

PROPEL

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**Continuous
Learning for
Continuous
Growth**

A RANE GROUP PUBLICATION



The World of Rane

Rane Holdings Limited (RHL)

Rane Brake Lining Limited (RBL)

Rane Engine Valve Limited (REVL)

Rane (Madras) Limited (RML)

- Steering & Linkages Division (SLD)

- Light Metal Casting India (LMCI)

- Rane Auto Parts (RAP)

- Rane Light Metal Castings Inc (LMCA)

Rane NSK Steering Systems Private Limited (RNSS)

ZF Rane Automotive India Pvt. Ltd. (ZRAI)

-Occupant Safety Division (OSD)

- Steering Gear Division (SGD)

Rane Holdings America Inc. (RHAi)

Rane Holdings Europe GmbH (RHEG)

Rane t4u Private Limited



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INSIDE THIS EDITION

Henry Ford said, “Anyone who stops learning is old, whether at twenty or eighty. Anyone who keeps learning stays young.”

If there is one thing we do from birth to death, consciously or unconsciously, it is learning. Some lessons are learnt the hard way. But with mentorship and guidance, we can learn in a more structured way, taking us to the next step in our journey with greater ease.

The Rane Group recognises this wisdom and has invested consciously in the Learning and Development of its employees. The learning is both skill-based as well as with the intention of honing future leaders.

The *Cover Story* elaborates Rane's philosophy, programmes and the impact of Learning and Development on the company and its employees.

Dr. N Saravanan, Chief Technology Officer, Ashok Leyland, shares his view on the developments in the future of mobility in the commercial vehicle space and how the OEM is preparing to meet the uncertainties in the *Outside In* section.

This time, we explain the workings of the engine valves in Know the Product. Some of the other regular features covered in this issue include the *Employee Spotlight*, *Rane for Good* and *News @Rane*.



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Customer Awards

Rane was the proud recipient of several prestigious awards given by the customers. These include:

LMCA received the “Best Supplier Quality (2021) – Gold Award” from LG Electronics



RML was given the Appreciation Award for achieving “Zero PPM” during the year 2019 & 2020 by Daimler Commercial Vehicles



REVL also received the Appreciation Award for achieving “Zero PPM” during the year 2020 from Daimler India Commercial Vehicles



Women's Day Celebrations at Rane

Rane's diversity policy has resulted in a rise in the number of women employees in the company over the years. March 8th, Women's Day, was just an excuse to bring them all together to honour them and make them feel special.



Continuous, Meaningful Learning to Meet Agile Business Needs

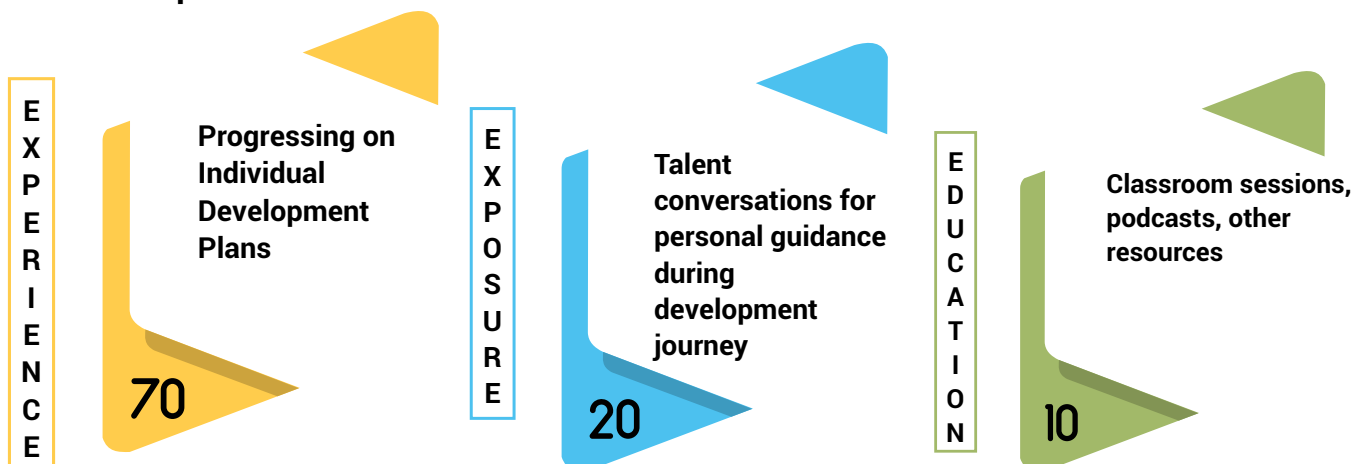


Learning today has become a business-critical priority, especially when business conditions are agile and uncertainty has become a norm. In this context, Learning and Development (L&D) calls for a holistic strategy that adds significant business value as well as creates meaningful experiences for employees.

At Rane, a holistic L&D agenda is in-built in our HR Vision and 'Employer Brand Promise' that commits to offering challenging assignments, learning and career growth opportunities for all our employees.

The foundation of the L&D practices in any organization depends on the robustness of the L&D architecture. A well-crafted L&D architecture results in building leadership capability and capacity as well as contributing to better talent engagement, improved

3E Development Framework





On an average, Rane Institute for Employee Development (RIED) delivers 40,000 learning hours annually covering leadership, behavioural and technical programs. RIED is a silver certified green building (certified by US green building council), equipped with state of the art facilities.



Established in 1995, RIED's vision is to build core competencies for individual and business excellence by identifying and nurturing internal talent, facilitating development of rich intellectual capital and enabling creating of robust leadership pipeline.



retention, accelerated performance, higher succession cover and, finally, competitive advantage.

Enabling Growth and Innovation

The learning landscape is changing and the learning of the future must be closely aligned with overall strategies for businesses to drive and support the growth agenda. The focus of learning is going to be on building leadership to deal with uncertainty, navigate ambiguity and craft intrapreneurial and innovative culture. An agile L&D function is the need of the hour to sustain an agile organization.

- At the entry-level, the focus is mainly on achieving results and hence the learning effort is on building competence in quick time. The emphasis here is on enhancing domain knowledge while on the job and preparing for managerial skills through mentoring. The engagement agenda is more aligned towards creating career experiences in line with the aspirations of the individuals.
- At the mid-level, the focus is on people and process leadership. The learning programme,

therefore, is designed around developing deep domain expertise, collaborations and driving innovation. Effective coaching and participation in high-impact CFTs enable the application of learning in a more meaningful manner.

- At senior leadership levels, the focus is on driving business results and future readiness, calling for a shift in the learning focus towards strategic leadership, breakthrough innovation and building leadership.

While there is a multitude of delivery platforms for L&D, learning on the job is the core, with several layers of plug-ins like classrooms, professional forum memberships, CFTs, coaching, mentoring, guided readings, apps on smartphones, MOOC etc.

Targeted Training Programme Design and Delivery

Co-creation through a rigorous participatory process is the underlying philosophy in designing any intervention/programme. The groundwork begins with drawing inputs and insights from focus group discussions involving the leadership team, a crosssection of the organization, domain experts and specialists.

Adopting the 3E development framework, interventions are co-designed and delivered by partnering with top-notch consulting firms and various institutes of repute.

Building Technical Expertise

Rane Manufacturing Systems Professional (RMSP)-Advanced is our flagship programme launched with the objective of building manufacturing capability. The Gemba-based learning intervention is for employees in Manufacturing, Manufacturing Engineering, Quality Assurance and Plant Engineering at junior and middle management levels.

The 24-month intervention consisting of modules in Manufacturing Processes, Manufacturing Systems–Common and Function-Specific and Advanced Manufacturing is facilitated by internal and external resource persons. Application of learning and effectiveness is tracked through action-learning projects evaluated by an internal and external jury member team. The coverage so far is at about 45% of our employee pool who have worked on 180 projects resulting in substantial cost savings.

RMSP-Basic is a recently launched initiative with the objective of expanding the employee pool coverage. It is delivered in a crash course format combining Gemba-based learning and virtual instructor-led sessions, spanning over five months.

Enables Transitioning into Leadership Roles

Our leadership development interventions aim at strengthening leadership transition at different levels of the organization. Talent reviews are held with the leadership team to identify high-potential talent. The individual's past performance and potential form the basis for participation in the intervention and the process is facilitated by HR.

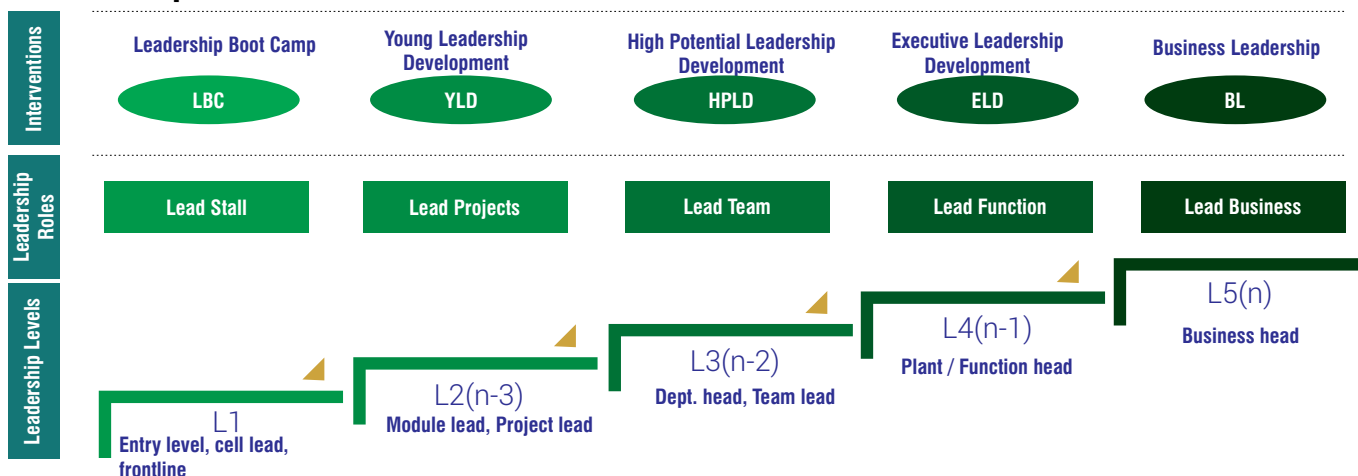
Four customised interventions are

designed to enhance the identified leadership competencies and facilitate the role transition. The Leadership Boot Camp is to strengthen the engagement of the entry-level talent for swift assimilation and high performance. Young Leadership Development intervention is to enable matured individual contributors and first-time managers to successfully transition into their new roles. Design and delivery include personality assessment, case studies on specific topics, role plays, in-basket exercises, group exercises and cross-functional collaboration.

The objective of High Potential Leadership Development is to enhance leadership capability of high potential talent at the middle management level and enable them in transitioning to Function/Plant Leadership roles. Leadership potential is explored through a development centre with multiple tools like role-plays, case-studies, in-basket exercises and behavioural event interviews. Developmental experiences such as 360-degree feedback, experiential learning, management development programme at a reputed institution and action learning projects to solve specific business challenges augment the learning journey.

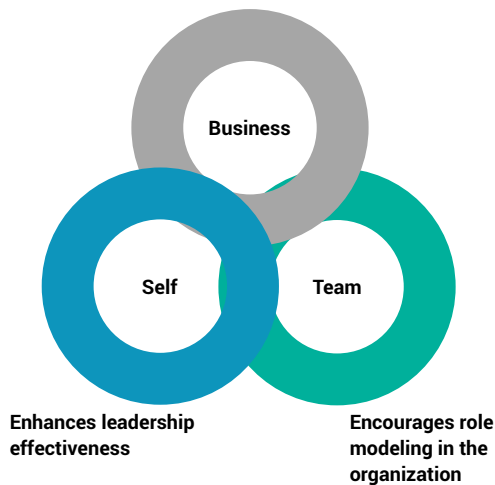
“Leader as Coach” intervention focusses on cultivating an

Leadership Interventions





Enhances leadership
quotient of the organization



appreciation of behavioural changes and encouraging the culture of development through effective performance development conversations. The learning from the 10-month long intervention helps participants in leading and collaborating with teams and driving critical outcomes.

Creating a Pipeline of Leaders

As the John C Maxwell quote goes,

“The single biggest way to impact an organisation is to focus on leadership development.” The outcome we envisaged was enhancement of ‘Next Level Readiness of Leadership’, which in turn will strengthen the leadership pipeline, ultimately leading to higher succession cover. Presently, 21% of our employees are on the leadership development track and the succession readiness for critical positions is at 31%

Reimagining Learning During the Pandemic

The pandemic led to major changes in how we delivered learning as face-to-face learning hours dropped and virtual classroom and e-learning hours grew. Employees consumed learning online through our ‘Learning Management System’-a technology platform that shifts the learning approach from instructor-led to learner-centric. The platform facilitates management of the entire learning cycle by enabling self-nomination culture, providing multiple learning methods and aids in tracking an individual’s developmental needs. Personalised learning courses that are a mix of online learning courses, eLearning modules, supplemented by virtual resources such as videos, presentations, articles, books and podcasts enabled learners to access learning at any time.

Despite the pandemic, we remained committed to on-the-job learning experiences. Reimagine to Reposition has been our ideology.

Agile, Adaptable Learning Programmes from **RIED**



R. Venkatanarayanan, President - HR, IT & CSR, Rane Group, shares Rane's vision, challenges and strategies for learning and development for its employees in today's post-pandemic world

Can you share the underlying philosophy that drives skill development at Rane?

The founders of Rane dreamt of becoming a talent factory to build people, who in turn would become building blocks of sustainable growth. This dream came true with the establishment of the Rane Institute for Employee Development (RIED) in 1995, which serves as our leadership development centre. RIED acts as a key enabler in our journey towards pursuing business excellence through its vision of Building Core Competencies for Individual and Business Excellence. We have come this far by making our L&D processes an integral part of business strategies and their implementation. The L&D needs of the entire

group flow from people development needs that ensure effective implementation of strategies. Combining talent and technology is the key.

How has Rane adapted to the social distancing and lockdown for delivering the programmes?

Agility is the word that comes to my mind, particularly around delivering training virtually – we had done a little before the pandemic, but suddenly it was our only option.

We redesigned a lot of our training programmes, created byte-sized content for learners to consume and leveraged our learning management system platform to deliver programmes. Virtual learning lends itself to much shorter sessions, so one can make more use of spaced practice while creating opportunities for participants to embed the learning and link it with other material to make it a truly blended approach.

Learning strategy at Rane – the way we design it and the way we deliver it – has already changed significantly. It's no longer just face to face; we have a more blended approach now with online courses. We're at the end of the beginning in terms of the way learning and development have changed.

What are some of the emerging important facets of leadership development today globally?

We are seeing powerful trends reshaping the leadership development landscape. Some of the global trends witnessed in leadership development are:

- The emergence of the 'personal learning cloud' as a networked learning infrastructure. This enables the fast, low-cost creation of corporate universities and in-house learning programmes
- The second trend is the decline of the standard classroom-based programmes for executive development, such as those primarily offered by business schools and universities.
- The third trend is the rise of customizable learning



environments, through platforms and applications that personalise content according to learners' roles and their organizations' needs.

How have you reconfigured the L&D programmes to incorporate these changes?

The complexities and volatility in today's business environment and the individual context of leaders required a different approach to leadership development. It is important for us to stay relevant to the business needs and ensure our L&D offerings facilitate the growth of our employees. Some of the recent changes we have adapted in our L&D programmes are:

- Creation of personalised learning journey as part of the leadership development programmes
- Adapting offerings from MOOCs and podcast which serve as supplementary educational input to the classroom training
- Byte learnings which give a crisp summary of the key skills along with actions for implementation to enable effective skill transfer at work

What role does technology play in the delivery of the programmes?

The L&D function today is empowered with a number of tools to tackle learning – from classroom-based training programmes to mobile-based gamified learning tools,

there are a number of tools that learning strategists need to accommodate.

We have been successfully utilizing our learning management system and online Gmeet to offer many of our in-house training programmes. Blended learning is here to stay and we will continue to see higher adoption of technology in skilling our employees.

What is the roadmap to ensure that the courses remain relevant?

The way I see it, L&D must be aligned to the business needs, and we can add value to the business only when our programmes have business relevance. The "opportunity to learn" is one of the biggest reasons why employees are looking for new jobs. It means that learning is a top priority for both the employee and the employer. Today, employees are more inclined to look for relevant and effective learning programmes, both within and outside their organization. In other words, HR is no longer solely responsible for learning and development, and employees are actively participating in the process as well.

L&D will continue to design learning and skilling programmes that are intimately integrated with the typical workflow of their employees. Thus, the advent of personalised learning, which fuses learning with usual work processes seamlessly, will be relevant and help in effective knowledge application.

Employee Testimony



"The Leader as Coach intervention showed and taught us the logical approach towards coaching. Apart from helping us draw a coaching plan through a step-by-step approach, it also gave us an opportunity to practice coaching skills by engaging with one of our team members."

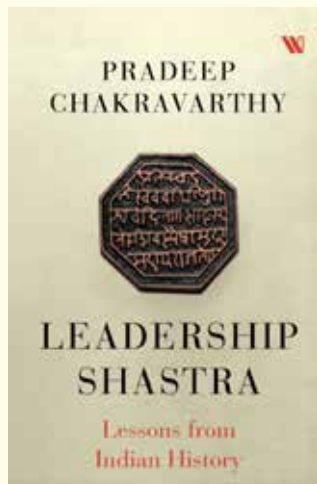
S SRIDHAR,
Associate Vice President –
Operations, Rane NSK Steering
Systems Private Limited



"The intervention helped draw deeper insights about self, both during the sessions and while practicing coaching skills. The approach used was simple, highly structured and brought out how we can hold meaningful coaching conversations by listening more and speaking less."

D SATHEESH KUMAR,
Senior Vice President – Marketing,
Rane (Madras) Limited

"Books give a soul to the Universe, wings to the mind, flight to the imagination and life to everything."



The book chronicles the lives of well-known historical figures like Shivaji, Babur, Ahilyabai Holkar, Sankaradeva and many others with a view to understanding their motivations, actions and legacies. The book examines how developing a comprehension of our past could be the key to understanding our own selves, our actions, motivations and those around us.

The session was in a panel discussion format moderated by Venkatanarayanan (President - HR,

IT & CSR) and Rajesh Raghavan (President, Corporate). Forty three senior leaders from Rane attended the discussion.

Harish Lakshman (Vice Chairman, Rane) gave the opening address, followed by the author Pradeep who shared leadership themes from the book which were useful pointers for the leaders to reflect upon. This was followed by open Q&A where the leaders shared their learnings from the book and asked specific questions on leadership to the author.

A learning organization is one where people continuously grow and develop. Especially for leaders, having active discussions and reflecting on the concepts have proven to be an effective leadership development strategy. In line with this, a book discussion session on the book Leadership Shastra, Lessons from Indian History was organised for all senior leaders on March 14 over Gmeet with the book author Pradeep Chakravarthi.



Rane QC Convention 2022 & Prof Washio Quality Award



To encourage, motivate, recognise and reward Quality Control Circles (QCC), Rane Group has been organising QC Conventions at the Group level since 2008. The 15th Rane QC Convention was held virtually on January 5, 2022. The best QCC from each of the eight businesses, selected through a business level QC Convention, participated in the Rane QC Convention.

The performance of the eight QCC was evaluated by an external jury. The QCC projects were based on the application of a systematic problem-solving approach, namely, QC Story. The Jury selected the Winner and the Runner up based on their performance using the seven steps of the QC Story approach.

The best QCC from each of the eight businesses, selected through a business level QC Convention, participated in the Rane QC Convention.

Chairman L Ganesh delivered the keynote address and the entire Senior Leadership team participated in the whole-day event. Vice Chairman Harish Lakshman distributed participation certificates to all the participants.

'Kentucky Bourbon' QCC of Light Metal Castings America Inc. won the Winner's Award and 'Priceless Brains' QCC of Rane NSK Steering Systems P. Ltd., Guduvanchery, won Runner-up Award in the 15th Rane QC Convention 2022.

The Winner of the QC Convention, Light Metal Castings America Inc., attained the Chairman's Excellence Trophy (Rolling Trophy).



Modularity, Stronger Ecosystems in Times of Uncertainty in the Auto Industry

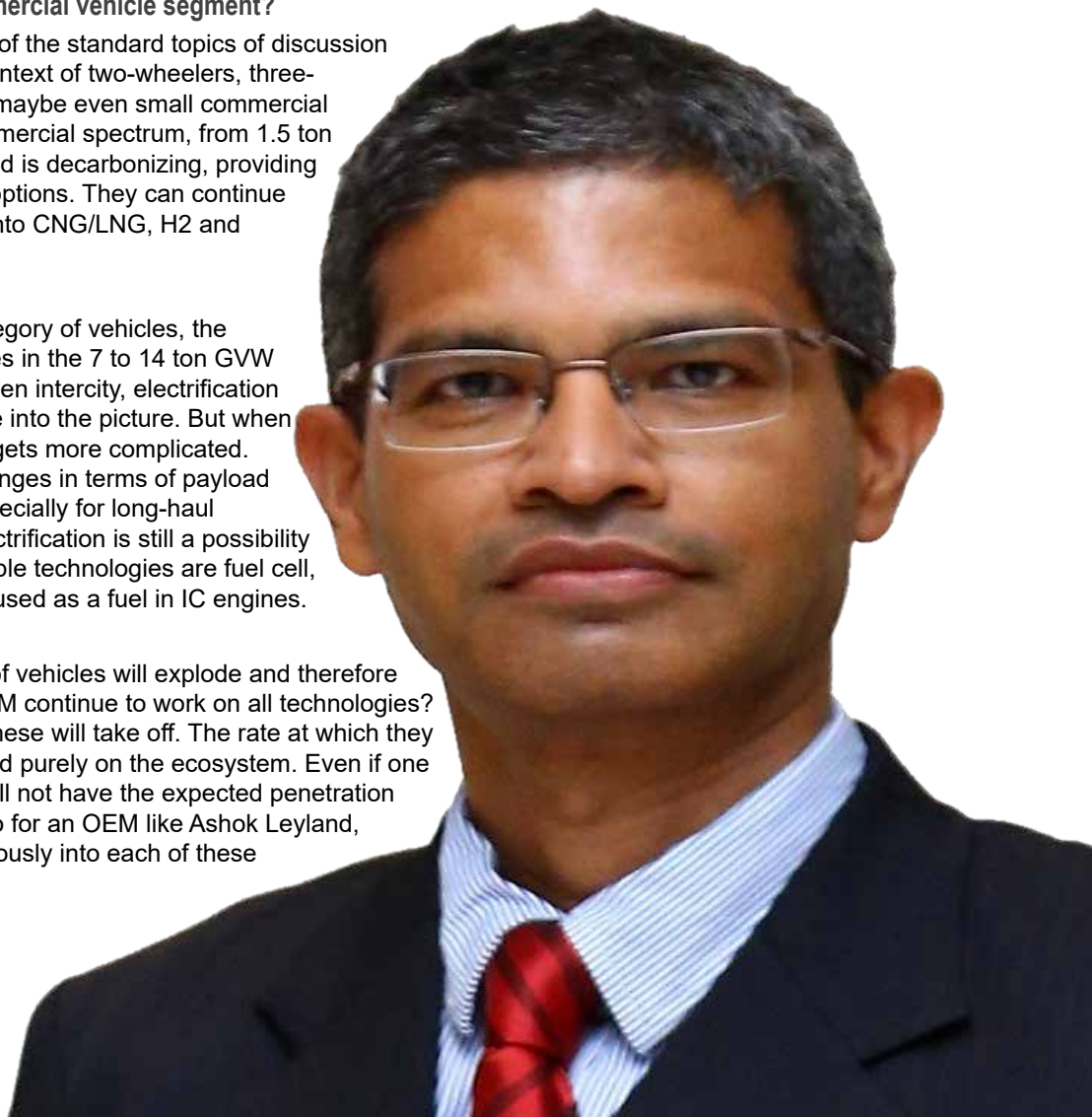
*The auto industry is abuzz with terms such as future of mobility, hydrogen, fuel cell, electrification, autonomous and more, especially in the commercial vehicle segment. As an OEM, which path to pursue and protect investments can be a challenge. **Dr. N Saravanan, Chief Technology Officer, Ashok Leyland**, shares with Rane Propel the importance of agility and modularity in meeting fast-changing needs. A strong alliance with tier 1 partners is one of the key factors in helping OEMs be future-ready.*

The automotive industry is in flux with many technological developments. How does this impact the commercial vehicle segment?

Electrification is, of course, one of the standard topics of discussion everywhere, especially in the context of two-wheelers, three-wheelers, passenger cars, and maybe even small commercial vehicles. But if we take the commercial spectrum, from 1.5 ton to 55 ton GVW, the growing trend is decarbonizing, providing users with multiple fuel/energy options. They can continue using diesel and petrol, move onto CNG/LNG, H2 and electrification.

When you look at the larger category of vehicles, the intermediate commercial vehicles in the 7 to 14 ton GVW category that runs intracity or even intercity, electrification and some amount of CNG come into the picture. But when you go to the larger vehicles, it gets more complicated. Electrification has its own challenges in terms of payload loss and the time to charge, especially for long-haul vehicles. For the short-haul, electrification is still a possibility though. Some of the other feasible technologies are fuel cell, LNG and even hydrogen being used as a fuel in IC engines.

So the choice for this category of vehicles will explode and therefore the challenge is how can an OEM continue to work on all technologies? It is difficult to predict which of these will take off. The rate at which they may enter the market will depend purely on the ecosystem. Even if one technology is superior, it may still not have the expected penetration unless there's an ecosystem. So for an OEM like Ashok Leyland, putting the right effort simultaneously into each of these technologies will be the key.



What has Ashok Leyland's strategy been to meet this challenge and create global, future-ready platforms?

If you don't want to be left behind, you have to be ready to take some risks. Since it is hard to predict which of the many technologies will be successful in the future, Ashok Leyland is working on modular platforms that are agnostic to fuel and power trains, especially in the medium to heavy-duty segment, which is 16 to 55 tons, over the last three to four years. This allows us to fit any powertrain with minimal changes. While we have invested quite a bit in diesel technology and have our own diesel engines, we are also working with partners to develop other technologies such as CNG, hydrogen fuel cell, LNG, and so on. This way, if the technology changes, then we can take out the diesel engine and put in a CNG engine easily or hydrogen-based engine with minimal changes.

What has Ashok Leyland's experience been in identifying partners willing to go with your approach to modular development?

The partners have to be willing to work with us since we will not be seeing volumes for some of the technologies like the fuel cell immediately, which may take even 10 years to get there. So the partners must be ready to make the investments now and work for the long term. We are seeing a lot of consolidation in tier 1 suppliers, who are not small anymore. Therefore, it has to be a mutual synergy. For instance, we have had a longstanding relationship with Hino for the last 30 years and that continues.

What role do you see information technology playing in the automotive industry?

In the commercial vehicle space, customers are not buying the bus

but instead buying the services. And IT plays a key role in enabling this (Mobility as a Service). All the tenders we see today are based on the service model, where the STU is only taking the services of the OEM, paying on a per kilometer basis. Now it is a capital expenditure for the OEM, who has to ensure its efficient operation. Technology is enabling identifying potential failures, especially in the case of EV buses. It can provide data around the usage of the vehicle, the driver performance and so on, which can help with other aspects such as insurance and financing as well. The data also becomes very critical in terms of diagnostic and prognostic perspectives, facilitating continuous improvement. Of course, questions of data sharing and data privacy will arise, but I think they will stabilise over time.

What does the future of mobility mean for an OEM like Ashok Leyland and for the auto components industry in general?

Mobility is going to become very competitive, very fragmented. We already discussed the question of fuel in commercial vehicles. The second is about autonomous vehicles. In commercial vehicle applications, I believe it will be used effectively in contained environments such as in the port or the airports.

When the containers are offloaded and moved, autonomous vehicles can be used for the purpose, making the process safer. Or it can be used to tow planes in the airport or carry passengers. Large mines are another area where they may be used. Maybe, in the long term, we may also see autonomous vehicles on the highway, but that's a lot more challenging and needs infrastructural support. Safety will definitely be one aspect that will drive the market as well as be the lodestone for regulations.

Since it is hard to predict which of the many technologies will be successful in the future, Ashok Leyland is working on modular platforms that are agnostic to fuel and power trains.

What will be key for OEMs as we build the future of mobility?

Being agile. Launch something. If there is a failure, you correct faster and relaunch like you do in the mobile market. Leverage digital tools to update software aspects faster and faster.

What are some of the key skills of the future in terms of talent in the automotive segment?

Mostly we are mechanical engineers but a little shift happened during BS VI as vehicles started embedding sensors and software. The key skills are shifting, requiring more cross-functional capabilities along with the ability to take risks and have entrepreneurial skills.

From a technical perspective, there is a greater demand for skills in electronic hardware, sensors and software embedded systems. The ability to integrate software thinking of modularity is becoming important.

So we pick up freshers and train them. Democratizing learning is also essential I feel. So we also hire science graduates from good colleges and train them. Of course, it's difficult to compete with startups in terms of talent. It is not about salaries alone but also retaining talent and giving them a growth path. We are not there yet, but we are doing our best.

Experiences in Production and Operations

Employees from the production and operations teams from across Rane Group companies share their experiences, learnings and memorable moments.



Vinodh Kumar M,
AGM - Manufacturing, RBL

Memorable Experiences

I got the opportunity to work with the Nisshinbo team and visited the Nisshinbo Tatabayashi plant where I learned the manufacturing process. I have implemented an automated, state-of-the-art powder coating technology in the manufacturing process.

Greatest Learning

I joined Rane in 2013 in the Plant Engineering Department, I worked with other functions through CFT and learnt manufacturing techniques. Subsequently, I led the manufacturing process. Working with the Nisshinbo team to drive the kaizen culture helped to expand my horizon. Through the KEY scheme, I have completed my PG in Manufacturing Management.

Key Contributions

I received four regional and four national awards for process improvement. Implementing innovative energy-saving initiatives helped to win the CII-National Energy

Excellence award. Implementing various productivity improvement projects and continuous improvement projects helped to win the ACMA-Manufacturing Excellence/HR Excellence award and the CII-National Safety and Environmental award. Total Employee Involvement initiatives helped to win 1st Prize in ACMA National QC competition. I worked along with the Nisshinbo team for changing the process layout to ensure smooth batch flow and capacity enhancement. We were recognised in the Nisshinbo Global conferences as part of the kaizen awards for 3 consecutive years.

Keeping Pace

Continuously focusing on DRM practices, arriving at a common goal for the team, ensuring PDCA is done wherever required in the internal manufacturing practices and processes by enabling the Dare to Try culture. Engaging with both internal and external customers to understand their unstated needs and ensure that the needs are fulfilled. Getting periodic feedback from peers, colleagues and superiors. HPLD training has helped me in practicing leadership skills and the change management process.

Rane in One Word:

Pride



Vinaya Chandra,
AGM - Manufacturing
Engineering, REVL

Memorable Experiences

Aligning the deliveries in line with customers' ramp-up plans is always very challenging to execute, especially when it is steep. This involves improvements in tooling, process and layout to balance the capacities. One such memorable experience was enabling a steep ramp-up in VECV E494 application from 3k pairs/month to 35k pairs with the execution of yield and capacity improvements in deposit and machining areas.

Greatest Learning

Working in Rane is an endless journey of learning. TQM way of working is my greatest learning. Training

programmes at RIED and HPLD learnings changed the way I look at any situation.

Key Contribution

"Focus on Non-Auto segment business" is a strategy I initiated to mitigate the risk of business loss due to electrification. Plant-6 is majorly contributing in the non-auto export business. With the support of top management, contributed to aligning and increasing exports deliveries from 1.1 lakh valves/month to 1.5 lakhs, working towards reaching 2 lakh valves.

Keeping Pace

Technology and customer requirements are changing day by day. I was given the opportunity to work in manufacturing engineering, manufacturing and operations, which strengthened my capabilities to handle the dynamic changes in the industry.

Rane in One Word

Great place to work



Manjunatha MB,
Senior Manager -
Production, RML-SLD

Memorable Experiences

My memorable experience was while working on variable-ratio steering gear (VRST) gear development for Tata Motors. This included establishing the sector shaft gear generation process in Klingenberg machine for VRST right from scratch, indigenous development of cutting tools, developing samples and testing at R&D. The capacity was ramped up from 840 to 5000 units per month. This helped strengthen the customer and supplier relationship with Tata Motors.

Greatest Learning

Learning about the Lean Production System (LPS), systematic approach to identify and solve problems and statistical tools like DOE, MVA etc. These learnings helped me understand and implement the TQM practices.

Key Contribution

Lead the team towards internal and external thread grinders capacity improvement to 46,000/month and realise the capacity up to 42,000. It has supported RML SLD to increase the SOB up to 80% in mechanical steering gear across all major customers like Mahindra, Escorts, Mahindra Swaraj, TAFE and ITL. Also, this capacity improvement was very significant in establishing the Panthnagar plant at Uttarakhand.

Keeping Pace

Since joining Rane in the Year 1998 as GAT, I have completed BE while working. Being part of Ran's MEX, RAMP and High Potential Leadership Development (HPLD) programs helped me to accept the changes and expand my roles and responsibilities. I progressively grew in the organization and am heading the manufacturing department—steering gear and linkage products.

Rane in One Word:

Great place to dare to try

Shanmuga Singh B,
DGM - Manufacturing,
RNSS



Memorable Experiences

During floods in Chennai 2015, the plant got affected severely due to water-logging inside the plant and water entered into most of the machine panels. We were unable to switch on the machine, so we stayed more than 48 hrs in the plant to get the machines working. Then we created flexibility in other machines to produce higher quantities of critical parts to prevent customer line stoppage and premium freight.

I was able to increase productivity twice by cycle time reduction in the tube forming process to cater to increased customer demand.

Greatest Learning

TQM for a systematic approach on business excellence, plant management to have control on all PQCDSM parameters and to improve further have been some of my greatest learnings. The High Potential Leadership Development Program helped me to improve my leadership quality. Technical learnings include processes

such as machining, welding, hardening, grinding, coating, painting, injection molding, rolling, punching, forming, cold forging, assembly and universal joint.

Key Contributions

Initial plant setup at Pantnagar to cater to the TML requirement played a vital role in turning around MSC business into a profitable one by improving all PQCDSM parameters. Created flexibility for producing CV products in PV products lines and increased machine utilization to more than 90%. Played a vital role in guiding the operations team to practice TQM meticulously for getting the Deming Prize in 2018 and for utilizing statistical concepts.

Keeping Pace

I keep myself updated by attending and understanding the requirements of customer needs, Industry 4.0 and digital transformation, etc. By improving the organization's internal process, productivity improved and eliminated waste. Rane has provided me with precious resources like time, money, and passion to complete my MBA which has enhanced my domain knowledge. Rane has provided training for 3 Months in NSK Japan on EPS and Plant Management.

Rane in One Word:

Challenging

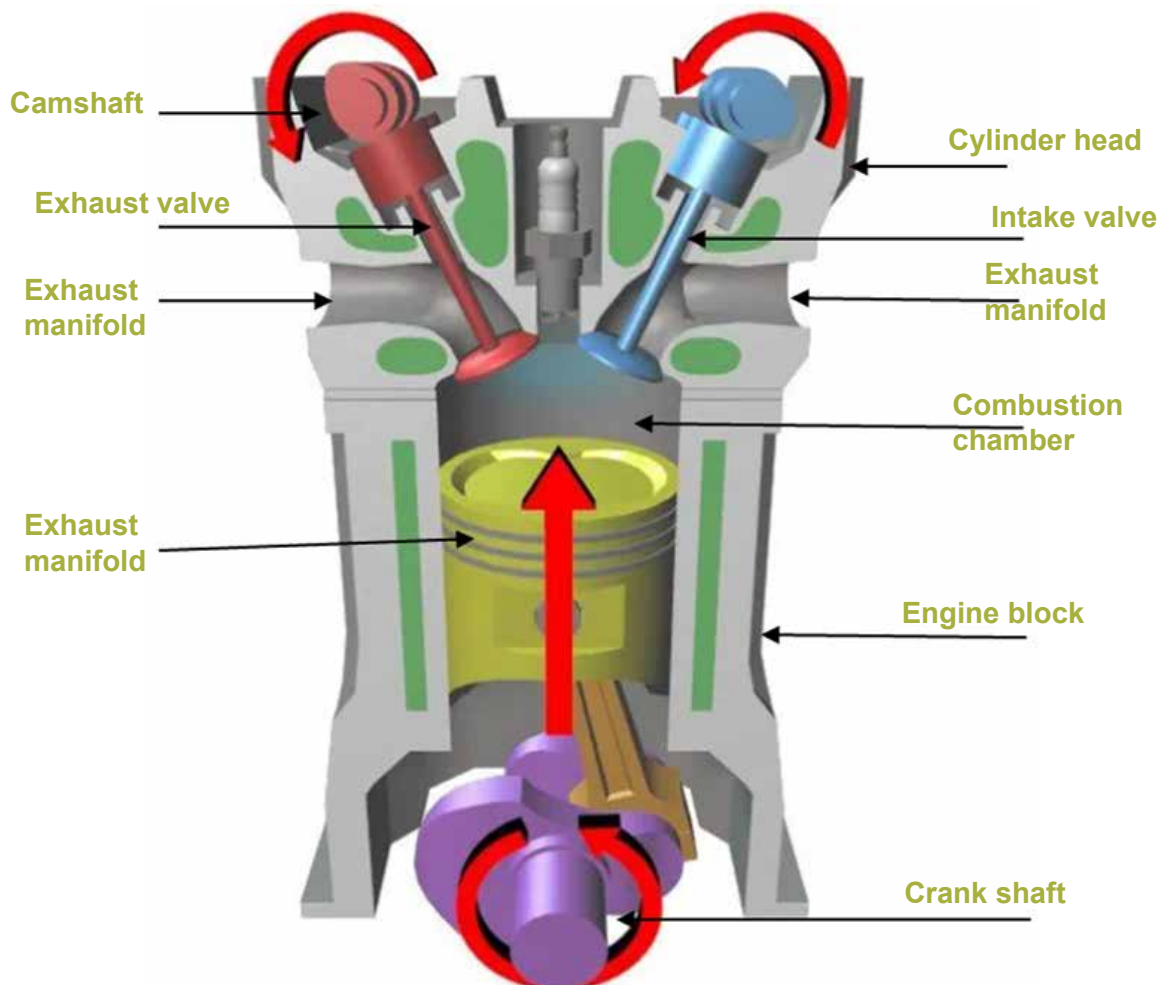
How Things Work Engine Valves

Engine valves are an important component in an IC engine. In fact, the primary work of an engine, i.e., combustion of fuel and generation of power, is controlled by the opening and closing of engine valves synchronised with the other valve train components.

The main function of the intake and exhaust valves is to connect and disconnect the cylinder head combustion chamber with the intake and exhaust manifolds with correct engine phase timing.

The main function(s) of the engine valves

A cut section of engine construction



This ensures the feeding of air/fuel mixture into the engine on one side (intake) and the discharging of exhaust gases from combustion chamber on the other side (exhaust). The intake valve allows air or air/fuel mixture to enter the combustion chamber during the intake stroke; the exhaust allows for the expulsion of exhaust gases during the exhaust stroke. Both valves act to seal the combustion chamber during the compression and power strokes. The valves are located in the cylinder head and driven by the valve train.

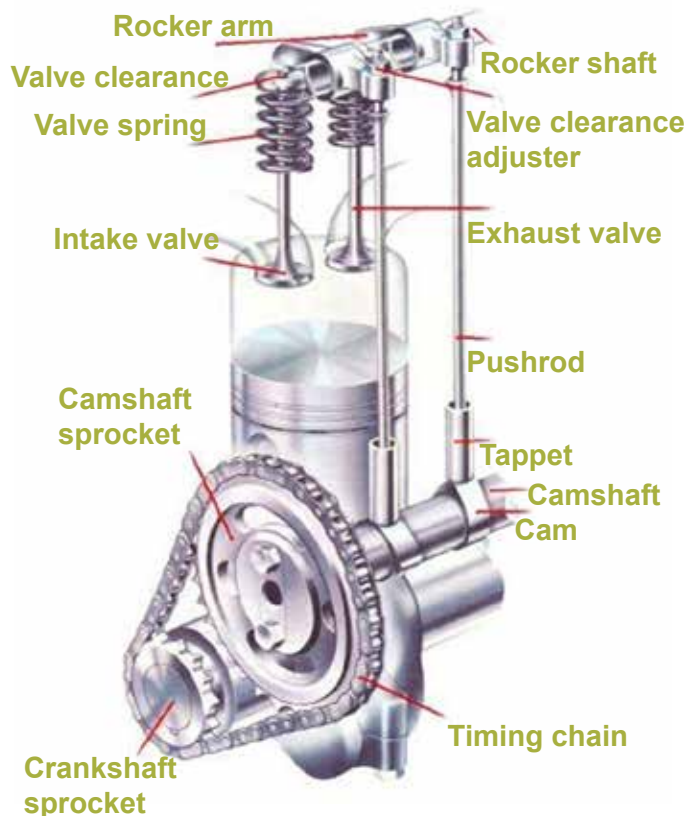
Working principle

The engine valve sits on the cylinder head of a combustion chamber. The engine coolant liquid passes around the cylinder liner and the water passages in the cylinder head. The valve pops up and down to let the exhaust gases leave the combustion chamber by exhaust valves and to let the fresh charges into the combustion chamber by intake valves.

Valve Train Assembly

The up-and-down motion of the valve takes place with the help of a rocker lever which is connected to the pushrod. The pushrod rests over cams on the camshaft.

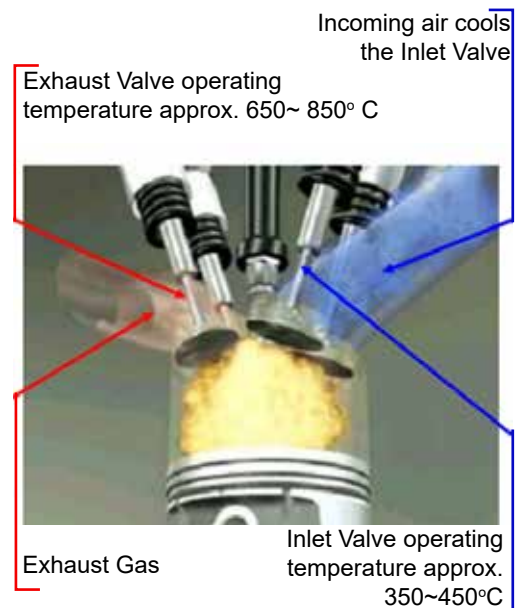
Valve Train Assembly



The valve is spring-loaded. The spring keeps the valve connected to the camshaft during its motion. After the expansion process, the exhaust gases, are purged through the exhaust valve at a high temperature, resulting in an increase in the exhaust valve temperature. In order to avoid any damage to the exhaust valve due to this high temperature, heat must be continuously taken away from the valve. This is achieved when the valve is in contact with its seat. As the exhaust valves touch its seat, a significant drop in exhaust valve temperature occurs.

Valve operating temperatures and material usage

Environment of Valve Operation



Valves are required to operate satisfactorily over long periods of time at elevated temperatures, under high stresses, and in corrosive environments. Most inlet valves are manufactured from hardened, low alloy steel and these provide strength, wear and corrosion resistance. Exhaust valves require high hot hardness, creep resistance and fatigue resistance and withstand high temperatures. In addition, the valves have to withstand the combustion pressures and valve actuation forces coming from the rocker arm.

Valve materials

The valve materials are classified as

1. Valve alloy steels
2. Super alloys
3. Hard facing alloys



Fourth Annual Day and UKG Convocation at Rane Vidyalaya

Rane Vidyalaya, Trichy, celebrated its Fourth Annual Day and UKG Convocation on Mar 11, 2022. The fourth batch of UKG children graduated kindergarten with the customary robes and marched to the “Shine Bright like a Diamond” tune.

The annual day performances by the children were based on the theme of ‘Celebrating Nature’. The theme was elaborated through dance performances from across the country: Bharatanatyam and Oyilaattam from Tamil Nadu, Dandiya from Gujarat, Bhangra from Punjab, Thandiya from Rajasthan and even Western music.

For the children coming from a rural background, it was a milestone when they enacted the English play *The Merchant of Venice*. Hindi play had a snippet from Mahatma Gandhi’s life. Tamil play was laced with humour.

The audience were spellbound throughout the programme. Recalling the journey for the past four years, correspondent B. Rajalakshmi, thanked the Rane Foundation Trustees for their support. The Principal, R. Nagarajan, read the annual report. R. Venkatanarayanan, President, Rane Corporate Services, Chennai, graced the occasion as the Chief Guest.



Rane Vidyalaya Heritage Club Inaugurated

Rane Vidyalaya Heritage Club was inaugurated by R. Venkatanarayanan, President - HR, IT & CSR, Rane Group, on Mar 18, 2022. The Rane Vidyalaya Heritage Club activities will be guided by Tamil Heritage Trust, a non-profit organization that works towards creating awareness amongst the public about the rich cultural heritage of India.

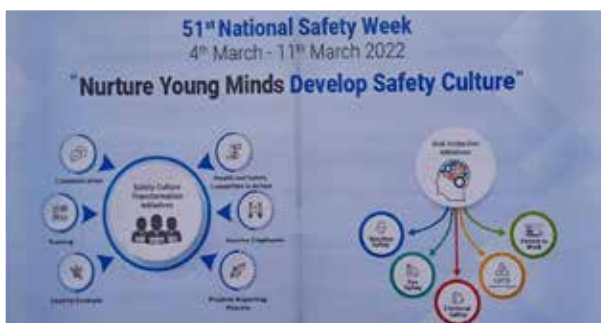
Sivasankar Babu of Tamil Heritage Trust held a workshop initiating the students through an interactive session on heritage. Rane Vidyalaya Heritage Club is expected to help deepen the engagement of the children with temple art, architecture and history through its various activities.

Marathon 2022

The Rane Group employees participated in the Chennai Marathon 2022 organised on March 6, 2022. Rane has been promoting employees' wellness and fitness through various initiatives, and enabling participation in marathon events is one of them. Since 2021, Rane Group has provided its employees with an opportunity to participate in the event, to nurture and inculcate a fitness and wellness culture.

The Chennai Marathon is the largest sporting event in Chennai. This time, there were four race categories: the 10 km, the Half Marathon (21.097 km), Perfect 20 Miler (32.186 km) and Full Marathon (42.195 km).

This year, 112 employees from the Rane Group participated in the Chennai Marathon. The majority of the participation was for the 10 km event. There were notable 17 registrations for the Half Marathon and 2 for 20 Miler.

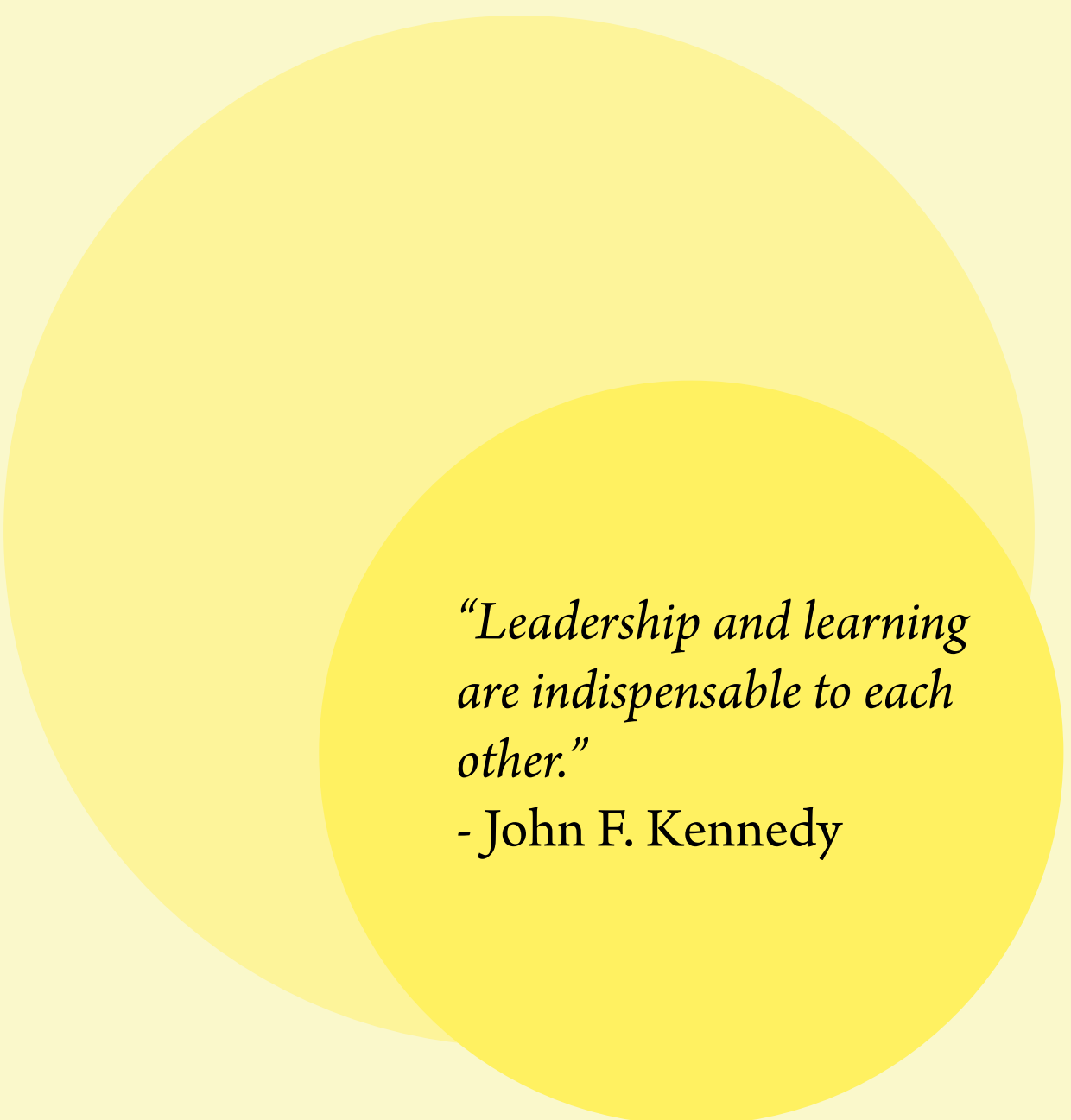


National Safety Day 2022

Every year on March 4, Rane commemorates National Safety Day with the goal of raising awareness and commitment to have a safe working environment. The week following that is observed as Safety Week (March 4 to 11).

This year, a series of participative, promotional and competitive events were lined up across locations as per the theme provided by the National Safety Council for 2022 - 'Nurture Young Minds, Develop Safety Culture'. Different external subject matter experts delivered speeches on various topics such as Fire Safety, Machine Guarding, Electrical Safety, LOTO etc. to the Rane employees.

Rane employees demonstrated their commitment to workplace safety by taking a safety pledge. Further, the month-long celebrations will encompass several programmes to increase safety awareness in the factory and other work areas.



*“Leadership and learning
are indispensable to each
other.”*

- John F. Kennedy



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