's Day 2022 – 'Break the Bias' as a variety of events were organised by the HR team to mark the occasion.

The celebrations kick-started with the 'Masterchef Challenge' for men on 7th March. Breaking stereotypes, men at Thermax donned the chef's hat and presented some lip-smacking delicacies. It was a pleasure watching the participants assemble their ingredients, tussle to meet the deadlines and compete to claim the winning sash. The winners were awarded after the assessment.

The culinary event was enjoyed by all participants and brought in a lot of camaraderie amongst the colleagues.











The International Women's Day celebration followed on the second day with equal zest, wherein exclusive events were organised for women employees at the Thermax Learning Academy. 'Funtastic Finance' - a game-based session to learn the fundamentals of finance was conducted by guest speaker Padmini Sundaram. The team with the highest points was awarded.

'Learning through drama'- another fun session by Steps Drama Learning Development, engaged the audience through entertaining role plays that advocated for an equitable workplace.

Employees also struck the 'break the bias' pose to express solidarity with the UN theme.

The events were well received and saw overwhelming participation from Thermaxians.



Employees strike the 'break the bias' pose













A thought-provoking role play by Steps Drama Learning Development

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The value of freeing ideas, not just locking them up

We can have both innovation and equality, say Joshua Gans and Andrew Leigh

There is a growing view that technology inherently increases inequality, be it from richly compensated software developers or giant web platforms that skim economic rents from users or other firms. But it is a false dichotomy. Tech often isn't responsible for the unfairness and where problems do exist, they are fixable. It is possible to have both scientific progress and fair societies.

This is the message of a new book aptly titled 'Innovation + Equality' (MIT Press, 2019) by Joshua Gans, an economist at the University of Toronto and Andrew Leigh, an economist and member of parliament in Australia. The pair are alarmed by the winner-take-most phenomenon that characterises many parts of the tech industry. They call for a wide range of reforms, from banning noncompete clauses in work contracts

and easing the process for university loans to reducing sexual harassment in the workplace to boost the number of women in tech.

One of the book's most powerful arguments is on intellectual property. It is a highly controversial issue that typically divides into two superficial camps, caricatured as portly capitalists who claim expansive rights to pickpocket consumers and other businesses on one side, and hippie softwaredevelopers and snowflakes on the other side, who want to opensource everything.

Messrs Gans and Leigh bring much-needed nuance and balance. Patents and copyrights are crucial for securing rights so that firms can invest, they acknowledge, but those rights need to be more limited than they are today. An excerpt from the book, on intellectual property, appears below.



Encouraging innovation

Back in the 1960s, Bob Kearns was an engineer working and lecturing in Detroit. Due to an unfortunate wedding night accident involving a champagne cork, he was legally blind in his left eye. When driving in a Michigan rainstorm, Kearns lamented the inability of his wipers to help him see better. In those days, windshield wipers had two settings - fast and slow - and they were always moving. Kearns's notion was that it should be possible to have a slower setting, in which the wipers paused briefly between each wipe.

Motivated by his own experience, as well as a long-standing desire to work for a big car company like Ford, Kearns spent years working out a way to make wipers pause. His solution relied on electronics - an unusual and innovative thing in those days. He fitted the mechanism to his own Ford Galaxie with most of the contraption inside a black box and drove it down to Ford to show its engineers. They pored over the car and were impressed. Kearns was then given the details of tests he would need to perform to become a Ford supplier. Those took months of work that Kearns completed in his basement. Ford, however, passed on him being a supplier, though the firm did employ Kearns for a brief period. In the meantime, Kearns filed for a patent on his invention.

It took seven years for Ford to work out Kearns's mechanism. Kearns discovered this when he saw an intermittent wiper in a new Ford model at a trade show. It was his invention. He sued the car giant.

Today, this might have been an easier case, but in the 1970s, patents in the United States were not as strong. In addition, Ford itself was a tough litigant. Henry Ford had many years of struggles when a lawyer patented the automobile, and so his company had a culture resistant to patent litigation. Kearns



became obsessed with the case, ruining his marriage, and prompting his children to become lawyers to help with his cause. It took twenty years, but Kearns eventually won a \$10 million judgment from Ford. By then, every carmaker had put Kearns's mechanism in their vehicles. Eventually, Kearns won a \$30 million iudament from Chrysler, but his

cases against other automakers were dismissed on legal technicalities.

You might think that it all worked out. But Kearns lost a lifetime of inventing, and society lost what his inventive genius could have brought. Unless you are Elon Musk, you are not going to be able to invent something for the car industry and become a carmaker to bring it to market. The best you might hope for, as Kearns did, is to become a supplier. Yet in doing so, you face a risk: if all you have is an idea, then you are vulnerable to expropriation. Once you give up the secret, the idea can be copied, and then the only protection you have is that afforded by patent law.

Indeed, subsequent research has shown that inventors are keenly aware of this. When inventing something that fits into a larger picture that is controlled by others, innovators are much more likely to go ahead if they have secure intellectual property protection. Moreover, those who have such protection end up doing the deals with others; something that, for most ideas, is what allows them to come to market rather than languish.

Owning Your Ideas

This illustrates the point of the patent system: it is designed to make markets for ideas safe. This is crucial in terms of freedom to innovate, especially when inventors have little power. Without patent protection, cheap knock-offs would quickly take over. A patent provides two decades to build and then profit from the market that is created. It makes it safe to spend time and money refining the invention before the imitators arrive.

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Innovation is tricky. Before products are launched, there is much uncertainty as to their value. Afterward, however, what was initially strange can become mainstream (or not, as in the case of the Segway). From nonstick frying pans to touch screen computers, ideas that once seemed radical have become commonplace.

Not all innovation requires intellectual property protection. Secrecy rather than patents protect some of the world's most famous creations. The ingredients in Coca-Cola and formula for WD-40 are tightly held. The recipe for Colonel Sanders's '11 secret herbs and spices' is locked in a vault in KFC's Louisville headquarters. Google's algorithm is kept confidential to prevent unscrupulous people from manipulating search rankings. If firms used patents to protect all their innovations, devious rivals would have little need to engage in cyberhacking; instead, they would simply go to the patent office.

Some inventions are not protected from copying at all. The opensource approach has helped create one of the world's most widely used computer operating systems (Linux), the largest-ever genetic maps (the Genographic Project), breakthroughs in astronomy (via NASA's photo-organising project), and the world's largest encyclopedia (Wikipedia). In some sense, open source - which aims to increase take-up by offering services at a zero price - is the opposite of a monopoly - which charges a higher price and ends up serving fewer customers.

Something So Right, It's Wrong

As with anything like this, however, it can go too far. The dark side of intellectual property protection is when its reach is extended beyond what was intended. A patent is intended to be an exclusionary right that is temporary. In most countries, it lasts about 20 years from the date you file for a patent. Its sibling, copyright, has a much longer life, extending up to seventy years after the death of its creator. This means that if Beyoncé Knowles-Carter lives until age ninety, then her song 'Bootylicious,' which she cowrote in 2001 at age twenty, would be in copyright protection until 2141. A right that lasts for 140 years can hardly be called temporary.

The temporary nature of patent protection is important. First, it creates an incentive for the innovator to do something quickly to get the product out to market. The longer they wait, the less time they will have the market to themselves. Remember, the goal is to get the innovation out there - by publishing its technical details, and putting it onto the shelves for sale. The second reason for temporariness is that once the patent runs out, people who want to use it in the market, or critically, innovate and build on top of it, no longer need to ask for the permission of the original inventor.

It is worth exploring this second notion more carefully. When Thomas Edison patented the incandescent light bulb, he succeeded in blocking competitors who offered products that in fact improved on his original design. The Wright brothers patented their aircraft design and became so litigious that one of their rivals joked that a person jumping in the air and waving their arms would get sued. Not surprisingly, the Wrights were more successful in blocking follow-on innovation in US courts than in France or Germany.

The Wrights' focus on litigation over innovation has been cited as the reason why European aviation was far in advance of US aviation innovation by the time World War I started. Only when the US government intervened were the patent issues resolved with US manufacturers pooling their patents and licensing to each other. But had the standoff persisted, it would have resolved itself with the expiration of both sets of patents (which at the time lasted for seventeen years).

Permissionless Innovation

Because invention is inherently uncertain, society wants to minimise the roadblocks that we put in the way of innovators. Intellectual property law aside, some new innovations face problems due to outdated bylaws, risk-averse company cultures, and regulatory processes that focus only on the potential downsides. The more people you have to persuade, the more forms you have to fill out, the harder innovation becomes. As rear admiral Grace Hopper famously put it, "It's easier to ask forgiveness than it is to get permission." In his book Permissionless Innovation, George Mason University's Adam Thierer refers to this as 'Hopper's law.' The notion of permissionless innovation has become one of the core ideas that economists use to think about

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promoting innovation.

Underpinning the notion of permissionless innovation is the principle that innovation should be judged innocent until proven guilty. Since encouraging experimentation has significant social value, the regulation of new ideas should move carefully. Laws that stymie new innovation should be based on evidence of concrete harm, not speculation about the worst-case scenario. Rules that create friction can have large effects. Researchers found that when Norway created a friction on innovation - abandoning the 'professor's privilege' that allowed university researchers to commercialise ideas without permission from their institution commercialisation rates fell by 50 percent. Permissionless innovation bolsters the idea of a 'regulatory sandbox' in which new financial technology innovations are given temporary permission to operate on a small scale.

A favourite question we ask students is: when do you think the answering machine was invented? Most remember that 1990s sitcoms such as Seinfeld had answering machines as part of the plot, so they think it was in the 1970s or 1980s. In fact, it was 1934. The answering machine was invented by AT&T, which at the time had a monopoly over US telephone services.

It was under AT&T's research arm that Clarence Hickman showed how to use magnetic recording technology to record a phone call. The technology operated just like the answering machines that appeared half a century later. It answered the call with a message and then allowed the caller to leave their own message to be played back later. When the caller hung up, the machine would disconnect.

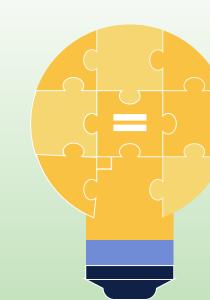
Despite all this, AT&T did not produce anything like an answering machine until the 1950s. This was despite continual customer requests for the product. This seems surprising. The missed call is as old as the call itself. For several decades, though, AT&T executives not only suppressed their own use of magnetic recordings with regard to telephones but also actively blocked others from trying to do the same. They did not want calls recorded.

Why not? The answer was a fear and a theory. They feared that if people knew calls could be recorded, they would be reluctant to make them. And what is better evidence that calls can be recorded than an answering machine? As one manager wrote, "If at any time there was a reasonable probability that such a device [i.e., a magnetic recorder] was connected at one end or the other, it would change the whole nature of telephone conversations and would, in our opinion render the telephone much less satisfactory and useful in the vast majority of cases in which it is employed. It would greatly restrict the use of the telephone."

This is an age-old fear: privacy. If people are worried that their conversations will not be private, they might not talk at all. The AT&T executives had no proof that their concerns were founded; that is part of the uncertainty that can surround innovations. But they were happy enough with their monopoly, which endured until antitrust regulators split the company into seven 'Baby Bells' in 1982. When you're the dominant player in a multibilliondollar market, why experiment with a new invention that might undermine people's comfort with telephones?

We know now that these fears were overstated. When answering machines became available, people adopted them without losing confidence in the telephone system. But because AT&T worried about the recording of calls, it moved to suppress its own extensive innovations in magnetic sound recording. The applications of that technology extended well beyond answering machines. Ultimately, German researchers commercialised magnetic recording and came to dominate the industry. The intrepid AT&T research team that built magnetic recording did not have permission to take its invention beyond the company's walls. Concentration has its downsides.

From 'Innovation + Equality: How to Create a Future that is More Star Trek than Terminator' by Joshua Gans and Andrew Leigh.





I joined Thermax on 12th September 1994 in the Process Heat Projects Division of the Engineering department, which was newly formed for bi-drum boilers. My journey in Thermax spans from the era of using a drafting board with rotring pens/stencils/procircles to cloud sharing of the Tekla model, 3D PDF generation of Tekla model of boilers as required in today's digital world.

There are many memories of Thermax that have been built over the years. One of the happy times was in 2004 when I visited our Ooty holiday home with my family of 7-8 members. Here, we happened to pay extra to the rickshaw driver but couldn't understand the local language that he spoke. One of the caretakers at the hotel room helped us understand the issue, and we could get the extra amount back. It was indeed an experience of goodwill.

One of the key learnings on projects happened in 2005 when I got trained on the Tekla Structures - software for 3D modelling and generating 2D drawings of industrial structural buildings for boilers / pipe racks or any other equipment support. This was a very useful tool, and we implemented the software for various projects. In 2010, I was nominated as the Tekla software beta tester (a Thermax representative) by Tekla.

I have had the privilege to design the boiler structure for various prestigious projects such as P. T. Cabbot (Indonesia), Foster Wheeler (modularised flue gas cooler assembled at Mundra shop, transported on SPMT to Mundra port, and shipped to Samref Saudi Arabia), Daelim (Ma'aden Saudi Arabian mining co.), Reliance (HRSG), to name a few. I am proud to have been a part of one of the largest projects in Thermax's history - the delivery of the largest shipment of plug and play modules to Dangote, Nigeria in 2019. The modularised flue gas cooler assembly project of Foster Wheeler and the Dangote project were selected as the winning projects for the N.D. Joshi award in the respective years.



Appreciation received for individual contribution to the Dangote project and for model designing from Tekla Softwares

In 2020-21, I got to work on a similar project to Dangote, called PEMEX – two modules were modularised and assembled at Mundra, and transported on SPMT to Mundra port, and shipped to Mexico. This was a challenging year for all of us as we were forced to work from home due to COVID-19. Using today's technology (Wi-Fi and cloud sharing), and with the help of the Tekla software, we could continue working uninterrupted.

I owe a lot to the company. It has helped me grow in life. From riding

a second hand bicycle and living in a rented chawl-type house before joining Thermax to today owning a car and a flat, I believe Thermax has helped me to come a long way.

Another aspect I appreciate most about the organisation is its culture. Throughout my career, I have also pursued my hobbies of playing cricket, table tennis, carrom board and even photography. I believe in upgrading my skillsets and learning new things consistently to become a better version of myself. I have also encouraged my children – son, Nachiket (22) and daughter, Noopur (15) to pursue their interests in arts.

On 12th September 2019, I completed 25 years of service in Thermax. For this memorable day, I had asked Nachiket, who was then pursuing his degree from the National Institute of Design (NID), Andhra Pradesh, to create a design/ icon to mark the occasion. He designed a logo within half an hour!

Nachiket explains, "While ideating the logo, I had to break down the number 25 into basic shapes. While doing that, I realised the number already had the Thermax logo hidden in it. I just had to make it more evident."

The logo was displayed, and much appreciated during the online interaction held in December 2021 for employees who have completed 25 years of service. It was a proud moment for me! Before I conclude, I want to thank all my senior managers – the list is extensive, but I would like to mention a few names – K. Vishvanathan, P. K. Chakraborthy, V. K. Unnikrishnan, Kavitha-Ratnam, Anil Patki, Ajay Hantodkar, B. V. Kamlekar, Basant Kumar Mohapatra, Mayuresh Joshi, Parag Atre and Sanjeevan Joshi. My tenure at Thermax has been rewarding due to them and my colleagues with whom I have worked for the past 25 years.

A big thank you to all!

- Dinkar Kamtekar

TBWES

Career 'Lift' Kara De

The human mind has the power to analyse, explore and decode many hidden secrets/treasures of nature. Historically, mathematicians have been amused by geometric shapes like circles, ellipses, cylinders, spheres, cones, etc. and the scientific community learned to use them in industrial products. Engineering equipment like vessels, tankers, tubes, reactors, piping etc. - all follow particular geometric shapes. Mathematician Max Munk discovered a shape that opened infinite possibilities to lift the machines heavier than air and forever changed the way people travel.

This shape called 'airfoil' can generate more lift with significantly less drag.

The major forces acting on airfoil are thrust, gravity (weight), drag and lift. For an aircraft, thrust is provided by the engine, and the airfoil shape provides the required lift to reach the sky by balancing the drag and gravity acting on the aircraft.

Modifying the airfoil shape resulted in a boon for the aircraft industry in the 20th century.

During an air journey, the most magical moment is the first lift achieved by thrusting the aircraft on the runway and pushing against the gravity pulling it down. Here,

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Wing with curved profile - Generates lift Tail - Balances movement and change in altitude Streamlined head reduces drag

the role of the airfoil is to provide the required first lift. The thrusting aircraft without an airfoil shape, probably will just remain as a massive vehicle on the wheels. To transform it into an aircraft, the shape of the airfoil has a significant role.

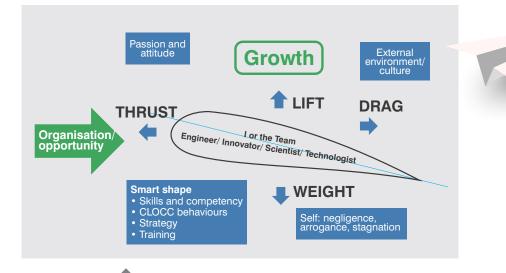
Similarly, the theory of the 'aircraft lift' can be applied in our life to achieve our career aspirations. If we observe the professional trajectory of some successful individuals who have been able to reach the top of their organisations in a short time frame, we can see their drive to excel. The same holds true for today's startups that strive hard to convert the proof of concept into a 'unicorn'.

How are some able to make that mark by lifting their professional career trajectory? Let us again examine the forces acting on the airfoil.

We will use an analogy like 'thrust' and 'lift' to represent positive

forces necessary for professional growth, and 'drag' and 'gravity' would represent negative forces opposing growth.

Thrust in an aircraft is provided by the engine. As for professional growth, the person is the engine, while the fuel is his/her passion and attitude. To achieve higher professional goals, you should have great passion, vision and a positive attitude (high calorific value). As explained by Sadhguru, an eminent yoga guru and spiritual leader, the human mind is a combination of four major parts - *buddhi* (intellect), *manas* (memory), *ahamkara* and *chitta (mind without memory - pure intelligence)*. *Ahamkara* is not ego but the identity of a person's personality. *Buddhi* is the intellect that helps *ahamkara* to take a proper shape by supporting it. Hence, one should use this





ahamkara very positively and constructively. In Indian philosophy, this ahamkara is developed by saying aham brahmasmi which means I am the cosmos. When you train your mind in this way, you break the boundaries and become limitless or infinite just like the cosmos. Buddhi and manas (fuel) help you to achieve that path of infinity.

'Drag' is the negative force which actually drags you backwards from your professional career path. It is created by the external environment and sometimes by forces that are beyond your scope. We should be aware of it and should make efforts to reduce its impact.

The weight/gravity concept is psychological in this reference. During the course of a person's professional journey, a lot of 'weight' of arrogance, biases, judgements, and beliefs accumulate, which can lead to stagnation. These added weights try to pull you down, and it becomes very difficult to achieve the desired lift.

The airfoil's smart shape helps to generate lift. Let's try to connect this with our professional life. Fundamentally, it is the core quality of a professional to get that required lift. It is an outcome of a person's effort to shape his/her career. This is reflected in the way the person approaches problems. Hence, the airfoil approach becomes the core quality of a person.

In Thermax, this attribute is defined under the CLOCC behaviours —

Customer centricity, Lead, Own, Create and Collaborate. Along with an excellent performance spirit, the person should be able to exhibit the



above valuable behaviours as well.

Michelangelo was a famous sculptor and painter in the 15th and 16th centuries who got the opportunity to work as a sculptor in St. Peter's Basilica, Vatican City. He started his work when Leonardo da Vinci had immense influence, but he could make his mark in history by creating masterpieces like Pieta and the painting of the Sistine Chapel ceiling. After creating Pieta (Virgin Mary holding her dead son) at a very young age, people asked him how he could create such a beautiful sculpture. He replied, "I saw the angel in the marble and carved until I set him free."

He only removed the unwanted parts from it. It's indeed a great

inspiring thought. Similarly, the 'smart shape of the airfoil' resides within each one of us, and we just need to remove that extra unwanted part.

When the engine (you) is fired by fuel (passion), you have got the smart airfoil shape (attitude), and if the engine remains fit (positive attitude), then even if the weather is turbulent (obstacles), what is guaranteed is the 'lift' (growth path). Grab the opportunity by keeping your wings firm to propel with that lift and keep thrusting to new heights.

In the end, when you realise that you are about to exhaust your fuel (retirement), thank the people who supported you, the organisation for the rewarding opportunity, appreciate yourself for the value you created in this journey and finally take a nose dive (*'natmastak'*) in gratitude to land safely.

Be proud of the wonderful journey called 'flight'.

- Dr. Devkumar Gupta RTIC



Slice of Life

NASA Researcher Finding Ways to Turn Down the Heat in Cities

Rooftop gardens and greenery can help ease some of the severe heat in cities, according to research from climate scientists at NASA's Goddard Institute for Space Studies (GISS) in New York. For several decades, researchers have promoted replacing black tar and other dark-coloured roofing materials with bright, sun reflecting surfaces or 'green roofs' full of plant cover. Now they have used freely available satellite data to measure how effective these changes are.

Heat is often intensified or amplified in cities, a phenomenon known as the urban heat island effect. Asphalt, concrete, and similar materials absorb and retain significantly more heat than vegetation, so temperatures in urban areas are often 10 degrees Fahrenheit hotter than surrounding suburbs or rural regions.

Green roofs are designed to harness the cooling power of plants to lower the temperature in city spaces. The greenery may be extensive (shallow soil, lowmaintenance plants) or intensive (deeper soil, more diverse plants and trees).

The GISS team studied three sites in Chicago to see how green roofs affected surface temperatures around those buildings, and whether there was a difference between those sites and others nearby without green roofs. Two of three green roofs in the study reduced temperatures, but results indicated that effectiveness may depend on location and plant diversity, among other factors. The results were recently published in the journal - Sustainable Cities and Society.



And this pun picture



Source: Corporat Comics

Source: NASA's official website

National Safety Week observed across factory locations

Thermax observed the National Safety Week from 4th to 11th March with the theme - 'Nurture Young Minds, Develop Safety Culture'. The campaign aims to renew the commitment of employees and the general public to perform their activities safely without any incident throughout the year, with the ultimate objective to integrate Occupational Safety and Health (OSH) into work culture and lifestyle.

A variety of events and activities were organised across Thermax's factory locations and customer sites during the week. These included safety oath at the workplace, a drawing competition for the employees and their families, an online safety quiz for employees, CPR training for spouses of employees, a drawing and safety equipment exhibition, among others.





Employees take the safety oath at Shirwal factory



Safety gallery displayed at Shirwal factory

The 'Chalta Bolta' safety quiz conducted at Paudh factory

A safety awareness skit performed at Paudh factory



CPR training for the spouses of Thermax employees at Chinchwad factory





4th to 11th March 2022 **NATIONAL SAFETY** WEKNURTURE YOUNG MINDS WEEKDEVELOP SAFETY CULTURE सुरक्षा संस्कृति के विकास हेतु युवाओं को प्रोत्साहित करें

