

**SEW**  
**EURODRIVE**

# Drive India

The SEW-EURODRIVE Customer Magazine

Reader Quiz inside.  
Attractive prizes  
to be won!  
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Warehouse Automation  
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Future of engineering:  
enriching chat with  
**Dr. D Dinakaran.**  
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## Dear Reader

GDP growth in India has now dropped for 7 quarters in a row, even before we start to factor in the huge impact of the global pandemic that has shut down entire countries. Definitely very challenging times in which to be doing business and running a company. At SEW India we have closed the year with double digit growth thanks to you, our customers, and we are grateful for the patronage you have continued to bestow on us during these difficult times.

For our customer story for this issue we look at Craftsman Automation, a Coimbatore-based engineering company with a diverse set of businesses and competencies, who have identified Automated Storage and Retrieval Systems (ASRS) as a sector that it going to boom in India. SEW has an ideal set of products and technologies to deliver solutions to OE's for this application, and we are supporting Craftsman to develop a fully indigenous ASRS system.

Discrete material handling using flexible conveyors and sorting and storage systems is in general a burgeoning field, driven not in the least by e-commerce. Recognizing this, SEW has developed a specialised line of drives for these applications, and our product story covers our new range of Extra-low Voltage drives available in both planetary and bevel helical gear configura-

tions that are ideal for this type of application.

I have long believed that any country is only as good as the quality of the education it provides to its students. For us in the engineering industry that of course means the quality of engineering education. In India SEW has partnered with interested and forward thinking colleges in our speciality area of Mechatronics, to see how we can help in bringing a hands-on and industry focused element into engineering education. In our feature story we interview

Prof Dinakaran of Hindustan University in Chennai, one of the colleges we are working with, for his insights into the issue.

I wish you happy reading!



**M J Abraham**  
Managing Director, SEW-EURODRIVE India

## SEW and Craftsman turn a page in warehouse automation technology.



SEW-EURODRIVE recently partnered with Craftsman Automation in an R&D project for warehouse automation technology. A new Automatic Storage and Retrieval System (ASRS) was installed, featuring the special EFFISRS technology module which sets new standards in energy efficiency.

Craftsman Automation Limited is a leader in precision manufacturing. With manufacturing units in automotive hubs across India, Craftsman's major area of activity lies in supply of cast and precision machined powertrain components for the automotive industry. The company designs, develops and manufactures engineering products including industrial and warehousing storage solutions, crane hoist, material handling systems and special purpose machines for a diverse clientele.

### The application.

The Automated Storage and Retrieval System (ASRS) is a type of warehouse automation technology that is used to automatically store and retrieve products on demand. The application is integrated with warehouse management or warehouse execution software.

**Key benefits of ASRS include:** Improved floor space utilization, reduced labour requirements and costs, increased picking accuracy, improved picking throughput (speed), tighter inventory control and improved ergonomics.

In a conventional SRS system, the travel and hoist axes are started simultaneously. When it is required to move only the travel unit to the next rack position, the hoist needs to be lowered by several rack positions, and both axes begin maximum acceleration until they reach top speed. But as the travel axis covers a short distance, it needs to stop very soon. The result is energy loss. SEW-EURODRIVE's ASRS system uses the innovative EFFISRS technology module, which prevents this loss of energy to a significant extent.

### Next generation technology.

SEW-EURODRIVE's EFFISRS technology is a universally parameterizable motion platform that controls a storage and retrieval system independently of the drive technology employed. Using this technology, the horizontal and vertical axes move simultaneously or individually, saving energy by up to 25%, thanks

to the optimized travel cycles of vertical lifting drive and horizontal travel drive.

#### The EFFISRS edge.

- Energy optimization of travel cycle of travel unit & hoist.
- Application module can be selected in application configurator; it offers guide startup & comprehensive diagnostics features.
- Possible to flexibly expand with other application modules from application configurator (e.g. auxiliary axes for fork drive, centering, etc.).
- High recognition value with known IPOS-based application modules, on which process data interface is based.

### Challenges galore.

Since this was the first such machine for Craftsman Automation, plenty of complex work went into product selection, and a lot of technical data needed to be modified by SEW's engineers. SEW's PLC performs motion control, pallet handling and also communicates with the WMS PC directly to receive commands. Which means there is no intermediate third party device between the PLC and the WMS systems. Furthermore, to control the ASRS system precisely, with a velocity of 150 mts / min (traverse axis) and 50 mts / min (hoist axis) required accurate tuning of system parameters.

### The SEW-EURODRIVE advantage.

- Single point source for complete motion control

solutions & products.

- WMS directly communicates with SEW PLC, eliminating need for master PLC.
- Energy optimization, thanks to SEW EFFISRS technology module.
- Complete control system provided by SEW engineers.
- Common braking resistor for both drives, enabling significant cost benefits.
- Local presence for presales & commissioning support.
- Slackness detection with PLC.

### Job well done.

The ASRS application has been installed in a customer's factory by Craftsman Storage Systems, a division of Craftsman Automation. Another ASRS application is currently under installation at Craftsman's own factory for in-house storage requirement. The systems offer advanced and effective storage solutions with superlative space utilization.

"SEW team has proven to be extremely supportive right from the design, selection of drives and application programming during installation. The products: drive and gearbox are state-of-the-art technology. We are sure that this is the first of many such successful projects that Craftsman and SEW will work on, in the near future."

- Gautham Ram, Director,  
Craftsman Automation Ltd.

## Small, powerful new solutions for the changing world of logistics.

With change being the only constant in the consumer and industrial sectors, SEW-EURODRIVE is continuously innovating to meet newer demand parameters. Factory logistics are turning more flexible with conveyor modules becoming smaller, many even being designed as mobile units. Shuttle vehicles are fast replacing rigid systems in many areas. SEW-EURODRIVE's new extra-low voltage drives come with synchronous motor technology with DC 48 V power supply and integrated control electronics. They offer the perfect solution for the changing demands in stationary and mobile warehousing systems.

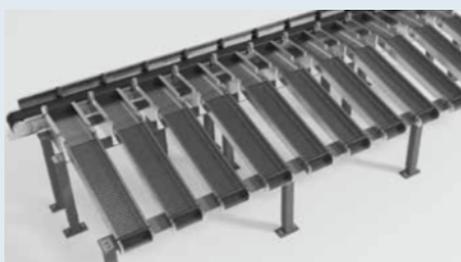
### COMPACT EXTRA-LOW VOLTAGE DRIVES



### When compact is perfect.

As conveyor lines get more compact, flexible and often even mobile, their drives need to keep pace. This is where SEW-EURODRIVE's new technology comes in. These extra-low voltage drives are designed for several key applications in both mobile and stationary materials handling.

As simple shuttle travel drives and load handling devices, on operating devices in sorters with a belt or tray, in rotary units and rotary tables, separator and format adjustment or automated guided vehicle systems.



### Application areas.

- Belt, chain and roller conveyors.
- Lifting modules and corner transfer units.
- Eccentric hoists and adjustment drives.
- Turning devices and rotary tables.
- Small trolleys, pallet transfer shuttles.
- Small container buffers.
- Sequencers, sorters and pushers.
- Simple shuttle or load handling devices.

### The solutions on offer.

- Compact motor of the DCA.. series – Efficient, easy to handle, flexible and contact reliable.
- Compact planetary gearmotor of the PN..DCA.. series – High overload capacity, running smoothness, perfect in fit and flexible.
- Compact right-angle gearmotor of the KN..DCA.. series – High overload capacity, powerful, perfect in fit and efficient.

### More benefits than ever.

The extra low-voltage drives from SEW-EURODRIVE score over conventional systems in many ways.

- Compact design, low weight, high power density.
- Energy-efficient motor.
- Overload-capable gear unit concept.
- Versatile use.
- Excellent SEW-EURODRIVE sales and support structure with services throughout the lifecycle of the system.
- Services, tools and resources closely linked to the product portfolio come from a single source, thus enabling greater convenience and accountability.

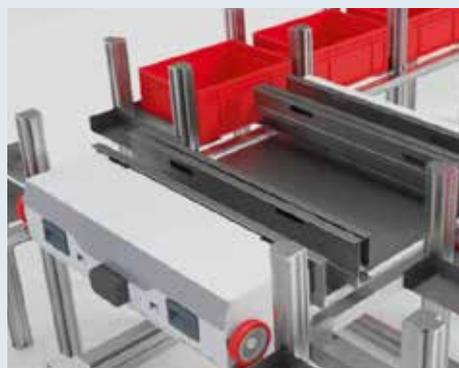


### Product specifications:

- Synchronous motor technology with DC 48 V power supply.
- Fully integrated control electronics with both analog and digital control.
- Three motor powers: 188 W/272 W/356 W.
- Three gear unit types (PNZ63F/KNZ63F/KNZ75F) with various reduction ratios.
- 17 suitable gearmotor combinations possible.
- RS485 engineering interface on the drives for DCAShell engineering tool.

### Opening new doors.

The new compact extra-low voltage drives from SEW-EURODRIVE are all set to revolutionize warehouse technology and warehouse systems. They can be used flexibly and efficiently in multiple applications, especially in the field of materials handling technology.



**JUST  
KIDDING**

Q: What is the name of the first electricity detective?

A: Sherlock Ohms.



# Aligning the future of students to the tomorrow of engineering.

*Over an enriching conversation Dr. D Dinakaran, Professor and Head of the Centre for Automation and Robotics at the Hindustan Institute of Technology and Science (HITS), Chennai, throws light on how the world of technology is ever-evolving, and engineering education needs to gear up to keep pace.*



**Firstly could you tell us something about yourself?**

Yeah. I am Dinakaran, heading the Centre for Automation and Robotics, HITS, Chennai. I hold a Bachelor's Degree in Mechanical, Masters in Manufacturing and a PhD in Industrial Automation. This ladder provided me an opportunity to focus on interdisciplinary domains which are of high demand today!

I played a vital role in starting Mechatronics Programme at Hindustan and was involved in Curriculum Development. I have established three laboratories in collaboration with industries. I have been working on various research and consultancy projects in the field of Robotics and Automation, funded by national and international agencies and industries.

**Yours was one of the few colleges to offer a mechatronics program. What are the challenges in setting up the curriculum for a mechatronics program?**

The curriculum for Mechatronics is not just a physical combination of courses in Mechanical, Electrical, Electronics, Controls and Algorithms, but it is a chemical combination, where the courses should react with each other and create a symphony!

The challenge in setting up the curriculum lies in constructing the curriculum pyramid which has fundamental courses at the bottom and applications at the top, and ensuring the synergy of the courses throughout the programme.

The focus of our curriculum is systems engineering and integration which facilitates students to play a lead role in 'interfacing and integrating' of different domains in product/process design and development.

**And are there any specific challenges in offering mechatronics as an undergraduate degree course as opposed to offering it as a PG specialisation?**

In my well-considered opinion, I could say there is a misconception about mechatronics as a 'specialization' programme. But it is a general engineering programme that enables overall understanding of all engineering domains and focuses on few applications like robotics and automation. I feel this framework is highly required for engineers to promote innovation and creativity to adapt themselves with dynamic technological changes.

**In the age of Google with everything available online, how do you make the course curriculum exciting to students. How do you get them to engage and learn better?**

The role of a teacher has changed from 'Teacher' to 'Facilitator'. I strongly believe in 'Learning by Doing' rather than 'Learning by Teaching'!

To emphasize more on 'Learning by Doing' a course on 'Design Project' is introduced in all the semesters. In addition, 'Project Based Learning' is practiced.

For example, I taught a course 'Design of Mechatronics Systems', where constructing a measurement system is one of the outcomes. Traditional assignments which involve collection of informa-

tion and writing, do not create enthusiasm among students.

Hence, I asked them to construct a complete measurement system in their laboratory and asked them to post the video in 'Learning Management System' which is an online platform! All students have done it! I believe that teachers should understand technology transformation and connect with students in their digital platforms and gadgets.

**How important are industry-academic partnerships? Where do they really make a difference in your opinion? How do they benefit both the parties?**

Industry-Academia partnership is a signboard for any programme which sets the direction for curriculum and educational objectives.

At the Centre for Automation and Robotics we have strong industry collaborations and have engaged Industries in various avenues like setting up our vision-mission statements, curriculum revisions, student internships, consultancy and research projects. Industries have funded for laboratory establishments and contributed in course delivery.

I am happy to share that SEW-EURODRIVE is jointly establishing a Motion Control Laboratory, which is a unique lab in India!

Industries are equally benefited as they have trained manpower readily available to them. We offer training programmes and consultancy services to industries. I am proud to say that we have trained more than seventeen industries last year in the field of Quality and Inspection as part of a project funded by the Royal Academy of Engineering, UK.

**Can you tell us about some interesting projects that your students and faculty have worked on, in collaboration with Industry?**

Sure. Our students are working on projects on specific industrial problems and social issues. One of the student batches worked on a project for DRDO on developing ultra-response purging system. The work is accepted by DRDO and we are going for a joint patent.

Automated NDT monitoring of cast components, real time vision inspection of rubber gasket, automation of die casting process are some of the projects carried out by students and implemented in industries. Currently, a group of students are working on design of magnetic retarder which is an 'on-demand consultancy project' by an industry.

You will be eager to know about a batch of students working on development of Gantry robot for Braille printing! We are planning to extend this model for printing 'Palm leaf manuscript' to reconstruct and preserve the early form of the Tamil script 'Tamizhi, Tamil Brahmi' for generations to come!

Our faculty team is very strong in research and development and we are working on assistive robot, wall climbing robot, virtual reality, machine vision and industrial adaptive robot technologies in collaboration with industries. We are also partnering with leading global universities and international industries for these projects, which comple-

ments the strength.

**How do you think the Indian engineering industry is evolving? Are engineering colleges in India able to develop students with the right skill-set that the industry needs?**

Indian engineering industries are targeting global markets and are becoming global players. They have an edge in terms of cost of manufacturing, technology and innovation. However, MSMEs also should be facilitated to face the challenges in poor access to market, technology and burdensome regulatory practices.

Many surveys state that more than 50% of engineering graduates do not possess the knowledge and skills required by the industries. It is time to revisit and reform the curriculum, teaching-learning practices, industry-institute interactions, infrastructure facilities and funding for institutions. We should not train the students just to use existing technologies. Instead they should also be prepared to create future technologies!

**In your opinion which industries / specialisations are likely to be the biggest employers in the next 5-10 years? What should Indian engineering colleges do to meet this demand?**

I am sure Automation, Artificial Intelligence, Robotics, Big data, Block chain, Digital manufacturing, Renewable resources, Virtual reality and IoT specialisations will play a vital role in Manufacturing, Information Technology, Infrastructure, Transportation, Energy and Healthcare sectors.

Universities should align their curriculum and learning practices towards these upcoming domains. Many of the present jobs may not exist in the near future due to technology transformation. It is very difficult to include everything in the curriculum; instead we should promote self-learning abilities among students.

**You have been in this field for a long time now. What are some of the things you love about your job?**

I feel young as this profession offers me an opportunity to always deal with youngsters. I learn many things from my students as they are good in digital devices and platforms. In fact, one of my students taught me how to use WhatsApp a few years back!

We always have a challenge to prove that classrooms are much better than Google in providing a learning environment with a human touch. Yeah! Prof. Google is our competitor!

I love this profession, because I wanted to be a professor. So I find every moment fun and enriching.

# Reader Quiz

Please answer the following questions for a chance to win Amazon gift vouchers! Just send an email with the question number and the correct answer. For example it could be

Q1. a.

Please also include your full name, designation and the name of the company you're working for and send your response to [marketing@seweurodriveindia.com](mailto:marketing@seweurodriveindia.com). Five lucky winners will each get an Amazon gift voucher worth ₹1,000. If there are more than five all-correct entries, winners will be chosen through a lucky draw.

1. By using SEW's innovative EFFISRS technology, how much energy savings are possible?

- a) Up to 50%
- b) Up to 25%
- c) Up to 15%
- d) Energy saving is not a key benefit

2. What is the key benefit of the Automated Storage and Retrieval System?

- a) Better floor space utilization
- b) Increased picking accuracy
- c) Reduced labour requirement
- d) All of the above

3. Which of the following is a key application area for SEW-EURODRIVE's Compact Extra-Low Voltage Drives?

- a) Aeronautics and space
- b) Materials handling
- c) Chemical and pharma

4. Which of the following is NOT a benefit of SEW's Compact Extra-Low Voltage Drives?

- a) Less noise
- b) Compact design
- c) Low weight
- d) Energy efficiency

**Last date for receiving responses: 30th April 2020.**