We aim to use advanced recycling technologies in our extrusion lines

Rajoo Engineers Limited has an impressive repeat customer rate of 60 per cent, positioning itself as a leading name in the plastic extrusion and recycling industry. Managing Director Khushboo Doshi, who carries on the company's legacy from its founder C.N. Doshi, discusses the company's origins and outlines her vision for extensive research and development, innovative solutions, sustainability, and customer satisfaction. In an interview with Nisha Shukla, she also revealed details about the recent acquisition of land adjacent to the Rajkot factory, the company's target market segments, as well as plans for achieving short-term and long-term goals and future expansion.

What inspired the company to specialise in plastic extrusion, and what sets your company apart from competitors in this field?

The inspiration behind our specialisation in plastic extrusion comes from our founder, C. N. Doshi. His keen understanding of market needs, unwavering focus on innovation, and commitment to providing exceptional value to our customers continue to shape Rajoo Engineers Limited today.


Khushboo Doshi, Managing Director, Rajoo Engineers Limited

From the beginning, we recognised the critical role of research and development. By prioritising R&D, we focused on indigenous manufacturing and adapted technologies to meet local needs. This commitment to innovation remains one of our core strengths.

At Rajoo, we place a strong emphasis on exceeding customer expectations and delivering unmatched value. Our dedication to customer satisfaction is reflected in our impressive repeat customer rate of 60 per cent. This loyalty speaks volumes about the trust our customers place in us and the value we provide.

In essence, our success is built on a market-driven vision, a robust commitment to R&D, and a strong focus on customer satisfaction. These elements set us apart from our competitors and continue to drive our growth and innovation in the field of plastic extrusion.

How do you define "innovation" in the context of plastic extrusion, and what are some of the most innovative products or processes your company has developed?

We are at the forefront of innovation in flexible packaging, demonstrated by two ground-breaking achievements:

- ***Nonafoil - a game changer for***

recyclable packaging: This is India's first nine-layer blown film extrusion line setting a new standard for excellence. It delivers high-barrier recyclable films for various applications, from food packaging to thermoformable films. Nonafoil achieves this with less than five per cent EVOH, significantly reducing environmental impact without compromising performance.

- ***Pentafoil-POD-AX:*** This five-layer blown film line represents a major step towards championing domestic innovation. The Pentafoil-POD-AX embodies India's manufacturing potential by creating and implementing innovative solutions domestically. It reduces dependence on imported technologies, showcasing Rajoo's commitment to fostering indigenous advancements.

Our expertise extends beyond blown film lines to high-output sheet extrusion systems, which have been successfully catered to semi-rigid packaging and the renewable energy sector.

We have heard that Rajoo Engineers has acquired land adjoining the Rajkot factory. Will the acquired land be used for further expansion?

Yes, we have acquired 28,210 sq.ft of land adjoining the Rajkot factory to expand our business. This strategic prime location will help us to expand our operations and provide ample opportunities for future development and efficiency improvements.

Our focus is on strategic expansion. This facility is a spacious structure on the adjacent land acquired last August, which will increase manufacturing capacity by 30 per cent. The dedicated space for quality control will help the company enhance the customer experience. Additionally, we have made a significant investment in the factory shed, spanning 18,000 square metres and standing 100 feet tall. This investment emphasises the company's commitment to innovation, quality, growth, and customer satisfaction. Equipped with advanced technology, the expanded facility is poised to revolutionise the production landscape, catering to diverse global requirements with unparalleled precision and reliability. Our steadfast focus remains on delivering top-quality products to our national and international clients.

What are the key markets/ segments you are targeting for further expansion?

Firstly, in the flexible packaging and semi-rigid packaging segments, we anticipate a demand due to its ability to prevent cross-contamination, especially when importing or exporting products. We will strategically target these segments with our efficient and high-quality machinery for blown film lines, sheet extrusion lines, and thermoforming machines.

We have also identified the renewable energy sector as a high-growth opportunity considering India's target of green energy and the Prime Minister's vision of Make in India.

Additionally, the agriculture sector has huge potential due to the increased usage of mulch film and greenhouse film to improve crop yield and resource savings.

Overall, the plastics market, especially the recyclable and biodegradable segments, will see positive momentum in the coming years. Our prime focus will be on staying ahead of the curve by ensuring extensive R&D to develop advanced machinery. We are continuously innovating extrusion technologies

like multi-layer co-extrusion and blown film die advancements to offer our customers best-in-class machinery with improved efficiency, production rates, and reduced waste.

Tell us in detail about your unique experimental centre. What is the key USP of this centre and its function?

Our unique experimental centre (RIC – Rajoo Innovation Centre) is very close to my heart. It is a plant-like setup where interested parties can rent space to conduct various trials of raw materials. We offer it to our clients, polymer manufacturers, and aspiring students. The centre also serves as a capacity expansion tool for our key customers.

We recently partnered with Plastindia International University to impart practical knowledge about plastic extrusion, enabling students to learn various aspects of the process. This setup helps us immensely in understanding the industry's needs and identifying future trends to watch for.

Localisation of the supply chain is a key aspect of the Make in India initiative. What steps are you taking to source raw materials locally and contribute to this initiative? How do you manage supply chain challenges, particularly in sourcing raw materials for your extrusion processes?

The 'Make in India' initiative is of strategic importance to us. Most of our raw materials are locally sourced. Our key objective has always been to decrease our dependence on other countries. This outlook existed even before the pandemic, but the pandemic truly cemented the importance of local sourcing.

In fact, right from critical hot components to electronic control panels, we manufacture everything in-house.

For our extrusion processes, we use multiple sourcing strategies to ensure the continuity of raw material supply. We also invest extensively in inventory management processes, such as MRP-based procurement and Just-in-Time (JIT), to avoid stockouts or production delays.

What are the biggest challenges currently facing the plastic extrusion industry, and how is your company addressing them?

According to me, there are two major challenges. The first is the need for robust government support in research and development. For any industry player to stay ahead, continuous innovation is crucial, and this often requires substantial investment in R&D. However, securing adequate funding and support from government bodies can be challenging. The second challenge is the myth about plastics and their reliability. Despite advances in sustainable and recyclable plastic technologies, public perception often remains negative, influenced by environmental concerns and misinformation. By securing R&D support, educating the public, complying with environmental regulations, and embracing technological advancements, we are ensuring our continued leadership and innovation in the industry. Our commitment to sustainability and reliability positions us to meet current challenges head-on and pave the way for a prosperous future.

Can you discuss any emerging trends or technologies in plastic extrusion that you believe will significantly impact the industry?

This year, we launched a nine-layer blown film production line called Nonafoil, which can produce high-barrier recyclable film for various critical packaging applications.

It is compliant with Industry 4.0, has a low EVOH layer, and can work with recycled materials and biomaterials. This brings me to the second significant trend: sustainability and smart manufacturing.

Production-to-end-of-life management is a huge theme that will influence the future of the industry. On the sustainability front, reducing raw material waste and increasing energy efficiency will be important. On the smart manufacturing front, features like short start-up and changeover times, automation from granules to dispatches will further shape the industry.

MOST OF OUR RAW MATERIALS ARE LOCALLY SOURCED. OUR KEY OBJECTIVE HAS ALWAYS BEEN TO DECREASE OUR DEPENDENCE ON OTHER COUNTRIES. THIS OUTLOOK EXISTED EVEN BEFORE THE PANDEMIC, BUT THE PANDEMIC TRULY CEMENTED THE IMPORTANCE OF LOCAL SOURCING.

What role does sustainability play in your R&D efforts?

Sustainability is a cornerstone of our research and development efforts at REL. We are committed to creating innovative solutions that not only meet the needs of our customers but also align with sustainable manufacturing practices and environmental responsibility. Our focus on resource efficiency and minimising environmental impact is evident in several of our recent innovations.

Both our Pentafoil-POD-AX and Nonafoil lines offer various customisation options to further enhance resource efficiency. These options allow our clients to tailor the production process to their specific needs, optimising material usage

and reducing wastage. By providing flexible and adaptable solutions, we enable our clients to achieve their sustainability goals while maintaining high levels of productivity, energy efficiency, and quality.

Can you share any insights into upcoming innovations or technologies that we can expect from your company in the plastic extrusion space?

At Rajoo, innovation is key. We constantly refine existing technologies and explore new frontiers in plastic extrusion. While we keep some exciting developments under wraps, sustainability remains a core focus. Our recently launched rPET sheet extrusion line is a testament to this, and we are actively researching ways to further promote recycled plastics.

We continuously upgrade our ERP systems to streamline our manufacturing processes, leading to faster production times and improved overall efficiency. We are also constantly integrating cutting-edge technologies to enhance precision, elevate quality control standards, and allow us to manufacture even more complex machinery.

What are the key sustainability initiatives your company has undertaken to reduce its environmental footprint?

We have implemented a robust set of sustainability initiatives to minimise our environmental footprint. By adopting a waste-reduction philosophy, implementing lean practices to minimise scrap, and exploring reuse or recycling options, we strive to make a positive impact. Energy optimisation is a key focus for Rajoo, with investments in energy-efficient equipment, smart power management, and exploring renewable energy sources.

At Rajoo, 45 per cent of our operations are powered by green energy, thanks to our solar park. We have further planned to expand our solar energy capacity by 3MW.

How do you address the challenges of recycling and waste management in the plastic extrusion industry?

Recognising the challenges of plastic waste management, we have taken a multi-faceted approach. We have designed machinery like the rPET sheet extrusion line, which is capable of handling 100 per cent recycled PET. Industry reports indicate a surge in demand for recycled plastics, reaching an estimated 50 million metric tons by 2025; our innovations directly address this need. Furthermore, we prioritise minimising production waste.

Looking ahead, we are actively exploring the integration of advanced recycling technologies within our extrusion lines. Here, collaboration is key, where we partner with industry and research institutes to advocate for improved waste management infrastructure and explore innovative recycling solutions for the entire plastic extrusion industry. By promoting recycled materials, minimising waste, and seeking future advancements, the company is committed to a more sustainable future for plastic extrusion.

What are your short-term and long-term goals for the company, and how do you plan to achieve them?

Our short-term goals are focused on achieving operational excellence and driving innovation. Additionally, we are launching the next generation five-layer blown film line with advancements by the end of 2024, enhancing our product portfolio and catering to evolving market demands.

In the long term, we envision Rajoo as a global frontrunner in sustainable plastic extrusion technology while creating excellent customer experiences.

How do you see the plastic extrusion industry evolving over the next five to ten years?

The plastic extrusion industry is on the verge of a significant transformation in the next decade. As leaders in extrusion technology in India, we see sustainability, advanced technologies, and market diversification as the key drivers of this change. Environmental concerns will continue to be a major force, with a rise in demand for biodegradable and compostable plastics, increased use of recycled content, and the development of closed-loop systems for plastic waste. The company is actively involved in exploring these areas, from integrating new bio-derived materials into machinery to developing processes for efficient handling of recycled plastics.

Advanced technologies like intelligent automation and material science innovations will also play a crucial role. Smart factories with automated processes will optimise production and minimise waste. Hybrid extrusion systems hold promise for on-demand customisation and complex part creation, and advancements in material science will bring new polymer blends with tailored properties. We are heavily invested in developing next-generation machinery that leverages these advancements.

Market diversification will see plastic extrusion cater to a wider range of applications. Light weighting for performance in automotive and aerospace, biocompatible materials for medical devices, and innovative food packaging solutions with extended shelf life and tamper-evident features are some key areas of growth. We are dedicated to developing extrusion technologies that cater to these evolving needs across various industries.

By staying at the forefront of these trends, our company is well-positioned to shape the future of plastic extrusion. Through ongoing research, development, and strategic partnerships, we will continue to provide clients with cutting-edge machinery and the expertise needed to succeed in this dynamic landscape.