L&T Valves

V'connect

Digitalisation
Evolution, Current Trends and the Future

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COVER STORY

Digitalisation:
Evolution, Current Trends and the Future

V'connect

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V'connect

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From the **Editor**

Dear Friend,

The topic of this issue is digitalisation, but the theme is hope, recovery and the future.

In the last few months, the spotlight was very firmly on digital technologies, as they enabled and empowered diverse human activities including banking and finance, commerce, shopping, education, entertainment, health and wellness.

V-connect Digitalisation special explores the infinite possibilities that digitalisation opens up in domains that we and our associates inhabit.

Happy reading.

May your future be bright, and digital.

We welcome your feedback, and contributions

Thanks,
Babu

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Stay safe!

Message from the
Chief Executive

Dear Colleague,

I hope you and your family members are safe and have adjusted to the new normal post-Covid19.

My appreciation to all the employees who have returned to their work location adopting safe work practices.

Organisations across the world have adjusted to the new normal. This pandemic crisis has produced a plethora of changes in the way we operate and serve our customers. New habits have taken over even the ways we communicate with each other in the organisation. The physical distance between us has increased, but we are more connected with each other and with our customers through technology.

The early adoption has helped us to make more out of the crisis and our order inflow and revenues have stabilised. We will be spearheading activities to make us more efficient through digitalisation. This journey begins with the formation of the new digitalisation team and this will help us in gaining the momentum to reach our targets, improve our cost structure, efficiency and productivity.

I also remind you to follow our mantra of "One Team One Dream" in these transient times to help each other and work towards our common goal of becoming the most trusted valve company in the world.

Stay safe and stay healthy!

Regards

Mahesh Joshi

Reinventing Music, **bit by bit**

> As the world is engulfed by 'Digitalisation' – the new age Ozone; the corporate sector seems to have unilaterally assumed the vanguard-ship of this snazzy new tool. And yet, there exist other domains that have embraced digitalisation like nobody's business. This edition of Different Strokes attempts to introduce how the field of music recording has drawn itself to the cutting edge of this new technology and has always been at the forefront of embracing change.

It all must have started in the year 1877 when one gentleman from New Jersey by the name of 'Thomas Edison' invented the phonograph – the first-ever break-through in sound recording. Ever since then, sound, and music recordings in particular, have transitioned from the phonography cylinder to piano roll, gramophone record, magnetic tape (reels), four-track cartridge, compact cassette, eight-track cartridges, compact disc, MP3, DVD, Blu-ray discs, and now, to live streaming on the internet. In this piece, let us peep into the world of song production.

Overview of Song Production
What are the steps that go into producing a song? Step one is 'songwriting.' It is not just about writing poetry. Songwriting is a cohesive confluence of words, melody, and rhythm (commonly known as 'lyric meter') to manifest musical thought. The second step is 'arrangement.' Arrangement refers to the selection of instruments that would play in each section of the song, the arrangement, and sequencing of each section, the duration, the specific pieces that would play, and so on. The third step is 'tracking' (also called 'recording.') Tracking captures the performance of the song. It is the process of recording various instruments. One track gets recorded at a time, and then all tracks are played together to experience the 'song.' Step four is that of 'editing.' The goal is to get the performance recording at its best. The fifth step is 'mixing.' Mixing is the process of blending the recorded tracks. The objective is to bring out the best in the multi-track recording. The sixth and final step is 'mastering.' It is a post-production operation that optimizes playback quality on all devices and across formats.
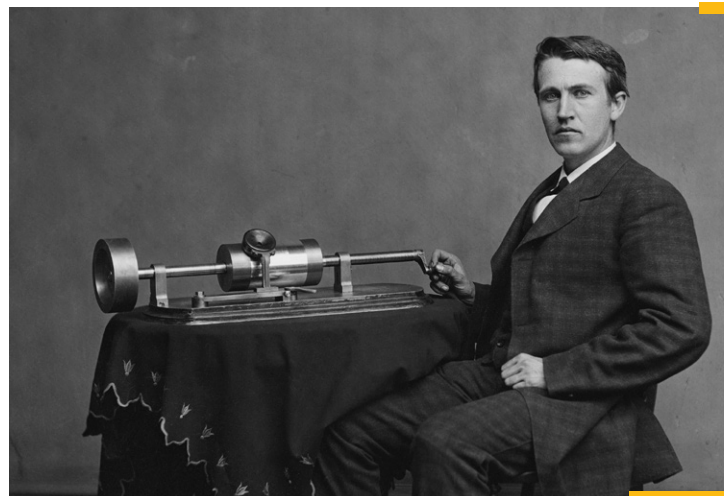
Believe me, each stage is a highly creative process, and without the creative gene, the outcome would be inaudible. And yet, the extent to which digitalisation has swept this domain is unimaginable. At every stage, the level of digitalisation achieved is phenomenal. In my view, song production is the best possible example of how humans and machines can collaborate to create 'harmony' (pun intended). One is not threatened by the other, and in turn, complements each other, creating an outcome that is larger than the sum. To see some of these technicians at work with their machines and software applications is a learning delight. Truly a remarkable depiction of creative skills combined with technical ability.

Let us pick up just a few areas in the following sections to learn a bit more.

Tracking (Sound recording)
This entire process is automated with a Digital Audio Workstation (DAW) that enables accuracy in melody and rhythm to strike 'correct' notes.

In 'tracking,' usually, a 'guide' track is created for other instruments in the beginning. It can be in the form of a simple 'click' or a pre-recorded 'loop' to set a tempo. Thereafter, the rhythm instruments get recorded as rhythm is the foundation of any song, and everyone follows the rhythm. It is followed by recording harmonies to create a chord structure (piano, guitar, etc.). With the basic chord progression in place, the next step is to record melodies (lead vocals). The interlude gaps are filled with another set of melodies. Finally, a few other flavours get added in the form of a chorus, a percussion fill or a piano fill. Indeed, song recording
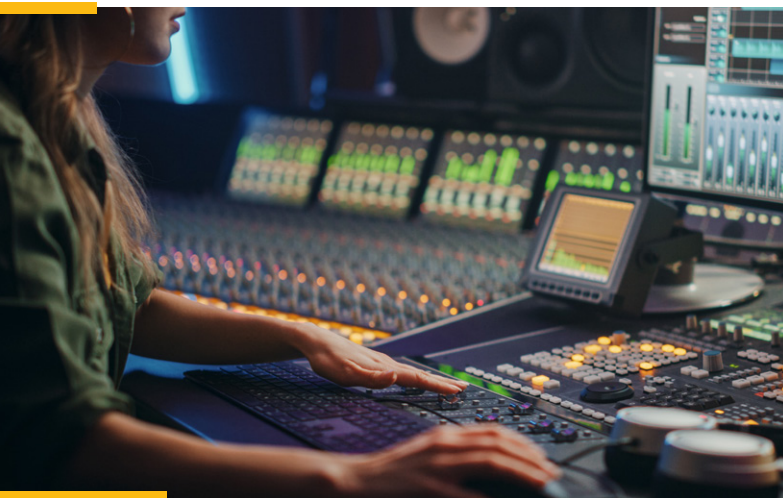
is no longer just a shift from analog to digital. The complete revamp in the process, thanks to the advent of digitalisation, is remarkable.

You might visualise a big band of musicians and singers rehearsing for days and months to get it right. Guess what, all these steps, and many more are 'taken care' by the DAWs in a matter of hours. Remarkable developments have hit this area with newer and intelligent application software (DAWs) being made available to composers and sound engineers. The DAWs come with thousands of built-in sounds, effects, pre-recorded instrument pieces (drum-beats, guitar pieces). The sound recording engineer and the composer have to collaborate in front of a machine and put them all together a-la a Lego model, albeit with a dash of musical creativity. Undoing and redoing, overwriting, drag and drop, and similar simple-looking features help the creative process beyond imagination.

One such application is Apple Logic Pro, which comes with thousands of virtual instruments, plug-ins, audio loops , and effects. The flex time feature in Logic Pro is capable of manipulating audio tempo and timing, giving 'freedom' to musicians to play around with their creative ideas (and sadly also to 'correct' a few out of tune musicians and singers). More importantly, music recording is no longer something that involves heavy and expensive music equipment. Digitalisation has helped turn computers (and even phones) into music-making powerhouses.

Mixing
Mixing involves blending the recorded tracks using processes such as Equalisation (EQ), compression, and reverb. It brings out the best in a multi-track digital recording by adjusting levels, panning, and time-based audio effects. All these with the latest digital applications.

EQ is perhaps the most fundamental and important technique of digital sound mixing. It achieves two important things. The first is to make each of our elements sound good in isolation. For example, it can subtly boost the upper midrange of a vocal piece or increase the presence of a synthesizer part to give them more weight in the audio. The second is that it makes 'space' for all the elements to fit together. Multiple elements (sounds) occupying similar frequency ranges attempt to fit in the same space and cause the sound to get muddled. EQ features allow us to clean it up and make them sound 'perfect'.

On the other hand, 'Compression' is the process of lessening the dynamic range between the loudest and the quietest part of an audio signal. Digital tools enable the boosting of quieter signals and attenuating the louder signals.

As the name suggests, 'reverb' is making the sound persist after the sound is produced. Digital tools in the DAW or mixing software allow sounds to reverberate to create the desired impact.

Mastering
Mastering balances the sonic elements and optimises playback across all systems and media formats. Digital tools are used to optimise playback quality on all devices from hi-end sound systems to phone speakers. Music has never been consumed on more formats and devices than today. These digital tools make sound device-agnostic, a truly remarkable achievement. In a way, mastering bridges the gap between the artist and the

consumer. A 'master copy' of the song is created digitally, and it is then reproduced on multiple formats like vinyl, CDs, tapes, and streaming services like iTunes and Spotify.

Digital techniques in Mastering, allow for the restoration of hisses, clicks, or small mistakes which get overlooked in the earlier stages. It renders uniformity and consistency of sound between multiple tracks in an album. It also enhances the stereo with the spatial balance (left to right). Overall, it creates a clean and cohesive listening experience.

Artificial Intelligence in Music
In Western music, there are 12 notes and 24 major and minor scales. Throw in the tempo, harmony, and articulation, and you can create millions of potential song tunes. Well, AI is right there. AI offers sophisticated yet easy to use creation tools for musicians in the form of flow machines, pixel players, and many more. These tools 'generate tunes' and aid creativity. The AI tool 'Yona' built by composer Ash Koosha does not only compose music but also sings lyrics.

Recommendation algorithms (popularized by Amazon) suggest music that may be of the listener's interest are in rampant use by music streaming services like Spotify and Apple Music. Recommendation AI does this by picking songs from playlists created by other users who share a similar taste. Spotify has more than 2 billion playlists in its repertoire.

AI tools can derive insights beyond just listening preferences. It tracks listener preferences in areas such as food, fitness, and similar others to target the delivery of promotions and advertisements.

What more, AI tools also provide helpful insights to music companies by analysing what is likely to be popular! The songs that are frequently picked and the ones which are frequently skipped by the listeners, provide the basis for drawing such inferences. After determining the favourites in this fashion, AI tools then marry that with demographic information too.

To conclude
Right from songwriting to recording, from composing to editing, and from distribution channels to media platforms, the entire domain of music is deep into the high-end of digital technology.

AI, digitalisation, and machine tools have democratised the creation of music, reshaped music marketing and distribution, transformed the way music is consumed (streaming services like iTunes, Spotify are a case in point), demolished the barriers that existed between different areas of media such as films, music, fashion, shopping, gaming (e.g. Amazon Music, YouTube, Tik-Tok) and has unified them. Personally, democratizing music creation, in terms of making it available and affordable to one and all, is the most profound of achievements to the credit of digitalisation.

The internet has already transformed the music business. Democratisation and collaboration have become the order of the day where it is easier to create music and that too of extremely good quality. Streaming is riding the markets, giving millions easy access to music, and in a way, has converged the whole world into a single market-place for itself. Moreover, spotting the trends and preferences ahead of time is a great enabler for any music enthusiast.

Having said that
This piece does not in any manner, wish to commoditise music or make the slightest suggestion in that direction. Nor does it wish to make music look like a 'computerised' process. Nothing in this world can substitute creativity and art. Yet, digitalisation is one hell of a tool to perfect this art. That is its rightful place.

More so, this is an attempt to help LTVL'ites to seek excellence in digitalisation beyond shop floors and manufacturing in general.

Happy Listening!!!

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Digitalisation
Then, Now and Next

Yaser Ahmed Palikonda Latheef traces the evolution of Industrial Revolution, from Mechanisation to Digitalisation, and provides a sneak peek into the exciting digital possibilities at L&T Valves

Then

In the 18th century, humans were able to run machines on a large scale by rotating a wheel using steam, and in some cases, water. This marked the first industrial revolution (Industry 1.0): mechanisation, improving productivity by leaps and bounds. While previously, an activity was completed manually, with the advent of the first industrial revolution, mechanical energy provided a way to increase the output without the need for men to turn the wheel.

By the 19th century, electricity could be generated centrally and transmitted over large distances. To automate processes, all that the factories had to do was, to get connected to the grid to utilise the electricity and run the machines. Electricity also provided a degree of consistency which the mechanical energy previously used could not. It made electrical energy more dependable for automation purposes, increasing quality, and reducing the worry around safety. This pronounced the second industrial revolution (Industry 2.0): electrification.

The 20th century saw the rise of robotic automation aided by electronics and computers, which again hugely increased productivity. Humankind could achieve precision and reliability now that the factory could run without much intervention from humans in day-to-day work, as robots could now be programmed to execute the necessary actions in each situation. It led to the third industrial revolution (Industry 3.0): automation.

Coupled with new manufacturing concepts such as lean manufacturing, conveyor systems, etc. it increased productivity to such levels that a nation could not only meet its requirement but could export in large numbers all over the world. Towards the 1980s, this was dubbed as Industry 3.5: globalisation.

Now

As the internet became available in a widespread manner through optical fibres, and with the advancement of cellular data from 1G to 5G, it became possible to enable communication between various devices and between devices and humans. It leads us to the theme of this article and the fourth industrial revolution (Industry 4.0) in the 21st century: digitalisation.

Living to witness an era of the Industrial Revolution is amazing. More so, as our organisation - L&T Valves has been a pioneer. L&T Valves, has, in the past decade, invested significantly in the components of the third industrial revolution - from flow lines in the Kancheepuram plant to

assembly conveyor lines in the Coimbatore plant, from monorails for phosphating to overhead conveyor systems for the paint booth, to list a few. L&T Valves also implemented lean manufacturing concepts in both the plants that led us to win the Pi Award among all L&T companies in 2017, and then again in 2018.

Now, L&T Valves is fully ready to jump join Industry 4.0. With a dedicated digital organisation guided by our CFO/CIO, Mr. Sameer Godbole, and a big budget to boot, there is a string of projects planned for the coming year. From digital stores to augmented reality, the team is all set to touch every function in the organisation and transform it. They could take the stress out of many other teams who have been trying to improve their function's processes while doing their day to day work in parallel.

Here is an analogy of a small store owner that emphasizes the importance of digitalisation. The small store owner could remember the prices of every item at his store and could total bills in a jiffy for his customers in his mind. A generation passed, and his daughter came into the business. With clever marketing and improved operations, the small store expanded to become a supermarket, to manage the increased demand (of both volume and variety). The store owner could no longer remember the price of every item in the supermarket or do a check out on his own. To manage the surge of customers, they needed to hire several cashiers. The only way they could know the prices of all the items was through barcoding. Soon, there were multiple hypermarkets all over the city, and the price data was updated and synchronised on the cloud. Similarly, L&T Valves need to digitise its processes to handle the complexities, varieties and volume.

Next
Technologies related to Industry 4.0 have enormous potential to boost output, just as each industrial revolution before had done to factories. Some of the technologies mentioned below are picking up pace across all industries, and its early adoption by L&T Valves will give us an edge in our industry:

Robotic Process Automation (RPA)
RPA is basically like a bot or a virtual assistant in your computer that takes care of the repetitive tasks that you usually do.

Here is some of the work that can be taken over by bots in our company.
- PCMT: Uploading General Assembly Drawing (GAD), Quality Assurance Procedure (QAP), Internal Testing Procedures (ITP), Welding Procedure Specifications (WPS), etc. in customer portals or sending it by email for approval

- PCMT/Design: Extracting comments given by the customer on the above documents and sharing it with the relevant department in our company

- PCMT/Production: Raising Inspection Call by email or in the customer portal

- PCMT: Obtaining shipment clearance/inspection release note by email or via the customer portal

- SCM: Updating data from excel sheets/emails to SAP (E.g. Supplier information price record)

Natural Language Processing
NLP enables the computer to read human language texts - digital texts as well as scanned pages - through OCR (Optical Character Recognition).

The popular uses of NLP include:
- Converting old physical documents into traceable/retrievable digital formats. Once these documents are digitised, these can be disposed of, freeing up a lot of space.

- Data mining – NLP takes hundreds of pages of text of market research and converts it into meaningful insights in the form of a infographics

- It goes through research in the latest technologies related to the valve in Sciencedirect / Elsevier and gives a summary to the technology department to choose where to focus on

The potential of NLP in:
- HR: Bias-proof and gender-neutral filtering of resumes – solely based on the matching of skill sets and relevant experience.

- PCMT: Extract data from our format and prefill customer format (Cover Sheet of GAD, Packing list, Inspection Call, etc.)

- Pre-sales: Extract data out of complex customer specification sheets and convert it into digestible information (prefill valve size, class, material grade, and other details in our format) and automatically generate FERT code

- QC: Extract data out of the supplier's material test certificate and prefill values in our format. Automatically approve or reject test certificate by checking whether the parameters are within the specified limit

- Pre-sales: Make sense out of non-English spec sheets (Arabic, Russian, Chinese, etc.)

- Pre-sales: Read 100 pages of contracts and summarise it into 2-3 pages with important points

- Sales/PCMT: NLP can read customers status request emails and automatically reply with the status by searching for keywords and taking data from SAP.

Machine Learning
The salient features of ML are:
- In addition to decision making based on past trends, ML also builds a predictive model for what will happen in the future

- A data dump is required from the company's ERP (i.e. SAP) and other software used

  - Step 1: Ensure every transaction is recorded (Adopting blockchain can be tried here)

  - Step 2: Build up sufficient repository of data

  - Step 3: Enjoy the fruits of the data built up over the years for analysis and ML

The applications of ML at L&T Valves:
- Maintenance: Modify preventive maintenance schedule based on the usage frequency of the machine and by monitoring the condition of the machine automatically through sensors

- SCM: View the supplier's trend to identify those who delay and the reason

- SCM: Identify the supplier who usually delays a specific grade of material or a type of the component (was it sub-contracted?)

- Production: The valve industry each valve has a different process and bottleneck and hence the value stream mapping for each valve is time-consuming. ML simplifies this and shows where the bottlenecks are for each type of valve.

- Maintenance: Identify when the breakdown of machine issues occur; and after the machining

of which component does it occur – to trace a pattern that we may not spot otherwise.

- HR: Predict attrition before it happens and to help retain talent

- HR: Determine the training needs of employees

Blockchain:
Its salient features are:
- While torrent copies a file to many computers, and every person with the copy could "seed" and upload the files to many other computers, blockchain usually contains information that a transaction has happened, when a file has moved from one location to another. However, the data is decentralised in both cases, and this is where the similarity ends.

- This transaction is verified by "miners" in a cryptographic form

- Once the miner verifies this transaction, it becomes a block and is added to the chain of previous transactions, a copy of which would be available to each user

- Since so many have a copy of this blockchain, it is easy to verify when someone's blockchain is tampered with

- The latest block is dependent on the "hash" value of the previous block, making the information of the entire chain different if any block is removed

The suitability of blockchain for the valve industry Supply Chain Management (SCM):
- The valve industry, with its many transactions of many parts, would benefit more by maintaining these transactions via blockchain instead of traditional ledgers

- The same blockchain ledger is visible to the company's suppliers who can view the status of receipt of goods at the company without the need for a portal

- Blockchain would be impossible to tamper with as there is a copy with each stakeholder. This will eliminate the need for tedious audits.

- While many companies build much technology for traceability, blockchain's by-product is traceability! One can hit two birds with one stone.

- A valve company would, with clear visibility, be able to cross allocate parts to different customer orders even when items are still in process at the foundry stage

- Blockchain would even perform the role of ensuring one uses the correct part for the correct customer - essentially what an internal sales order does in a company

The application of blockchain in other functions:
- HR: A centralised, verified employee profile pool in the blockchain network will prevent the recruitment of people from bogus backgrounds

- HR: Automatic release of payment to contractors based on attendance

- QC: When the valve company's sub-suppliers and its entire supply chain is on blockchain, the company can then find out if anyone in the supply chain replaces the original part with counterfeit ones.

- F&A: Blockchain would eliminate a lot of middlemen and manual work involved in checking the invoices and informing the bank to make the payment (accounts payable)

- Stores: All complexities such as items received in batches against a Purchase Order would be handled seamlessly via blockchain (reconciliation)

- Business Process Control: Corruption/money laundering would become next to impossible

Since blockchain is a relatively new topic in the manufacturing domain, here are its significant advantages:

- In the present process, tracking each invoice with partial receipts for a single PO, and corresponding payment and verification of physical receipt of items is prone to errors and is time-consuming (invoicing system of supplier linked to our PO)

- Banks can, through blockchain, easily verify if a PO has been given to a supplier by a reputable company and provide them with financing

- Blockchain will ensure that the supplier raises an invoice with a value exceeding that of the PO since both invoicing of the supplier and our PO creation are on the same platform.

Some other technologies to look out for:
Interface-less Machines
- One can forget about the operator standing in front of CNC machines. The operator can WFH and can control the machine through an app from home (Lights-out Manufacturing)

Edge Computing
- Powerful computing units nearer to where the computation has to happen (embedded metrology, smart sensor)

DevOps
- Concurrent Engineering (Operations) meets IT Development projects

While Industry 4.0 is the order of the day, the next industrial revolution is not too far away. Popularly dubbed as customisation, it is where mass production keeps happening, but the line also produces each item tailor-made to a customer. For example, as a shirt is being stitched in an automated line, at the moment when a customer enters his measurements (chest size, sleeve length, etc.) into the online platform, the shirt entering the line then, would be cut and sewn to that exact measurement and all through the production process, the shirt would be traceable to that customer. Similarly, in the valve industry, as the customer places an order for a specific grade of a valve, the machine in the foundry will automatically and in real-time pick up the right mixture of scrap for that grade and the whole manufacturing sequence follows. A long way to go, but again, not far away. At this stage, we will have more programmers than engineers – who would be making live changes to improve efficiency and help improve the customisation experience rather than doing the routine day-to-day work of coordination and decision making. Probably AI would already have been fed with all the past experiences of right and wrong decisions by that point and trained to convert live data generated into ML to further improve the algorithm.

Hope that this edition of V-connect will get us thinking on how to get things done digitally and propel us all in the path of digitalisation.

Wishing you all a happy digital journey!

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Digitalisation in
Decision Making

Decision making is a complex process. Senior management decisions have far-reaching impact on businesses and lives, and hence leaders take time, gather data and evaluate options before they take a decision. With business scenario becoming more dynamic, time has become a crucial element in today's good decision making. This poses three major challenges:

• Understanding the business dynamics

• Faster decision making

• Effective communication of the decisions to stakeholders

Digitalisation provides a good framework to resolve these constraints.

Understanding of the Business
The digital world provides various tools to understand the business and market requirements. Organizations use the tools to monitor indices and commodity prices, identify emerging trends, and develop and launch solutions.

Myntra, the apparel e-tailer, uses AI to study popular designs and styles listed on the platform – and Moda Rapido, its AI-run label, boasts one of the trendiest merchandises in the market today.

Faster Decision Making
The process of reflecting on the past is an essential component in the decision-making process. Warren Buffet, for example, dedicates several hours per day to thinking. But there are only 24 hours in a day. Digitalisation equips time-strapped executives with structured information literally at their fingertips providing them time to think and take appropriate decisions.

Data is very valuable to any organisation. The arrival of digital dashboards that capture operational KPIs has significantly reduced the clutter on executive tables. These dashboards provide faster

access to data and facilitate faster and informed decision making. The dashboards also improve the effectiveness of meetings by promoting a healthier and transparent atmosphere in boardrooms leading to clarity and ownership of the decisions taken.

Effective Communication to the Stakeholders
The incremental change done by each employee will have a compounding effect in achieving the organizational goals and communication aligns all the employees towards a common goal.

The new tools for meetings and communication bring leaders in direct contact with the employees. These provide people an opportunity to interact with leaders and understand the organizational goals - therefore, today's initiatives gain better traction, faster.

Overall, digitalisation promises a revolution in decision making powered by AI, big data, analytics, data visualisation as well as communication and collaboration technologies. We got a taste of the possibilities during our work-from-home phase – but the best is yet to come and early adoption of digital decision-making technologies and processes could prove to a definite differentiator in the future.

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Digital Knowledge-sharing

| Vaibhav Maheshwari, Head - Global Aftermarket, traces the story of the webinar waves that swept the world.

L&T Valves is known for its engineering skillset and technology for decades. We had a Valve School which had provided a platform for knowledge sharing with our customers. We were going steady unless the Corona virus took the limelight. To beat the negative energies, we decided on 27March '20 to increase our customer connect amidst the global pandemic. L&T Valves being the leader could launch its first webinar wave on 1April 2020. It happened to be a big hit with a record attendance of 493 members on Day1. An idea is good when it's implemented immediately.

We had no experience into the digital mode, however we took the challenge to deliver the session. We had anticipated to take up a free account on Zoom to manage 200 members but then to our surprise, the no. of registrations started to shoot beyond 500 participants. It was then we bought the Zoom membership. We sailed well with our first mover advantage during the Lockdown 1.0 and the work-from-home scenario globally. A total of 7000+ customers have been connected through our program which covers subjects and content which is common to our competitor valves too. We had a 10% attendance from our competitors in each program and we restricted none in imparting and sharing our knowhow. In fact, it is a proud moment when we have competitors attending the sessions, as it confirms our technical superiority.

As the boat was sailing smooth, the webinar platform from Zoom was shaken apart and our customers didn't want to login on Zoom as per their organisations directive. We moved to Microsoft Teams and Cisco WebEx modes.

Covid has brought about a new normal and L&T Valves has leveraged it well. The continued connect to our global customers would not have had been possible without the webinars.

We received so many encouraging emails and LinkedIn comments. We uploaded the webinar videos on our website (www.Lntvalves.com/videos) and the content has attracted a huge following.

We thank all our customers for having the trust in us amidst the tough times and wish all our internal and external stakeholders the best of heath in these uncertain times.

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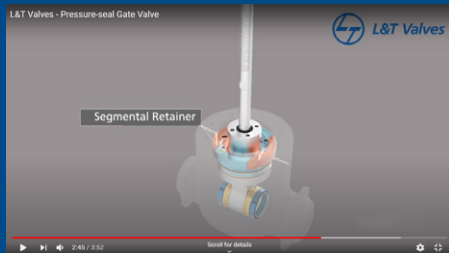
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Digitising the Human Mind

Digitising the human mind is not an impossibility though it can be a monumental task with an extremely high degree of complexity. Vidhyarthi S, Manager HR, attempts to provide a structure to the process.

The sound of a siren makes many a head to turn. But the whirring vibration from a distant corner reaches only the sharpest of the minds - a mind tuned to cut out the noise and focus on the signals.

It is undoubtedly these minds that brought into reality the infusion of technology with almost everything around human existence. Computers, mobile phones, augmented realities, and artificial intelligence today embrace human life. Yes, that's a mighty wave to have struck mankind. It is wiser to accept, adapt, and evolve with technology rather than build a fort and attempt to stay within it only to realise later that the sturdiness of the fort is compellingly illusory than real.

The key to understanding Digitisation and Artificial Intelligence is acknowledging that it is indeed an ocean. We are talking about redefining everything mankind has ever done till date. Homo sapiens - modern humans are known to have existed approximately two hundred thousand years ago. So, practically speaking - to redefine everything that humans have done in these thousands of years is by no means an easy feat.

Yet, it is not an impossibility. People are people wherever they are. Whether in the prehistoric ancestral era or in the quantum era of parallel universes. If artificial intelligence needs to evolve to replicate the mind of a human, there are two key tenets that it needs to build its edifice on.

Tenet 1: Differentiating the Event from the Experience
An Event is what happens in the physical world - the outer reality. It is external to the individual. Experience, on the other hand, is internal. It is what the human mind interprets and assimilates from that external physical event.

The crux is the word, interpretation. Let's take Simon, Jessie, and Patricia as three distinct characters. When each of them witnesses water flowing out of a broken tap, here are the three possible interpretations…

Simon being the logical, objective, level-headed person voices, "There is water coming out of the tap."

Jessie being the 8-year-old girl, calls out, "Oh my! The water is overflowing." She runs helter-skelter to find the help of an adult.

Patricia being the humanist, and environmentalist calls out, "There is so much wastage of water. Let's do something about it."

One simple event; three different interpretations.

An artificially curated technology that is attempting to clone the human mind needs to address the above reality. The possibility of infinite interpretations for even the simplest of events and a seemingly simple human experience.

If AI is all about simulating human thinking, then there is a critical need to be able to simulate human interpretations however varied and diverse they may be. The machine will not and must not invalidate an interpretation because it sounds illogical. Because for each person, his interpretation stands valid and true, however incorrect and distant it may be from reality. Human minds are wired so. If you think of this as flawed, then you are possibly questioning the very design of human thinking.

Tenet 2: Decision-Making
How does a human mind make decisions? There are many who feel empowered by data and facts. 'Give me the numbers,' they say 'to get my decisions cracking.' But that's a myth - a strongly

entrenched myth about human processes in decision-making. Dan Ariely, in his book, The Power of Irrational Thinking says, humans are incapable of thinking rationally. According to his research, decisions are backed by emotions rather than logic.

Let's understand this with a couple of day-to-day examples.

Why do I have the urge to read the same newspaper day in and day out? What propels me to rummage through the newspaper stands and pull out that one paper which seems to have built that connect with me?

Why is there a brand culture across geographies? Why do people purchase products of the same brands over and over again?

The questions can go on, but the underlying tenet is the same. There is a strong interplay of emotions when individuals are placed in moments of decision-making. When there are a plethora of choices in front, and when all may or may not be equal and fair in their features and benefits, clearly one differentiating element thrusts a person to make a choice. And, that is nothing but a buried emotion associated with an earlier experience.

As a young child, if I were gifted with a birthday present wrapped in a burgundy gift wrapper, I am likely to have built a positive emotional association with the color burgundy. Today, as I stand in front of a plethora of footwear choices, my hands pick the shoes in burgundy, however out of fashion they maybe - because I am programmed to like burgundy.

Humans make decisions based on past experiences. Depending on what emotions are associated with those past experiences, humans seem to have already made their decisions - albeit subconsciously. The surfacing of the decision already made to the conscious mind is what gives it an illusion of logical decision-making. Once an emotional decision is made, humans then justify it with logic. An emotion can always be justified by logic but the vice versa of logic being justified through emotion is not an expectation in today's left-brained world.

This, by far, will be the toughest process for Artificial Intelligence to crack if it were to replicate human thinking.

With 7.8 billion people across the globe, and each individual having a plethora of experiences and associated emotions, the database that AI needs to build to replicate human ways of decision-making appears arduous. And it doesn't end there. We humans are constantly evolving, and therefore these experiences and associated emotions are only bound to change with time. How will AI acquire and adapt to these evolutionary changes?

Difficult but not impossible. Many new age techniques such as Pattern Matching, Heuristics, Neural Networks are being explored and researched in-depth. The answers seem to lie scattered. If that one sharp mind can enclose all that is scattered into one simple equation - then AI will have a jumpstart. It would do what the internet did to mankind decades back.

If Einstein is watching the world today from a distant corner of outer space, then he would be thrilled to witness his theory of relativity in full action. Time, all of sudden, seems to be ticking fast, so much in line with the speed of human thinking. Perhaps, AI will soon catch up.

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Digital Marketing

Talk to anyone on marketing, you are bound to hear Search Engine Optimisation and Search Engine Marketing a couple of times within a minute. Marketing has changed and it has become increasingly digital.

Our worlds have changed, interactions have changed so has the way companies market themselves. Digital marketing is the component of marketing that uses internet and online devices to promote products and services.

We all know the theory of evolution which says only the species that adapts itself survives. This is more true in the digital context. Life and death of brands on the digital timescale is very short and adapting to trends is essential for survival in the present scenario.

Search engine optimization and usage of social media for marketing are essential things like Memorandum of Association for a business in the present times. Companies have shifted from focusing on getting the best aisle on a supermarket to getting the best spot on a google search result. Websites are designed with keywords and backlinks focusing on how it behaves on search engines.

With the increasing popularity of smartphones and cheap internet, smartphones has become the major mode of internet activity. Companies have become increasingly conscious about how websites and content appear on mobile phones.

Conventionally Linkedin used to be the only way brands used to communicate to their customers. Currently, Facebook, Instagram, Snapchat, Pinterest, WhatsApp etc., are actively being used by brands to communicate. Brand personas have to be build according to the channel but in sync with the brand values. Though usage of multiple channels makes the message reach customers easily, the packaging without losing the brand identity has become a tough task for marketers.

In the past few years, trends like personalized marketing, influencer marketing and video marketing have picked up heavily.

Netflix and Amazon Prime have tailored recommendations in their websites to increase the viewership of the channel. Similarly, each company is developing communication strategies which are personal in nature, by using AI and social media behaviour.

Speaking of Influencer marketing, Gillette, known for video ads, used multiple Instagram influencers to target its consumers. This campaign was so successful that it achieved higher engagement rates than traditional marketing. Video marketing is another trend of the times. Videos have higher viewership and engagement rates compared to written content. Cisco estimates that 82% of content online will be videos by 2022.

Here at L&T Valves, we have a strong Linkedin presence with 70K+ subscribers. In addition, we use Youtube to share our knowledge sharing content as well. We have adopted to the current times even with the pandemic and will continue to evolve in the future as well.

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L&T Valves

A Digital Internship

Internships are invaluable for organisations and students alike. Adweyta Shambharkar, a summer intern from IIM Udaipur shares her experience of an online internship with L&T Valves

For every MBA graduate, the summer internship experience acts as a stepping stone to bridge the gap between theory and practice.

L&T Valves has, during my 8-week internship in the summer of 2020, played a crucial role in helping me vault over this gap. Amidst the COVID crisis, I feel fortunate for being offered the opportunity to pursue my internship project virtually. The internship allowed me to have a new sense of professionalism and a clearer view of what it meant to be in the professional world.

My internship project at L&T Valves focused on 'The digitalisation of supply chain activities to improve vendor relations'. It involved interacting with different stakeholders to analyse the supply chain activities in place and propose feasible digital solutions to address the challenges. To have a holistic view of the operations at L&T Valves, interactions with various members from the SCM, Project Management, Operations, F&A, and IT teams were a major part of the project.

The project facilitates the smooth flow of information between the vendors and LTVL. The 'Supplier Portal', which will be the outcome of the project, will help vendors understand the status of their material from inward to bill booking. Internally, the data will help LTVL in improving the availability of material and lead to improved OTIF and customer satisfaction.

I am grateful to every individual who directly as well as indirectly contributed to the project. Although the virtual mode of internship restricted my access at times, people in the organisation compensated for the same by providing information required through screen sharing sessions and providing available documents.

Prasanth Prasad
Head - Sales, EMEA

> "I do everything with a high degree of involvement. This gives me the ability to respond to problems swiftly. My ability to analyze problems, take quick decisions and take my people along with me are my strengths."

What would you say are the top 3 achievements of your career so far?

I would list the below three achievements:

- Our approval – for the entire product range in ADNOC Offshore in 2013. It helped us become a ball valve supplier to the Abu Dhabi Offshore fields.
- GC 32 order from Petrofac –This enabled us to develop an entire range of top entry variants in TMBV.
- Aramco CPA -Ensures a steady business from Aramco and also help us in augmenting our product approvals in Aramco.

However, I do not want to list these as "my achievements", as so many of my colleagues are part of these achievements.

According to you, what are the three qualities required to be an inspirational leader?

A truly inspirational leader should be empathetic, passionate, and should communicate clearly. These three qualities are a must for motivating, mentoring, and leading the team.

What is your global outlook on the valve manufacturing industry in this pandemic world?

I believe the valve industry will see a lot more consolidation. The valve OEM brands with financial strength will survive. The valve industry will move towards more of branding (Contract Manufacturing/White labelling) rather than manufacturing everything in-house.

What do you think are the best approaches to retaining key customers in the current economic scenario?

Our vision is to become the most trusted valve company. Trust is what will retain our customers. They should see us as a company to be trusted. The rest will follow.

If you were to mention one name as a role model in the field of Sales, who would that be? And why?

Steve Jobs. For the passion with which he conducted his iconic product launches for his exceptional understanding of customer requirements, and his urge to be number 1.

What skills would you want your team members to sharpen in the next two years?

Financial Acumen and Digital Selling. The need for developing financial acumen skills is obvious.

On Digital selling, the new normal has thrusted B2B sales transactions into the digital space. We need to sharpen our digital selling skills and learn to put across our sales pitches in this new space that is also evolving constantly.

What is the one change you would like to see in the coming one year at L&T Valves?
All of us have to believe that we are one team and we exist because of our customers.

What are your hobbies?
Apart from the clichéd hobbies of watching movies, Netflix, reading fiction…the one thing that I really enjoy is my culinary experiments (To put it simply – cooking).

It is mostly Indian Cuisine, with some variations (which sometimes changes the whole dish!). Recently, I am being challenged by my daughter to take on baking. I successfully completed my first brownie experiment.

What is your advice for a young budding engineer in the manufacturing industry?
Try to learn something new every day. Please do go back to the textbooks you studied in college and connect theory to practice. Don't be afraid to make mistakes but do learn from them. Connect with people from other departments and organisations to have an overall understanding of the industry.

> Prasanth Prasad has over 15 years of experience with L&T Valves. He started his career as a sales engineer in Kolkata and later worked in Chennai, Mumbai and UAE. Prasanth played a key role in securing the first order for ultra-high-pressure valves for India's first supercritical power plant.
>
> Prasanth moved to International Sales in 2012, and today heads the Middle East, Africa and Europe territory. He was instrumental in securing key approvals (ADNOC Offshore, EGAS) and breakthrough orders (Top entry ball valve orders - KOC) in the region. He also played a key role in securing CPA agreement with Saudi Aramco under the IKTVA programme.

Congratulations!

We wish you happiness and joy

Anish Raj K, Chennai married Soumya on 5 Sep 2020

Got married...
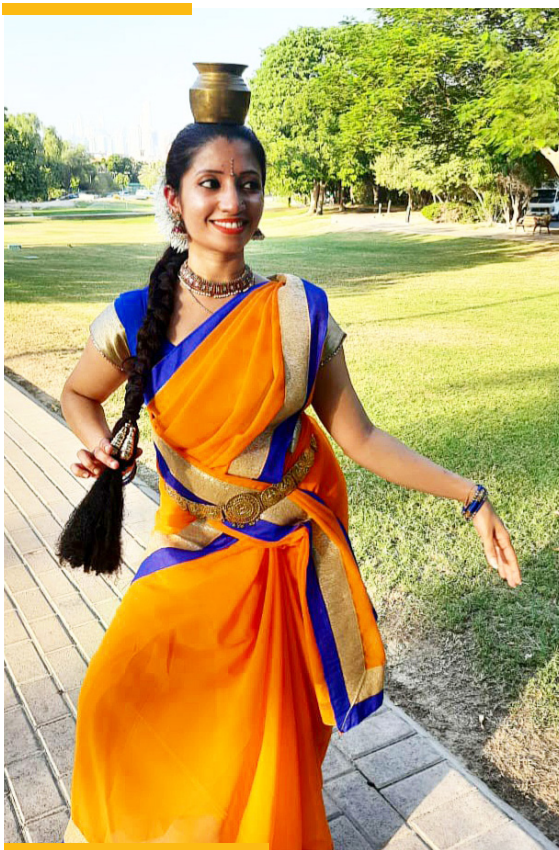
Blessed with a kid...

A change in assignment...

A breakthrough in your career...

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kuriakoseb@Lntvalves.com

Introducing
Priya Pavithran

"Keep the passion alive and you'll see the wonders that it will bring into your life"

Growing up in the Middle East, Priya had limitations in pursuing her interests in classical dance, yet her father's support helped her realise her dream. Priya trained under Smt. Kalamandalam Mini Radhakrishnan for bharatanathyam, mohiniyatam and kuchipudi from the age of 11. She actively participated at youth festivals across the seven emirates and won many prizes.

Dance is a passion she holds close to her heart and believes that it helps her stay healthy and also acts as a stress buster. Dance has taught her virtues like patience, improved her observation skills and gave her a better appreciation of ancient Hindu mythology.

Apart from classical dance Priya also loves sketching and painting. Though not trained professionally, she also takes the risk to occasionally croon Malayalam, Tamil and Hindi melodies.

A Postgraduate from Madonna University, Michigan, Priya has been worked with CXOs from diverse industries including IT, marine and cosmetics. She joined L&T Valves in July 2018.

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Support in the time of Pandemic

L&T Valves CSR initiatives contribute to inclusive growth by empowering communities and accelerating development. The thrust areas include medical infrastructure, sanitation, education and skill development.

In the pics, the new casualty and laboratory buildings constructed with L&T Valves support at Government Hospital, Madukkarai, Coimbatore.

The Future is **Digital**

L&T Valves Asset Management Programme (LAMP)
IoT-ready smart valves with sensors and communication modules
> Predictive maintenance based on actual data

Intelligent Valves
Next-gen smart valves that leverage Artificial Intelligence and Machine Learning
> Valve diagnostics for assured safety and reliability

Scan to view film

ValvTrac Digital Traceability
Digital identification and smarter documentation powered by RFID
> Information, virtually at your finger-tips

Scan to view film

smARt.view Augmented Reality App
Virtual plant tour and remote inspection
> Minimises limitations of distance and time

Scan to view film

Cryogenic Triple-offset Butterfly Valves

Sasikumar D, the design lead for Butterfly Valves, explains the design features and the development journey

L&T Valves is a global leader in valves for cryogenic applications. Recently we developed a customised solution for an American EPC contractor.

Key requirements:

- Inspection door on top of the valve body to enable easy inspection, maintenance and replacement of laminar seals at site without removing the valve from pipeline
- Electrically operated with operating time of 20 seconds
- Dual certified to CF3M / CF8M

The triple-eccentric design facilitates a positive torque closure as well as permits the free movement of the disc, once the valve is unseated, resulting in lesser wear of seating surfaces. The degree of eccentricity and the mating profile of seat and disc were carefully selected to achieve reliable performance at low temperatures.

The body seating surfaces were hardfaced with Stellite #21 and matched with a precision machined laminar seal (graphite + Inconel 625) to achieve tight shut off and longer seat life.

Free rotation of stem disc mechanism at cryogenic temperatures is essential to prevent torque overload on electric actuators. Although general austenitic stainless steels are suitable for stem at cryogenic temperatures, the strength of the austenitic stainless steel is much lower to withstand any inadvertent actuator overloads. Hence, Nitronic-50 (XM-19), which has the benefit of both the higher strength and expansion coefficients equivalent to the body material CF3M/ CF8M, was used.

In order to reduce the friction of stem bushing sat low temperatures, the stem bushings were hard chrome plated. Further, the bonnet was extended with sufficient gas column to keep the packing away from the cold fluid.

The valves were successfully tested at -196°C as per BS6364 and supplied to an onshore LNG platform.

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Memories of a **Hero Stone**

Captivating visitors to D Building at Coimbatore is a large brass and copper sculpture created by Mr S Nandagopal. The sculpture dates back to the early '90s and is a part of the 'Memories of a Hero Stone' series.

The work is inspired by primitive commemorative hero stones ('veerakkal' in Malayalam and Tamil) found in South India that celebrate battlefield heroes and heroics. The hero stones carry inscriptions and display a variety of adornments.

S. Nandagopal (1946 - 2017) was an Indian sculptor and painter. He was a member of the Madras Art Movement which pioneered modernism in south India and the son of KCS Paniker, the founder of Cholamandal Artists' Village.

L&T Valves

Houston, USA

Al Jubail, Saudi Arabia

Coimbatore, India

Kancheepuram, India

Jamnagar, India

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The Future of Valves

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☑ **Portfolio and Range:** Wide variety of valves, offering a solution for every need

☑ **Future-ready:** Next-generation technologies to provide unmatched safety and reliability

☑ **Maximum Productivity:** Global sales and aftermarket network for quick responses wherever you are

☑ **Manufacturing Footprint:** Facilities in USA, Saudi Arabia and India to meet your requirements

☑ **A subsidiary of Larsen & Toubro,** a USD 21 billion engineering and technology conglomerate

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EIL • Fluor • JGC • Hyundai
McDermott • Petrofac • Saipem
Samsung • Tecnicas Reunidas
TechnipFMC • Toyo

L&T Valves
A wholly owned subsidiary of Larsen & Toubro Limited

Butterfly Valves

Elastomer-lined Valves
API 609, CatA

PN10/16/25, #150
Up to 36" (900 mm)

Fabricated Steel Valves
AWWA C 504, C 516, EN 593

PN10 to PN16
Up to 120" (3000 mm)

Triple-offset Butterfly Valves
API 609, CatB

#150 to 1500,
Up to 100"
(2500 mm)

Ball Valves

Floating Ball Valves
ISO 17292, API 608, API 6D

#150 to 2500,
Up to 8" (200 mm)
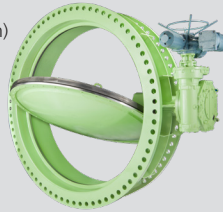
Trunnion-mounted Valves - Top-entry
API 6D

#150 to 1500, Up to 30" (750 mm)

Trunnion-mounted Valves - Side-entry
API 6D

#150 to 2500,
Up to 56" (1400 mm)

Gate, Globe & Check Valves

Small-bore Valves
API 602, ASME B16.34

#150 to 4500, Up to 2" (50 mm)
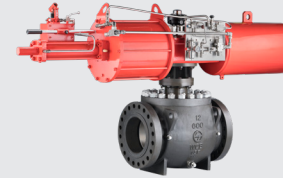
Pressure-seal Bonnet Valves
ASME B16.34

#600 to 4500, Up to 42" (1050 mm)

Bolted-bonnet Valves
API 600, API 603,
API 623, API 594

#150 to 2500,
Up to 72" (1800 mm)

Digital Solutions

L&T Valves Asset Management Programme (LAMP)
Smart Valves with diagnostic and communication modules

Valve Automation Solutions

High Integrity Pressure Protection
Systems (HIPPS)

Emergency Shutdown
Valves (ESDV)

Bronze Valves

Gate, Globe & Check Valves
EN 1171, DIN 3356/2

PN6 to #300,
Up to 40" (1000 mm)

Plug Valves

Double Block & Bleed Valves
API 6D

#150 to 600
Up to 42" (1050 mm)

Knife Gate Valves
MSS SP 81

PN10 and #150,
Up to 24" (600 mm)

Control Valves

Globe Valves
Butterfly Valves
Segmented Ball Valves
Eccentric Plug Valves

Sleeved Plug Valves
ASME B16.34,
EN12516-2

#150 to 800,
Up to 16" (400 mm)

Piston Valves
ASME B16.34, API 602

#150 to 800,
Up to 8" (200 mm)