

Research & Development, Technology Development and Innovation

Research & Development (R&D), Technology Development and Innovation continues to be an integral part of RIL's agenda for achieving growth, business profitability, sustainability and rural transformation. The Reliance Technology Group (RTG), created by consolidating various research and technology functions is helping create enhanced value delivery by leveraging all the skills and competencies, and creating new opportunities at the interfaces. RTG continues to get external perspectives from members of the Reliance Innovation Council (RIC).

Key objectives of RTG are as follows:

- Develop fit-for-purpose and sustainable technology and its application.
- Provide effective project support and assurance to manufacturing plants and businesses.
- Provide technical assurance to projects including technology selection and absorption.
- Proactively identify and support technical opportunities to add value across RIL's businesses.
- Develop technology strategies suited to create business growth and offset threats.
- Balance technology sourcing by a flexible strategy of smart buying, fast customisation and flagship development of key technologies.
- Exploit synergies cutting across technologies/disciplines.
- Improve technical productivity on a continuous basis.
- Develop / recruit staff with skills and motivation to meet current and future business needs.
- Create a fit-for-purpose process centric organisation.
- Ensure long term technical health of RIL businesses.
- Manage technology and Intellectual Property (IP) assets for the Company.

RTG continues to support improvements in manufacturing operations, e.g., through the implementation of advanced process control.

In refining R&D, the major technology focus is on maximising desired product yields from Fluidised Catalytic Cracker (FCC), enhancing recovery of higher value products from distilling units, and on increasing efficiency and reliability of refinery processes by using advanced tools, e.g., computational fluid dynamics. Efforts are also under way to develop new processes to widen operating window for crude processing.

In the petrochemicals area, RTG is providing technology support to olefin crackers, polymers, fibre intermediates, Linear Alkyl Benzene (LAB) and polyester. In the polymers area, RTG is working on strategic technology for high performance polyolefin products such as Biaxially Oriented Polypropylene (BOPP) and Impact Polypropylene through innovation in catalyst systems.

RTG is also working on the development/commercialisation of new products e.g., oxygen barrier polyester resin for packaging, material for fruits/vegetables preservation and low cost Antimicrobial Polyester. In addition, RTG is working on emerging technologies such as fuel cells, carbon fibres, bio-fuels and gasification of various feedstocks.

Some major ongoing / completed projects include:

- Maximising light olefins yields.
- Expansion of testing and pilot plant facilities in refining.
- Technology development to process cheaper and heavier crudes.
- Computational Fluid Dynamics (CFD) studies for trouble shooting.
- Molecular modeling in blending and feed characterisation.
- Value addition by upgrading of coker streams.
- Process development for co-monomers from ethylene.
- Material development for enhancing shelf life of fruits and vegetables.
- Development of new grades of elastomers.
- New Purified Terephthalic Acid (PTA) technology development.
- Catalyst recovery from Crude Terephthalic Acid (CTA) residues.
- Development of a regenerable adsorbent for removal of olefins in Benzene, Toluene and Xylene (BTX) streams.
- Development of a dehydrogenation catalyst for LAB.
- Development of a polyolefin catalyst precursor.
- Development of catalyst ligands for the production of disentangled ultra-high molecular weight polyethylene.
- Development of High Melt Strength (HMS) grades of polypropylene.
- Development of low pill polyester in the continuous reactor.
- Development of full dull dope dyed polyester.
- Development of new catalyst systems for bottle-grade resin productivity enhancement.
- Finishes for specialty products in polyester.

RIL continues to participate in various collaborative projects in India and overseas.

The RTG has joined the New Millennium Indian Technology Leadership Initiative (NMITLI) project on indigenous fuel cell technology development as the sole industry partner. The work will be a collaborative effort with Council of Scientific and Industrial Research (CSIR) laboratories including National Chemical Laboratory (NCL), Pune, to demonstrate Proton Exchange Membranes (PEM) fuel cell technology over the next two years. Another initiative with NMITLI is in the area of conversion of bioglycerol into value added chemicals.

Creation and protection of IP is becoming a core activity at RTG. Systems and processes have been build to effectively protect the know-how, innovations, and knowledge generated by the staff. As per RTG's mission, the Company will continue to create business value and competitive advantage for RIL by applying (buying, customising, developing) the right technology, at the right cost, and at the right time to meet the current and future needs of RIL through the following initiatives:

- An integrated, central technology organisation to support RIL businesses and manufacturing facilities.
- A sustained high performance work culture which fosters innovation, entrepreneurship, inclusiveness, teamwork and continuous improvement.

A process centric organisation that maximizes synergies across all interfaces, leverages core competencies of various disciplines to maximise value from current assets and creates new growth opportunities, while allowing people to develop and contribute to their full capabilities.

Innovation

In a challenging year of demand destruction and the global financial crisis, RIL was resilient and continued to innovate to convert the adversity into an opportunity. RIL launched an innovative initiative called "Mission Kurukshetra" aimed at galvanising and energising the entire organization to rise to the occasion and help RIL emerge stronger.

The focus of this initiative was on extreme efficiency, value maximisation to serve the new market conditions and safety and reliability of assets. The employees responded overwhelmingly by pouring in a record number of ideas over a specially built business excellence tool which operated on the Information Technology (IT) backbone.

This initiative not only helped in surmounting the challenges with a will to win, but also identified serial ideators, who were recognised and rewarded by the leadership of RIL. The Leading Expert Access Programme (LEAP) which gives access to global thought leaders continued to inspire the people of RIL. Nobel laureates, industry captains and thought leaders enthralled and enlightened communities with their experiences of life and work.

The year culminated with the meeting of the RIC, which was organised in Jamnagar in January 2010. "Value creation through innovation" was the theme for this meeting. The meeting witnessed Nobel laureates such as Professors Lehn and Grubbs, global strategy leaders such as Professor CK Prahalad and leading thinkers such as Professor Whitesides and Dr. Haseltine work along with the Chairman Dr. Mashelkar, Mr. Mukesh D. Ambani and the leadership of RIL in defining the RIL of the future and lay out roadmaps based on the unique positioning of the Company.

The Reliance Innovation Leadership Centre (RILC) continues to serve the RIC and builds on the innovation agenda drawn up to make RIL one of the most innovative companies in the world. It has lined up some exciting and highly innovative initiatives that will take innovation at RIL to the next level. RIL continues its quest to make innovation a way of life and ensure that the next generation of growth is innovation led.