

Making a difference to

The future

As the digital age continues to revolutionise our lives, more opportunities are available to businesses than ever before, providing they innovate to meet the expectations of customers.

Technology advances continue to reshape the world we live in

Businesses must understand how digitalisation is transforming the behaviours of their customers and address the impact of how technology is making it easier for the voices of different stakeholders to be heard.

Meanwhile, there are increasing opportunities in the significant advances digital development is offering businesses, in terms of the ability to ethically gather and analyse data and turn it into knowledge. This is knowledge that must be acted upon fast to drive the innovation needed to enter new markets and respond to new trends.

As markets expand and diversify, businesses have a real opportunity to respond to demands for niche products and to the increase in small independent customers and virtual communities that demand a 'different' level of service. To survive and thrive, we must be agile to keep pace with, and foresee changes in technology and consumer expectations.

Our opportunities to make a difference

We maintain a relentless focus on innovation to create new and improved ingredients in collaboration with our customers. Achieving this depends upon the deep knowledge of global markets, and customer objectives, products and applications, that we gain from our direct-selling model and focus on customer intimacy.

Our Open Innovation and Smart Partnering Programmes also play a crucial role. By working in entrepreneurial cells and partnering with world-leading academics, universities and start-ups, we identify unique opportunities and develop new solutions that will add value to our customers' products and fulfil consumer demands. This is integral to our strategy of offering ever-higher levels of performance at ever-lower levels of negative environmental impact.

Innovation is not just applied to inventing the new, but also to adapting existing ingredients and ways of working. By taking our science and applying it in new and novel ways to different applications and in niche market areas, we are creating significant sustainability and performance benefits for our customers and their consumers.

Across the Croda world Digital and data

Our future innovation will be supported and strengthened by our digital strategy, which has been developed by our new Digital Centre of Excellence, who work collaboratively right across our business to ensure that we take advantage of every opportunity.

We are also continuing to invest in artificial intelligence in R&D. Our investment in the Centre of Innovation for Formulation Science at the University of Liverpool's Materials Innovation Factory (MIF) in the UK is building a data-centric approach to innovation. The capabilities available at the MIF allow us to gain a more detailed understanding of ingredient interactions, active delivery and optimised formulation development for any given application. This is through design of experiment, faster robotic formulating platforms,

high-throughput analytical testing and advanced data analysis. The result is our ability to better exploit the functionality of existing and new ingredients in a wider range of formulation systems, giving our customers greater choice of innovative formulations.

Product innovation

We are harnessing data science and robotics to shorten product development life cycles, automate manufacturing and invest in new product areas. In particular, we will leverage the cutting-edge technology we have invested in through our shareholding in Cutitronics, who are developing a patented handheld device that assesses skin health and prepares it for the optimum delivery of the skin care formulation it dispatches. As we proactively expand our collaboration strategy, we will continue to invest in these start-ups in niche applications,

along with university partnerships, allowing us to commercialise and bring exciting innovations to market.

Operational innovation

We will continue to ensure that our manufacturing assets and supply chains are flexible to enable production and delivery of small batch sizes to meet changing customer demands. This is only part of the work that our Process Innovation Team focuses on, as they find ways to optimise the performance of our plants, whilst minimising their environmental impacts.