praj

Innovate · Integrate · Deliver

Investor Presentation – August 2022

Company at a Glance

38 Years of Legacy

Presence across 100+ countries

1200+ employees

90+ research scientists

4 manufacturing facilities

300+ patents

40%+ business from repeat customers

~10% Global ethanol production market share*

1000++ References/plants worldwide

400+ overseas references

Net Debt Free company

3-Year Revenue CAGR 27%

3-Year EBITDA CAGR 33%

3-Year PAT CAGR 30%

FY22 ROCE 24%

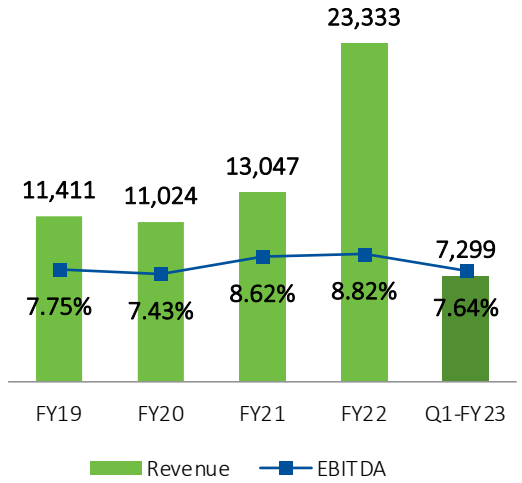
* Excluding China

Company Overview

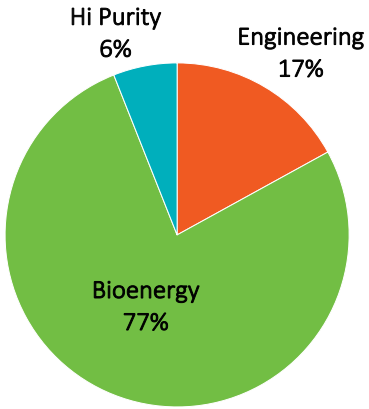
Company Overview

- Incorporated in 1983 under the visionary leadership of technocrat Dr. Pramod Chaudhury.
- Praj Industries Ltd. (Praj) has grown to become one of the most reputed and technologically advanced biotechnology and engineering companies in the world.
- Offering a bouquet of sustainable solutions for bioenergy, high purity water, critical process equipment, breweries and industrial wastewater treatment
- Focused on the environment, energy and farm-to-fuel technology solutions, with 1000++ customer references in 100+ countries across 5 continents and still counting.
- Team of 90+ technologists, 300+ patents filings, and 24 Indian and 60 international patents being granted.
- Known for its TEMPO (Technology, Engineering, Manufacturing, Project management, and Operations & Maintenance) capabilities.
- The manufacturing capabilities are substantiated by four world class manufacturing facilities located in Maharashtra and Gujarat, which are near ports and supported by a multi-disciplinary engineering team.
- Global Offices located in Thailand and Philippines in South East Asia and in Houston, Texas, USA.

Operational Revenue (INR Mn)



Q1-FY23 Revenue Break Up (%)



Order book
As on Q1-FY23

INR
32,417 Mn

Order Intake in
Q1-FY23

INR
10,940 Mn

Board of Directors

Dr. Pramod Chaudhari – *Executive Chairman*

As a first generation techno-entrepreneur, Dr. Chaudhari founded Praj in 1983. He dreamt and developed Praj into a world-class engineering company specialized in Agri-processing opportunities. Deeply passionate about Bio-economy and Environment, Dr. Chaudhari is committed to develop clean and green technologies. Dr. Chaudhari is a 'Distinguished Alumnus of IIT Bombay (1971)' and an alumnus of Harvard Business School (AMP 1995). He is the first Indian to receive the global honour of the prestigious 'George Washington Carver Award 2020' by BIO-Impact, Washington DC, USA and the first Asian recipient of the prestigious 'William C. Holmberg Award 2022' for Lifetime Achievement in Bioeconomy

Mr. Shishir Joshipura – *CEO & Managing Director*

Mr. Shishir is a Mechanical Engineer from the prestigious Birla Institute of Technology & Science (BITS) Pilani and an Advanced Management Graduate from Harvard Business School. He has over 35 years of rich experience in varied fields of engineering. He possesses a strong business and leadership record. He began his career with Thermax Ltd and held several key positions to rise through the ranks to become Executive Vice President and Global Head of Cooling & Heating business. Before joining Praj, he served as Managing Director of SKF India Ltd from 2009 to 2018. He chairs the sub-committee on Environmental Sustainability of CII Western Region.

Mr. Sachin Raole – *CFO & Director (Resources)*

Mr. Sachin is a Chartered Accountant and Cost Accountant with 27 years of experience in varied fields of finance and accounts. He has worked in the areas of divestment, mergers & acquisitions, financial restructuring, treasury, accounts and taxation. He has very rich experience in the wide spectrum of finance across industries; manufacturing, project, financial services and pharmaceuticals.

Mr. Berjis Desai – *Non-Executive Director*

Mr. Berjis is a law graduate from Mumbai University and a post-graduate in law from Cambridge University, UK. He specializes in mergers and acquisitions, derivatives, corporate and financial laws and international commercial arbitration. He has been on the Board of Praj since 1993. Mr. Desai is on the Board of many renowned listed Companies.

Ms. Mrunalini Joshi – *Non-Executive Director*

Ms. Mrunalini is the Executive Director of Nichrome India Limited. She is a Science graduate by education, with a rich business experience spanning over 15 years in the packaging machinery industry. In addition to market research for various industries, she has expertise in international marketing, branding and corporate communication. She is also actively involved in several social initiatives around Pune district.

Mr. Sivaramakrishnan S Iyer – *Non-Executive Director*

Mr. Sivaramakrishnan S Iyer is a qualified Chartered Accountant from Institute of Chartered Accountants of India. He specializes in corporate finance and advises companies on debt/equity fund raising, mergers/amalgamations, capital structuring for new/expansion projects etc.

Dr. Shridhar Shukla – *Non-Executive Director*

Dr. Shridhar Shukla holds B.Tech in Electrical Engineering from IIT Bombay, MS in Electrical Engineering from Virginia Tech, USA and Doctorate from North Carolina State University, USA. He brings with him over 23 years of versatile experience in the areas of building and running software companies, infrastructure software products, services and R&D. He was associated with Persistent Systems Ltd as Director and COO between 1995-2003. Presently, Dr. Shukla is the Managing Director of kPoint Technologies – a Pune headquartered organization with the motto Videofy Enterprises. He is also the Co-founder and Chairman of the Board at GS Lab.

Ms. Parimal Chaudhari – *Non-Executive Director*

Ms. Parimal is the Managing Trustee of Praj Foundation and steers the CSR wing of the company. She holds a Bachelor's Degree in Arts with major in English, followed by a post graduate degree in Journalism and Communications. She has also been awarded the Rotary fellowship for group study exchange program to study media institutions in Austria, Germany and erstwhile Czechoslovakia. She has also completed core courses in creative writing at Cambridge University. As a recipient of Fulbright Fellowship, she has acquired MS at Syracuse University, New York, US. She is a communication consultant and a journalist by training and has taught at the Department of Communications and Journalism at the Pune University for six years.

Mr. Suhas Baxi – *Non-Executive Director*

Mr. Suhas Baxi is a Mechanical Engineer from VNIT Nagpur and obtained management training at IIM, Ahmedabad. He has worked with global and Indian companies in helping develop and implement market and organization development strategies and has been an active member of industry body CII where he was Chairman of Pune Zonal Council in 2010-11 and has been a member of National Council of CII for Higher Education. He is the co-founder of BiofuelCircle Private Limited.

Leadership Team

Mr. Atul Mulay (Head of Bio Energy)

Mr. Atul Mulay is working as President and Strategic Business Unit Head for Bio Energy Division and heads Global operations. He is Director on Praj Engineering and Infra Limited Board and a Trustee of Praj Foundation. He has been associated with Praj Group since inception of the group. He is a qualified Mechanical and Production Engineer and has also done his post graduation in Marketing Management from Pune. He has to his credit Fulbright Scholarship from United States of America and completed his Global Leadership Management Tepper School of Business, Carnegie Mellon University.

Mr. Vasudeo Joshi (Head of Advanced Biofuels)

Mr. Vasudeo Joshi is working as Vice President and Business Unit Head for Advance Biofuels and he is a Chemical Engineer and has over 33 years of experience in the field of Biofuels, Dairy & Food Processing Industry. He has been working with Praj for over 24 years with Multidiscipline experience in the Business Development, Proposals & Cost estimations, Engineering and Execution of Biofuel Projects in Domestic and Overseas markets. He was leading the Praj team in successful demonstration of Praj's 2nd Generation Biomass to Ethanol Technology at its Integrated Demonstration Plant.

Mr. Abhijit Dani (Head of CPES & Zero Liquid Discharge)

Mr. Abhijit Dani is a Vice President and Business Unit Head of Process Equipment and Modularisation, and Water Treatment. He is a Mechanical Engineer and MBA in Marketing and Finance. He was selected for prestigious Fulbright Scholarship from Carnegie Mellon University, USA. In 2009, he joined Praj and over last 12 years, under his leadership, this Business Unit has created many milestones in Process Equipment and Modularisation offerings in HydroCarbon, Industrial BioTech and Chemical Industry. He is also the Vice Chairman of Process Plant & Machinery Association of India (PPMAI) and he is also on the Central Advisory Board of Chemtech foundation.

Mr. Sanjay Sapru (Head of Brewery & beverages)

Mr. Sanjay Sapru is working as an Executive Vice President and Business unit head – Brewery. He has over 25 years of experience in business development and has completed his graduation from Birla Institute of Technology and Science, Pilani and Indian Institute of Management, Calcutta. Prior to joining Praj Industries 7 years ago, he has held roles in various capacities at SABMiller India.

Mr. Mihir Mehta (Head of HiPurity Systems)

Mr. Mihir Mehta is BU Head & Vice President at PRAJ HiPurity Systems Ltd. and heads global business unit and operations of HiPurity systems. He is a qualified mechanical engineering graduate from Mumbai University has earned repute for himself in the Indian Pharmaceutical Industry. He has to his credit more than 550 water plants and more than 200 critical process plants installed in India and abroad. He is a Fulbright scholar from Carnegie Mellon University, USA.

Mr. Ghanashyam Deshpande (President - Technology and Engineering)

Mr. Ghanashyam Deshpande presently heading Centre of Innovation and Applied Technology group in Praj has more than 30 years experience in developing affordable sustainable solutions for biofuel industry. He has expertise in process design engineering, scale-up, optimization and Integration engineering for advanced bio-fuels and chemicals, design and Deployment of sustainable solutions for low carbon and high energy density bio-fuels for all modes of transportation and providing value added low carbon intensity solutions to industry through Process Intensification and Innovation Technique. He holds a Masters in Chemical Engineering from ICT, Mumbai.

Dr. Pramod Kumbhar (Chief Technology Officer, Praj Matrix)

Dr. Pramod Kumbhar works as President and Chief Technology Officer of Praj matrix - R&D Center. He is focused on driving innovations in industrial biotechnology to make biofuels and bio chemicals. He has a Ph.D. in Chemical Engineering from ICT, Mumbai and Post-doctoral stints at CNRS laboratories in Montpelier and Institute of Catalysis, Lyon in France. He is Fellow of Maharashtra Academy of Sciences. Prior, he has worked at General Electric R&D Centre in Bangalore and SI Group (formerly Schenectady chemicals, USA) in various positions including last assignment as R&D director for Asia Pacific. He has Received Bronze and silver medals from GE for patent filings and has more than 25+ publications in peer reviewed scientific journals.

Mr. Shrikant Wale (Delivery Head)

Mr. Shrikant completed his engineering graduation in mechanical in the year 1990 from Govt. Engineering college, Aurangabad. He has pursued Management Program for Technologists in the year 1996 from IIM Bangalore and Leadership Development Program from ISB Hyderabad in the year 2018. He holds 30 years of diversified and rich experience in Manufacturing. He has worked with companies like Thermax Ltd, Thermax (Zhejiang) Cooling & Heating Engg. Co. Ltd., Doka India Pvt Ltd. His last assignment was with Oswal Industries Ltd., as Director - Operations.

Mrs. Nidhi Dhanju- Global Chief Human Resource Officer

Mrs. Nidhi is currently leading the Human Capital Practice. Her role includes all facets of human elements including Human Relations and Resources, Admin, Sustainability and CSR. Prior to Praj, Nidhi was the Vice President, Organizational Effectiveness at Thermax where her role included the entire gamut of Corporate HR including Talent development and Succession Planning, Compensation and Benefits, HR systems, Senior and entry level talent acquisition. She received her Bachelor's degree in Psychology and Economics from Lady Sri Ram College, Delhi in the year 2000 and a PhD in Human Resource Development from the University of Minnesota, USA in year 2006.

Key Milestones

1983-90

- Inception: 1983
- Established In-house R&D Center
- Launched continuous fermentation technology
- Venture funding by ICICI

1991-98

- Listing on BSE, NSE in 1994
- Forayed into synergistic fields like brewery
- Entered South East Asian market
- Alliance with Filtrox for Filtration systems

1999-2007

- Entered South American, European and African markets
- Forayed into process equipment, water & waste water treatment solutions
- Successful testing of fuel ethanol on pilot scale in India

2008-14

- Set up PRAJ Matrix – R&D Centre
- Scaled up the 2nd gen bioethanol technology
- Shifted to Praj Tower (HQ), LEED Platinum facility
- Entered high purity water segment through acquisition

2015-22

- Iconic **George Washington Carver Award** For Dr. Chaudhari
- Ranked #1 Company to work in Advance BioEconomy 2020
- Strategic alliance with Gevo for Isobutanol, an intermediate to SAF
- **India's First** 2G Bio-refinery Demo Plant
- Partnered with OMCs# to Set up 2G Bio-Ethanol Plants
- Integrated Demo Plant of Compressed Bio-Gas
- Ranked **2nd Hottest** company in the Bio-economy for 2021
- **2022 William C. Holmberg Award** for Dr. Chaudhari for Lifetime Achievement in Advanced Bioeconomy

#Oil Marketing Company
BSE: Bombay Stock Exchange
NSE: National Stock Exchange of India

Manufacturing Facilities

Pune Unit

- Infrastructure for SS, Copper and LAS (Low Alloy Steel)
- Area: 28,800 sqm for fabrication unit

Mumbai Unit

- Exclusively for HiPurity Systems
- Systems /equipment comply with WHO / US FDA / UK MHRA
- Area : 70,000 sqm

Kandla SEZ

- Stainless steel, Alloy & carbon steel products and Modular skids
- Area: 30,700 sqm (Unit 1); 20,200 sqm (Unit 2)

Certification

U, U2, S, R

3834-2, 1090-2

3rd Party Agencies

Award & Accolades

2017

Individual: Dr. Pramod Chaudhari

- Ranked 35 in 'Globally Top 100 People List' in Bioenergy space by Biofuels Digest

Corporate:

- 5th Procurement Excellence in Best Green Procurement
- Best Biotechnology R&D Specialists - Asia
- Best Supply Chain Management Practices by Indian Institute of Material Management (IIMM)
- National Safety Council (NSC) Award for Sanaswadi factory

Sustainability:

- Rotary Industry Award for environmental initiatives
- Excellence in Sustainable Supply Chain by World Sustainability organization

2018

Corporate:

- Information Technology Team has won IT Security-Now in Best Batsman of the year category
- Overall Excellence in Procurement & Sourcing to Supply Chain Management
- CPES business unit (Critical Process Equipment and Skids) honoured with Pune Best In Class Manufacturing Leadership
- Supply Chain Management Team was honoured with "Express Logistics & Supply chain Leadership Award 2018"

Sustainability:

- Pune Corporate Social Responsibility Leadership

2019

Individual: Dr. Pramod Chaudhari

- Asia's Greatest Leader of 2018 award by URS Media

Corporate:

- Golden Peacock Eco-Innovation for 2G biomass to bioethanol technology
- Praj Industries jumped to 8th position from 34th in 2018 in the list of TOP 50 Hottest Companies in Advanced Bio-economy for Year 2019 by Biofuel Digest
- "CHEMTECH CEW Leadership and Excellence Award 2019"
- Asia's Greatest Brand of 2018 by URS Media

Individual: Dr. Pramod Chaudhari

- Presitigious George Washington Carver award announced for Dr. Pramod Chaudhari
- 'Dattopant Thengdi Rashtriya Svavalamban Sanmaan 2020' by Swadeshi Jagaran Manch
- Dr. Pramod Chaudhari conferred with the degree of D. Litt. by Tilak Maharashtra Vidyapeeth

Corporate:

- Ranked No.1 among the "Best Places to Work in the advanced bioeconomy 2020"
- CII Innovation Award 2020 in Manufacturing Large Enterprise category for it's SHIFT technology
- CII 3R Award 2020 for Excellence in Design, Innovation and Developing Product Generating Minimum / Zero Waste at User End

2021

Individual: Dr. Pramod Chaudhari

- 'AsiaOne Global Indian of the Year 2020-21', by Asiaone Magazine and URS Media International

Corporate:

- AsiaOne Magazine & URS Media International chosen Praj as "World's Greatest Brand of 2020-21".
- Ranked 2nd in a list of world's 50 Hottest companies in global bioeconomy for 2021 in Low Carbon Fuels and Renewable Chemicals category based on US Biofuels Digest
- Ranked 3rd in a list of world's 50 Hottest companies in global bioeconomy for 2021 Biodesign and Engineering Category based on US Biofuels Digest

2022

Individual: Dr. Pramod Chaudhari

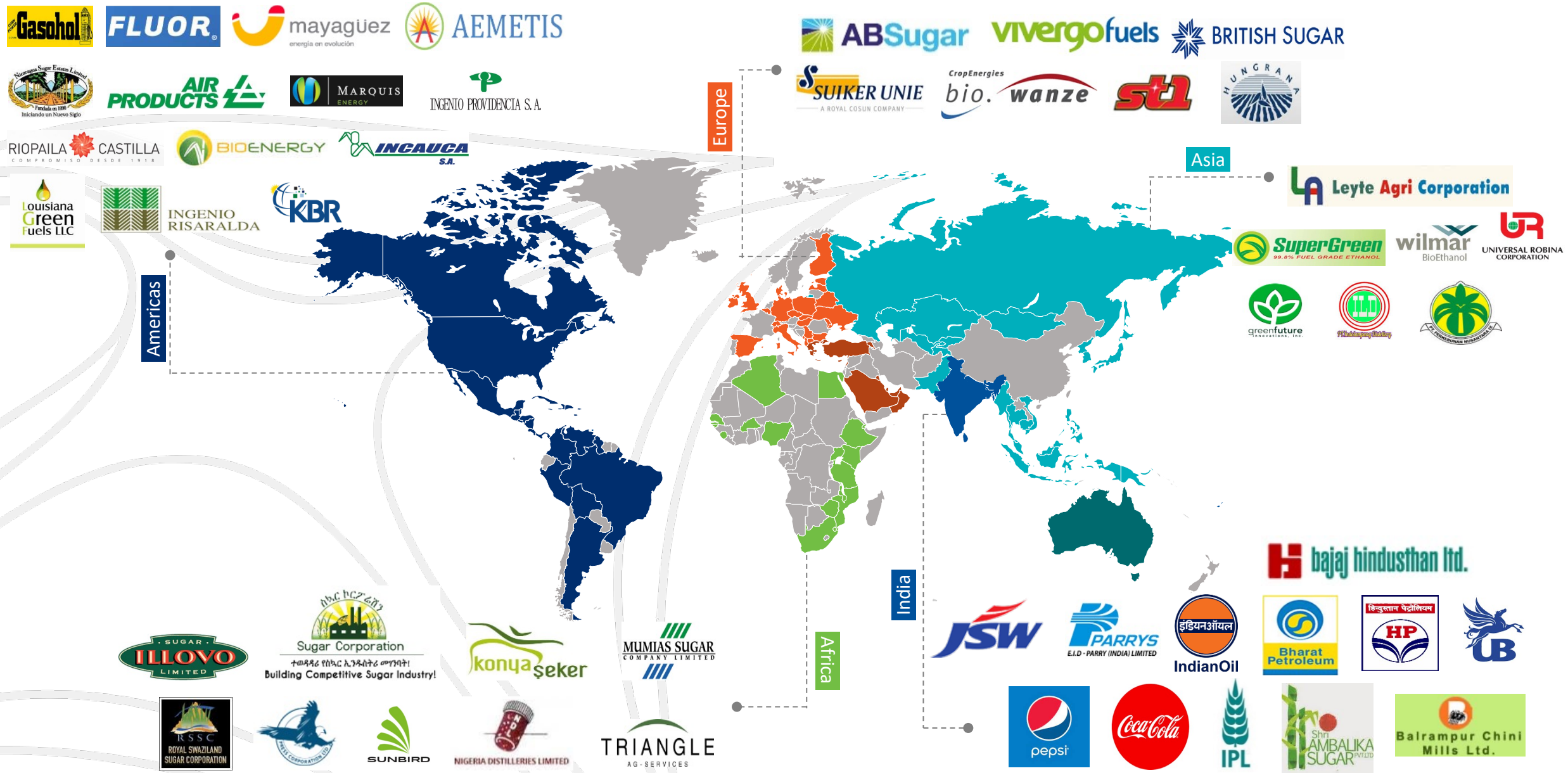
- Prestigious William C. Holmberg Award to Dr. Pramod Chaudhari for 'Lifetime Achievement in the Bioeconomy'

Corporate:

- Conferred with the prestigious Fortune India THE NEXT 500 in the Engineering sector.
- Golden Peacock Award in the innovative Product and Service Category for ground-breaking product – BIOSYRPUP.

George Washington Carver Award 2020 for Innovation in Industrial Biotechnology and Agriculture *Presented to* **Dr. Pramod Chaudhari**

1000++ References in 100+ countries across all 5 continents.. And Still counting



Key Partnerships

Areas	Partnerships/Associations	Key Objective
Academic	IISER Pune; Pune University; IIT, Bombay; ICT, Mumbai; NCL, Pune	Co-development, Research
Market	DEDINI Indústrias de Base (Brazil); Valmet (Finland); novozymes (Denmark)	Business growth, Expansion
Customer	IndianOil; Bharat Petroleum; HP	Re-define India's 2G Ethanol Market
Technology	gevo (USA); DVO (USA); Sekab (Sweden); ARAI Progress through Research (India)	Keeping Technology Edge
Associations	Department of Biotechnology; ABLE Association of Biotechnology Led Enterprises; CII; IFGE	Networking , Policy Advocacy


Business
Overview

Business Segments

High Purity Solutions

Water Systems

Modular Process Systems

Value Added Services

Bio Energy

1G & 2G Ethanol plants

Compresses Bio-Gas

Future Fuel: SAF, Marine Biofuel, Bio Hydrogen etc.

Engineering Businesses

Critical process equipment & Skids

Brewery and beverages

Zero Liquid Discharge

R&D

Customized Research Services & Solutions

BioPrism™: Renewable Chemicals and Materials

4 decades of leadership in Industrial Bio-technology Space

Bio Energy

Decarbonization

- Bio-Mobility™ is the mainstay of the company's contribution to the global Bioeconomy.
- The Bio-Mobility™ platform of technologies envisages the use of renewable resources to produce carbon neutral transportation fuel across all modes of mobility (surface, air and water).

1G Ethanol

- Pioneer in India since the 80's in the Ethanol Technology solutions serving various applications in different parts of the world.
- Leveraging the R&D capabilities by transforming first-generation Agri feedstock (sugars found in sugarcane juice, molasses, starchy grains) into bioethanol, and has registered several patents for this technology.
- Offering a complete suite of solutions for the global ethanol industry like multi-feed multi-product plants, modernization of existing plants, renewable fuels like BioCNG, iso-butanol etc.

Bio Products

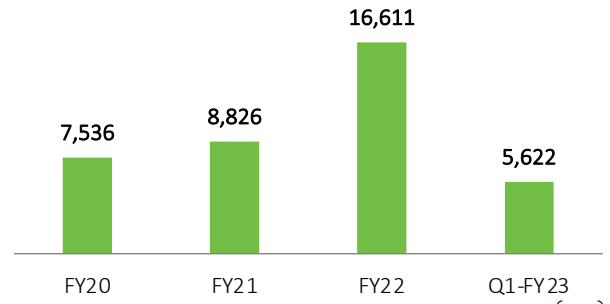
- Offers innovative formulations that add "economic value" to biochemical processes.
- These are formulated using useful bacteria, yeasts, fungi, enzymes, anti-microbials and nutrition biomolecules.
- These products not only increase process efficiency in the plant, but also result in a higher recovery of ethanol.

2G Ethanol

enfinity™

- Offering end to end solutions to set up bio-ethanol plant based on its proprietary Enfinity - 2G lignocellulosic ethanol technology.
- Processing a wide range of Agri residue such as rice straw, wheat straw, bagasse, corn stover and corn cobs, soft wood and empty fruit bunches to produce bioethanol and renewable chemicals.
- Successfully set up an integrated demonstration facility (12 MT/day) in India In 2017.
- This technology is currently being deployed at three commercial scale bio-refineries in India.

Bio Energy – Revenues (INR Mn)



Bio Energy

Renewable Natural Gas

- Developed advanced bio methanation technology based on proprietary microbiological pre-treatment for production of compressed biogas (renewable methane gas) from Agri residues and press mud.
- Developed and commercialised a proprietary renewable gas technology – RenGas™, and has commissioned over 40 plants in India of the same.
- Highest yielding BioGas with 30% lower operating costs due to its unique microbial cultures.
- The process creates value-added manure with organic soil as a byproduct while advanced biogas cleaning techniques gives pure methane.

Sustainable Aviation Fuel (SAF)

- The Praj - Gevo, Inc. innovative process uses iso-butanol produced from renewable sources (e.g. Sugars and Starch and Biomass) as feedstock to produce SAF.
- Technology is in its final leg of optimization and commercial offering and it is proven to significantly reduce carbon emissions when blended with Aviation fuel.
- Gevo, Inc. will license its technology and Praj will provide technology, plant equipment and EPC services to refineries for converting renewable iso-butanol into Sustainable Aviation Fuel and premium gasoline through the ASTM-approved pathway of Alcohol-to-Jet (ATJ).
- Iso-octane is another high value co-product used as fuel for F1 racing.

Marine Biofuels

Marine biofuels produced from certified lignin-based feedstocks are rapidly gaining interest among international ocean shippers and carriers.

Engineering

Critical Process Equipment and Skids

- Offering a range of static equipment such as pressure vessels, reactors, shell & tube heat exchangers, columns, and other proprietary equipment as per the client design requirements.
- Provide modular process skids and packages. A modular process skid is a system within a frame that allows easy transportation.
- Undertakes end-to-end projects for modular process skids and packages and supports clients with Finite Element Analysis, Process & Thermal Design and Piping Design & Stress Analysis, and design skids using software like Plant 4D and PDMS.
- Products under this segment are used in sectors such as Oil & Gas, Refineries, Petrochemicals, and Fertilizer, among many others.

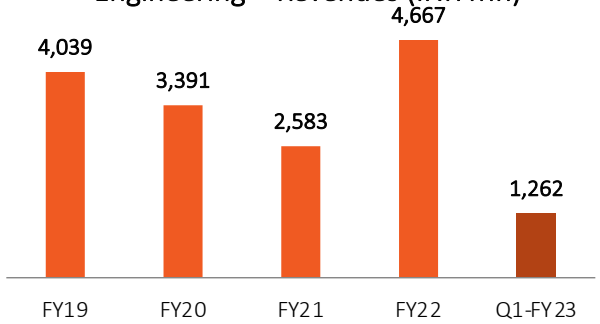
Wastewater treatment (ZLD Business)

- Offering integrated energy-efficient solutions for effluent recycling and zero liquid discharge for various industrial applications.
- The strong experience of treating the most challenging wastewater enables it to offer highly optimized systems with lower footprints and optimized operating costs.

Brewery and beverages

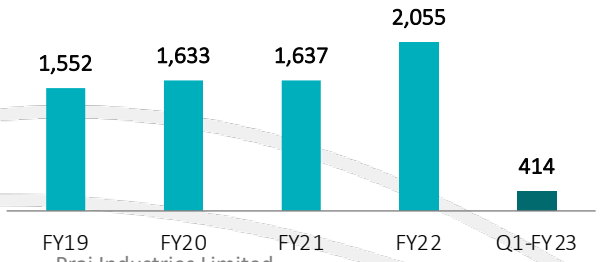
- Since its inception in 1994, the brewery division has been offering customized plants, equipment & technology solutions to customers in the brewing industry.
- Supplying world class brewery plants capable of producing the best quality beers at the most optimum cost.
- The breweries are environment friendly, utilizing minimum water, energy and generating a low carbon footprint.
- With over 70% of market share in India and experience of installing projects in Africa and South East Asia, it offers a complete range of solutions in conceptualization, technology, design, plant engineering, project installation and commissioning.

Engineering – Revenues (INR Mn)



High Purity Solutions

High Purity Solutions – Revenues (INR Mn)



Water Systems

- HiPurity Systems Limited (a wholly-owned subsidiary) provides value added and end-to-end integrated solutions to the Pharma, Biotech and Wellness industry.
- Pharmaceutical water is one of the core raw material/ingredient/solvent/cleaning agent, etc. It has to undergo a change in terms of end water quality using different technologies for treatment, design principles, inspection principles and quality processes.
- With more than 450+ installations globally, it has evolved to be one of the key solution providers in the Industry with many firsts, helping the industry wade through the various changes and challenges.
- Catering to industries like cosmetics, food & beverage, health supplements & nutraceutical which follow 'Compendial' water quality norms.

Modular Process Systems

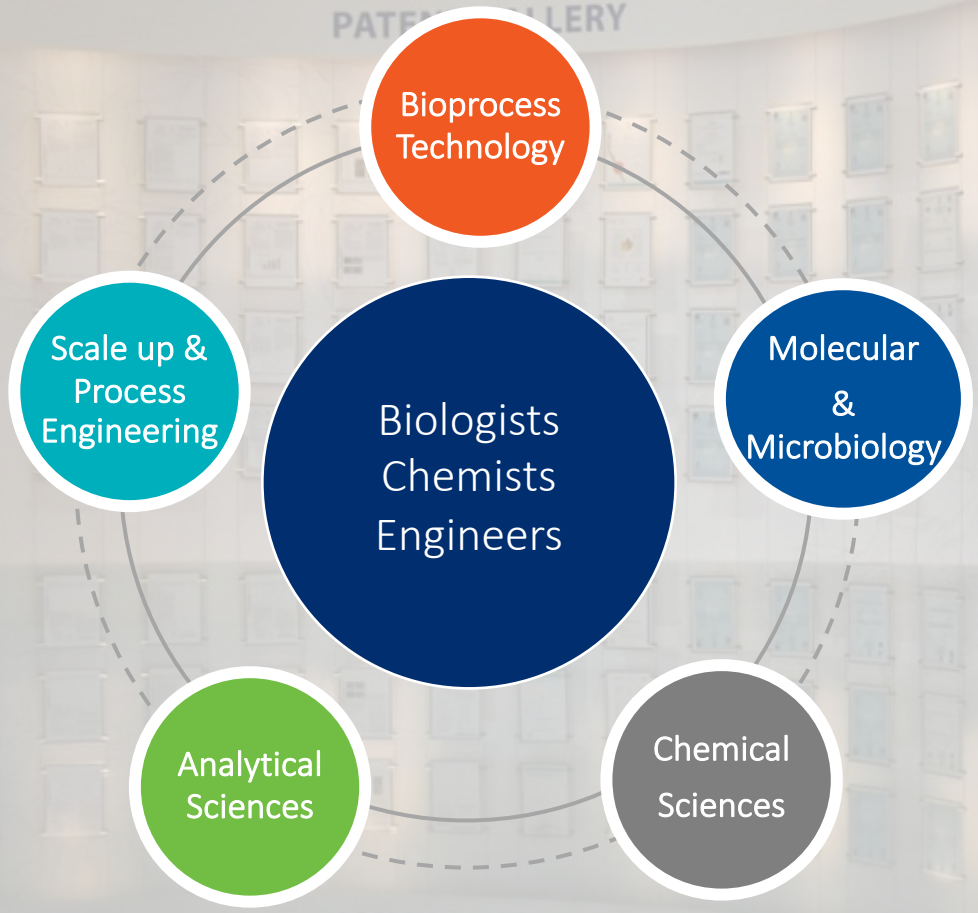
- The Modular Process Systems Business Line provides solutions to Pharma/Lifescience clients for a variety of applications in Biopharma, Sterile Formulations and Topicals & Orals.
- In-house vessel Manufacturing to orbital welding to system integration and Testing enables the company to help customers achieve faster time to market targets in this ever-challenging & dynamic business environment.

Value added services

- Providing special products like ozone systems and combi test kits and special services like electro polishing, on-site training and Riboflavin test at site.
- Also providing spares and consumables like membranes, chemicals, tubes & fittings and valves, instruments & pumps.

Praj Matrix - R&D

CENTRE OF EXCELLENCE



- The backbone of the company's technology development is Praj Matrix, the Innovation Centre.
- It is a state-of-the-art facility certified by the Govt of India's Dept of Scientific and Industrial Research, equipped with 16 laboratories for molecular biology, microbiology and bioprocess technology, process engineering & scale-up, and chemical sciences.
- First of its kind R&D facility with Bench & Pilot scale facilities that enable validation of scientific assumptions as well as rapid commercialization.
- Matrix's main area of focus is renewable chemicals & materials, enzyme production and biofuels.
- 90+ technologists who are engaged in research in areas such as protein engineering, protein production, strain development, and the development of fermentation processes using bacterial, yeast and fungal platforms.

Praj Matrix – Bio-Prism™

- Developing technologies for production of bio-based Renewable Chemicals and Materials (RCM).
- RCM produced from bio based feedstock are sustainable alternatives to products made from fossil resources.
- Sugary, starchy and cellulosic agri-based feedstocks along with gases like biogas, methane and various non-edible oils are the starting materials for RCM.
- For conversion of these feedstocks to the final molecule of interest, it is exploring Bio-catalytic, Chemo-catalytic & Thermo-chemical routes.
- Within the bio-industrial ambit, a spectrum of bio plastics remain a priority, along with cellulose-lignin refinery products and specialty products.
- These products have applications in industry sectors such as automotive, packaging, furnishing, construction, agriculture and food sectors.

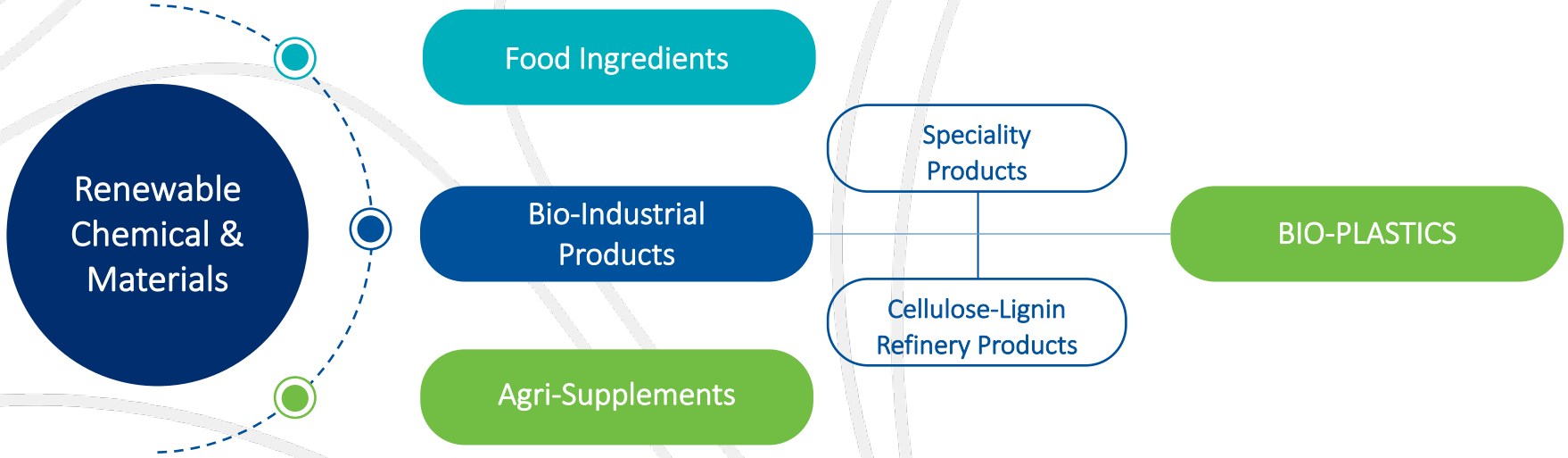
BIO-PRISM ™

Bio-Prism

Nature Reimagined – Promise of Sustainability

Renewable Chemicals & Materials (RCM)

Carbon Recycling



New Products & Innovation

Water Footprint reduction

SHIFT

- High Brix fermentation technology for reduction of effluent quantity to reduce water requirement in fermentation and energy requirement in Evaporation (ZLD) section.
- Technology has been commercially implemented on multiple feed stocks viz. cane juice syrup, B-heavy and Molasses-C. This helps to upgrade capacity of existing facility ensuring round the year operation.

ACHE

- Optimized design of Air Cooled Heat Exchanger (ACHE) being offered for water stressed projects.

Energy Footprint reduction

Alcohol MVR

- Reduction of thermal energy (Greenhouse gas emissions) by integration of MVR with distillation section.

Process Integrated Boiler (PIB), HBCS (High Brix Concentration using Agitated Thin Film Dryer)

- Technology developed to concentrate Spent wash (process effluent) generated from molasses based distillery to self-combustible level. 70% concentration of solids on weight basis, thereby reducing supplementary fuel requirement in incineration boiler by more than 30 %

Plant Capacity optimization

Maximol

- Ethanol dehydration plant capacity was upgraded by 30% in more than ten plants helping to enhance plant capacity.

BIOSYRUP®

- This technology helps in increasing ethanol yield as well as flexibility to store sugar rich stream for extended number of days of operation.

Co-product maximization

Human Grade Proteins

- Developing technology for production of human grade protein as a valuable co-product from grain-based distillery.

Pharma Grade Ethanol

- Introduced Pharma Grade Ethanol with unique capex and opex optimized solution for global clients meeting their local statutory norms for production process.

Lignosulphonate

- Developed technology from Lignin generated from 2G Enfinity™ plant which can be bolted to improve the overall viability.

Carbon-Intensity Footprint reduction

Bio Bitumen

- Based on lignin, developed an eco-friendly renewable material for road construction. A proprietary process (under patenting) to convert the crude lignin into Bio-bitumen which has potential to replace this fossil based bitumen.
- The Netherlands-based Circular Biobased Delta (CBBD), one of Europe's premier consortia to promote bioeconomy, has approved Bio-bitumen samples that will now be tested for scale up in Asphalt on a Dutch test strip on the road.

Digitalisation initiative

RemoteBridge™

A unique Remote Plant Monitoring System which provides solutions to improve the performance of plant through data collection, analytics, diagnostics and remedial measures.

Industry Overview

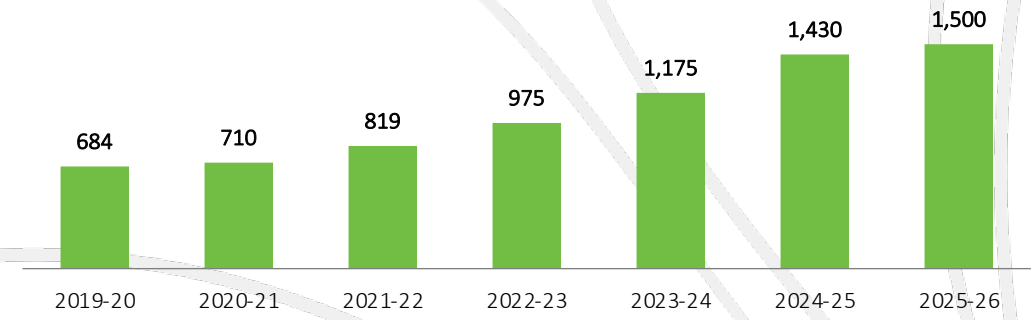
Bio Energy Industry Overview

- India's net import of petroleum was 185 MMT at a cost of $551 Bn in 2020-21. Most of the petroleum products are used in transportation. Hence, a successful E20 program can save the country US $4 billion per annum.
- Achieving energy security and the transitioning to a thriving low carbon economy is critical for a growing nation like India. Blending locally produced ethanol with petrol will help India strengthen its energy security, enable local enterprises and farmers to participate in the energy economy and reduce vehicular emissions.

Capacity Augmentation			
Ethanol Capacity (in Cr. Lt.)	Molasses based	Grain based	Total
Existing ethanol/alcohol capacity	426 (231 distilleries)	258 (113 distilleries)	684
Capacity addition from sanctioned projects	93 (will be added by March,2022)	0	93
New capacity to be added	241	482	723
Total Capacity required by Nov 2026 to reach 1350 Cr litres supply	760	740	1500

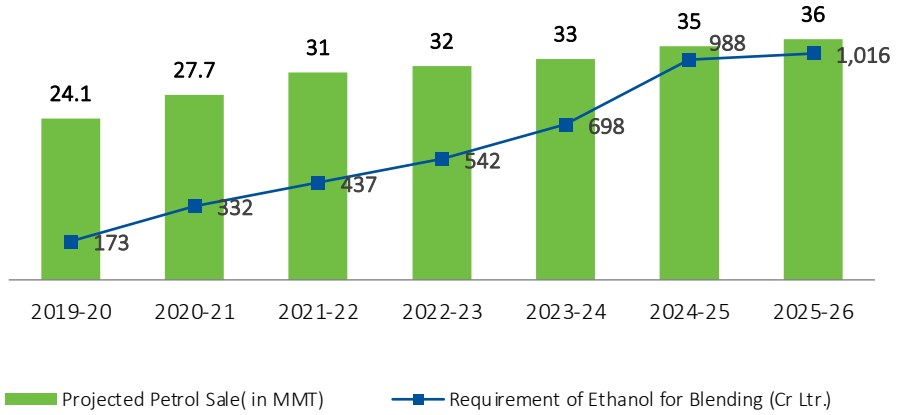
Ethanol Production Projections										
ESY	For Blending			Blending (in %)	For other uses			Total		
	Grain	Sugar	Total		Grain	Sugar	Total	Grain	Sugar	Total
2019-20	16	157	173	5	150	100	250	166	257	423
2020-21	42	290	332	8.5	150	110	260	192	400	592
2021-22	107	330	437	10	160	110	270	267	440	707
2022-23	123	425	542	12	170	110	280	293	535	828
2023-24	208	490	698	15	180	110	290	388	600	988
2024-25	438	550	988	20	190	110	300	628	660	1288
2025-26	466	550	1016	20	200	134	334	666	684	1350

Capacity Augmentation (In Cr. Lt)



Source: *NITI Aayog on roadmap for Ethanol blending in India*

Ethanol Demand Projection



Growth Drivers

Government initiatives

The government of India has advanced the target for 20 per cent ethanol blending in petrol (also called E20) to 2025 from 2030 to reduce the country's oil import bill and carbon dioxide pollution.

The government is also taking efforts to develop an ethanol economy by introducing flex fuel engines so they can run on ethanol blends

1G

The target of E20 blending would demand production of ~1000 Cr Litres of Ethanol for blending purposes, this translates to INR 12,000-14,000 Cr. of Capex requirements.

2G

Opening up of alternate route i.e. Second Generation (2G) route for ethanol production. Oil Marketing Companies are in the process of setting up 12, 2G bio-refineries with an investment of INR 14,000 Cr.

Critical Process Equipment and Skids

The global static and rotating equipment market was USD 29.08 billion in 2020 and it is projected to grow from USD 29.84 billion in 2021 to USD 38.90 billion in 2028 at a CAGR of 3.9%.

ZLD

India's wastewater treatment plants market stood at USD 2.4 billion in 2019 and is projected to reach USD 4.3 billion by 2025 owing to increasing demand for municipal water as well as sewage water treatment plants across the country.

CBG

The government plans to set up 5,000 CBG plants across India with a production target of 15 MMT, under SATAT initiative. An approximate investment of INR 2,00,000 Cr. is envisaged in the next 5 years.


Strategic
Overview

Strategic Overview

Leverage innovative and technology solutions in “Clean-Energy based Bioeconomy” utilizing our expertise in Fermentation

Modularisation as an offering for Clean-tech and Green-tech customers to complement growth in the existing CPES business

Leverage partnerships with renowned organization’s and institutions around the world

Focus on opportunities in complex injectable, fermentation and Bio-pharma space for PHS

Digitalization initiatives for better productivity and customer experience

Enhancing Technology and water treatment solutions to minimize consumption of energy and harmful water discharge in the environment

Increased solution based deliveries to drive sustainability, plant efficiency, yields and productivity while generating co-products

Making inroads into new frontier of bioeconomy namely, Bio-Prism™ portfolio of technologies for production of renewable chemicals and materials (RCM)

Propagate concept of Bio-Mobility™ by introducing lower carbon fuels to minimize carbon footprint & continue to be at the forefront of the transition to Net Zero emissions

CSR Initiatives – Impacting Lives at Bottom of the Pyramid

	Environment	Health	Education
			
	Sustainable water resources development	**Preventive Healthcare for rural women**	**Hands on life skills education through Rural schools**
Key Initiatives	• Widening and deepening of Streams in 37 drought prone Villages • 18.99 lakh cu metres of Silt removed from streams	• Preventive healthcare program implemented in 33 Villages in Pune • Promoting "Food as Medicine" concept through nutrition garden	• Infrastructure upgraded in 16 schools from 8 districts of Maharashtra • Rural entrepreneurship programs
Positive Impact	• 1,253 open wells and 660 bore wells Recharged • 12,360 acres hectares Agricultural land brought under irrigation	• Enhanced health status of 7,000 beneficiaries • Improved Hb level and reduction in nutritional deficiencies	• life skills education covering 6,500 students and more than 50 instructors • 22 entrepreneurs are being mentored


Financial
Overview

Historical Consolidated Financial Performance

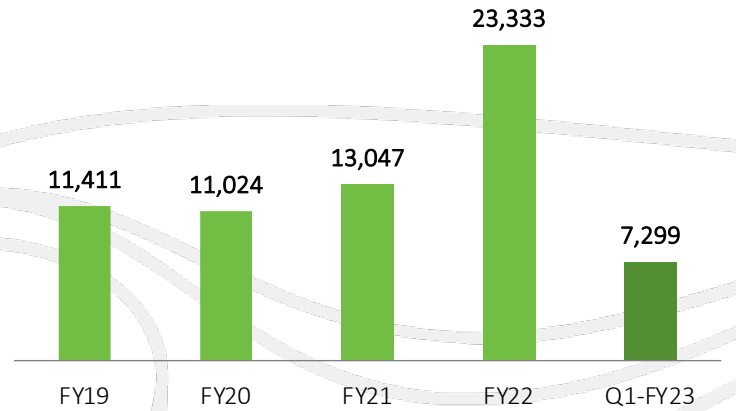
Particulars (INR Mn)	FY19	FY20	FY21	FY22	Q1-FY23
Operational Income	**11,411**	**11,024**	**13,047**	**23,333**	**7,299**
Total Expenses	10,527	10,205	11,923	21,274	6,741
EBITDA	**884**	**819**	**1,124**	**2,059**	**558**
EBITDA Margins (%)	*7.75%*	*7.43%*	*8.62%*	*8.82%*	*7.64%*
Other Income	233	261	257	241	55
Depreciation	230	218	221	226	64
Interest	8	31	29	25	7
PBT	**879**	**831**	**1,131**	**2,049**	**542**
Tax	197	127	320	547	129
Profit After tax	**682**	**704**	**811**	**1,502**	**413**
PAT Margins (%)	*5.98%*	*6.39%*	*6.22%*	*6.44%*	*5.66%*
Other Comprehensive Income	6	(3)	11	(22)	-
Total Comprehensive Income	**688**	**701**	**822**	**1,480**	**413**
Diluted EPS (INR)	**3.74**	**3.85**	**4.42**	**8.18**	**2.25**

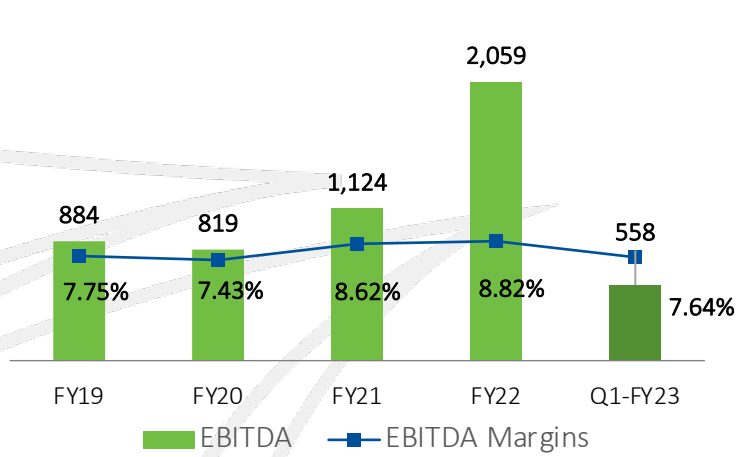
Historical Consolidated Balance sheet

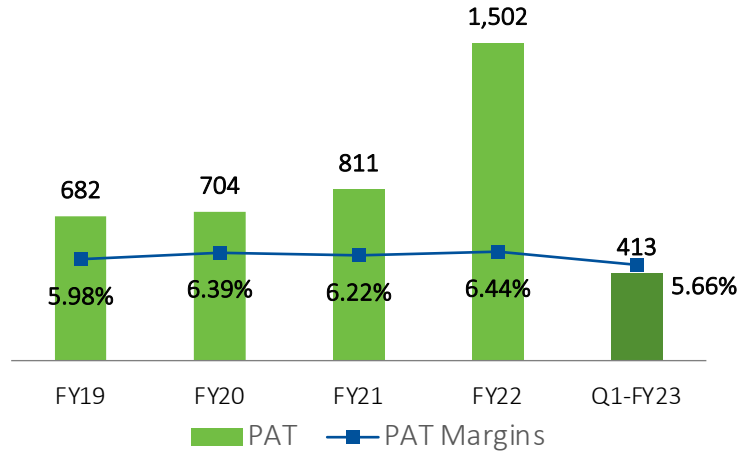
Particulars (INR Mn)	FY20	FY21	FY22
ASSETS			
Non-Current Assets			
Property, Plant & Equipment	2,167	2,064	2,085
Capital Work in progress	21	4	14
Investment Property	137	137	137
Goodwill	626	626	626
Intangible assets	8	11	19
Financial Assets			
(i)Investments	398	398	652
(ii)Long-term Loans and Advances	60	-	-
(iii)Other	127	151	139
Deferred tax assets (net)	180	104	19
Other Assets	93	90	31
Sub-Total Non-Current Assets	**3,817**	**3,585**	**3,722**
Current Assets			
Inventories	1,111	1,289	3,450
Financial Assets			
(i)Investments	1,237	2,950	3,979
(ii)Trade Receivables	3,301	4,534	5,118
(iii)Cash and Cash Equivalents	458	1,011	1,075
(iv)Other Bank Balances	35	313	476
(v)Loans	1	-	-
(vi) Others	39	46	74
Current tax assets (net)	85	-	-
Other Assets	1,532	2,210	4,233
Sub-Total Current Assets	**7,799**	**12,353**	**18,405**
TOTAL ASSETS	**11,616**	**15,938**	**22,127**

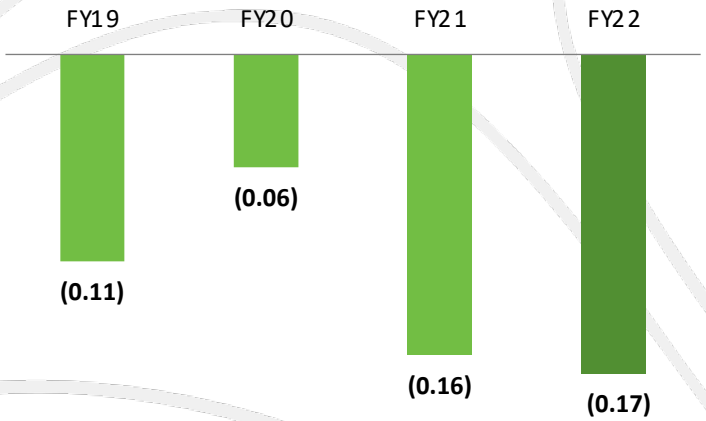
Particulars (INR Mn)	FY20	FY21	FY22
EQUITY AND LIABILITIES			
Equity			
Share Capital	366	366	367
Other Equity	6,826	7,652	8,790
Non Controlling Interest	7	7	7
Total Equity	**7,199**	**8,025**	**9,164**
Non-Current Liabilities			
(i)Lease Liability	-	113	147
(ii)Other Financial Liabilities	152	-	-
Provisions	172	157	171
Sub-Total Non-Current Liabilities	**324**	**270**	**318**
Current Liabilities			
(i)Trade Payables	1,875	3,416	4,248
(ii)Other Financial Liabilities	175	134	234
(iii)Lease Liabilities		63	63
Other current Liabilities	1,972	3,763	7,761
Provisions	73	251	315
Current Tax Liabilities (Net)	-	16	24
Sub-Total Current Liabilities	**4,094**	**7,643**	**12,645**
Sub-Total Liabilities	**4,417**	**7,913**	**12,964**
TOTAL EQUITY AND LIABILITIES	**11,616**	**15,938**	**22,127**

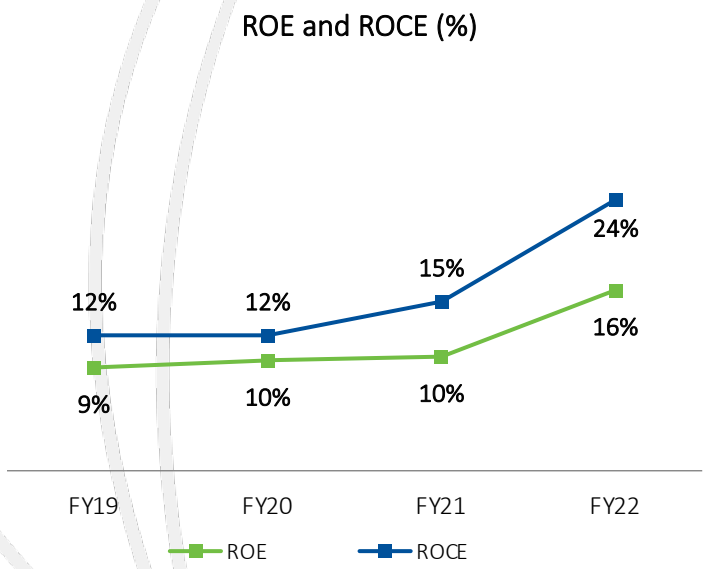
Consolidated Historical Financial Trend



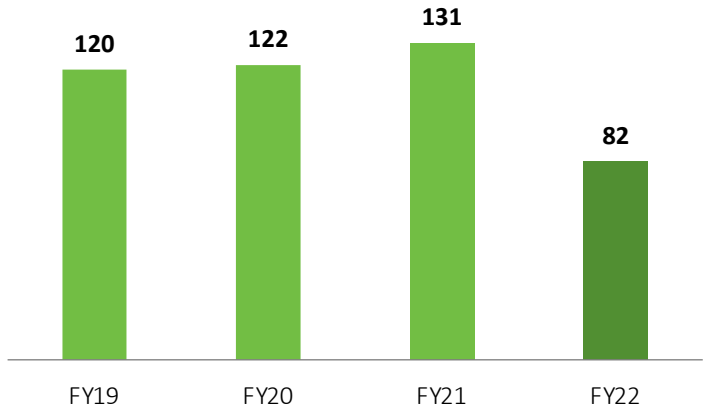






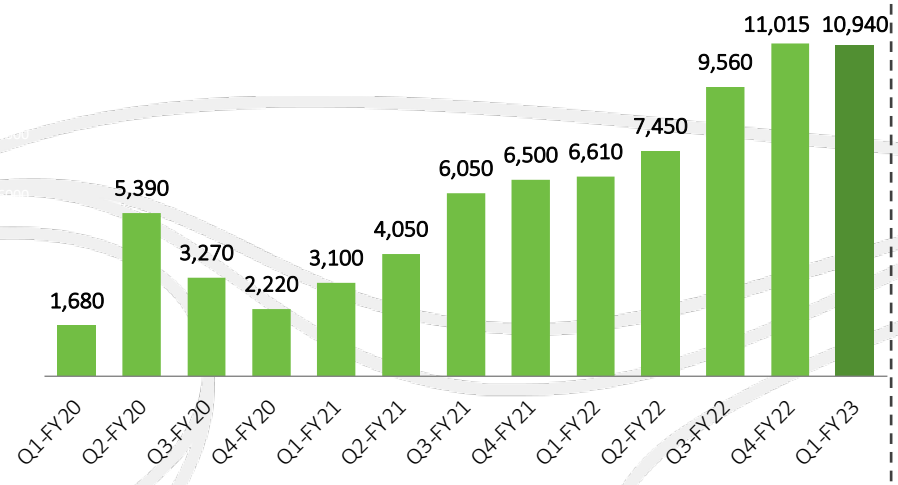


ROE = Net Profit/Net worth, ROCE = EBIT/Capital Employed

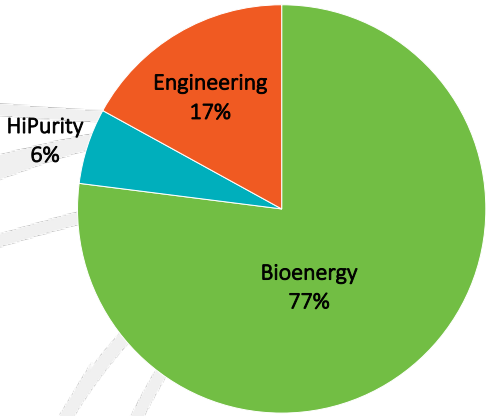


Order Intake & Order Backlog

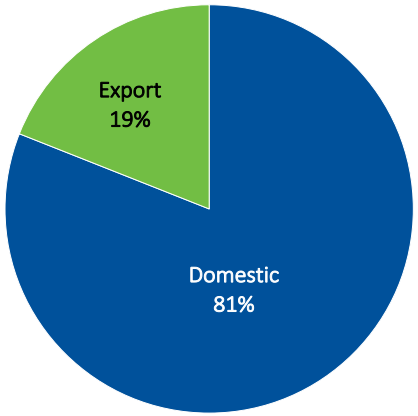
Order Intake (At the end of each quarter, Values in INR. Mn)



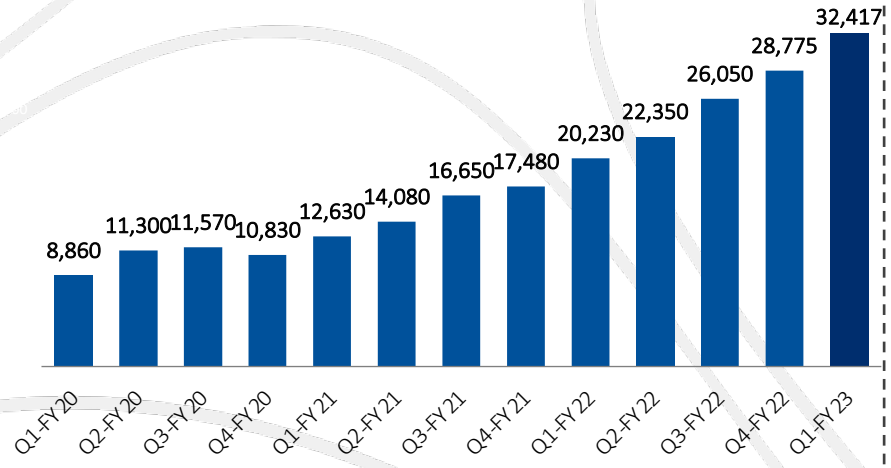
Q1-FY23 Segmental Order Intake – INR 10,940 Mn



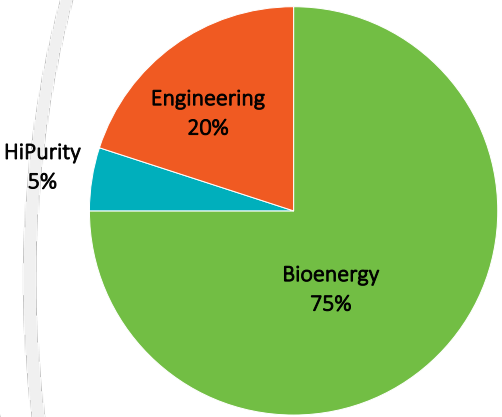
Q1-FY23 Geographical Order Intake



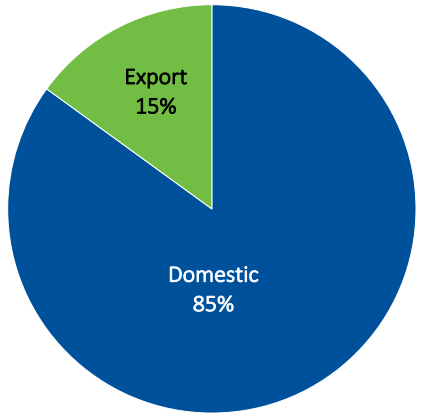
Order backlog (At the end of each quarter, Values in INR. Mn)



Q1-FY23 Segmental Order backlog – INR 32,417 Mn



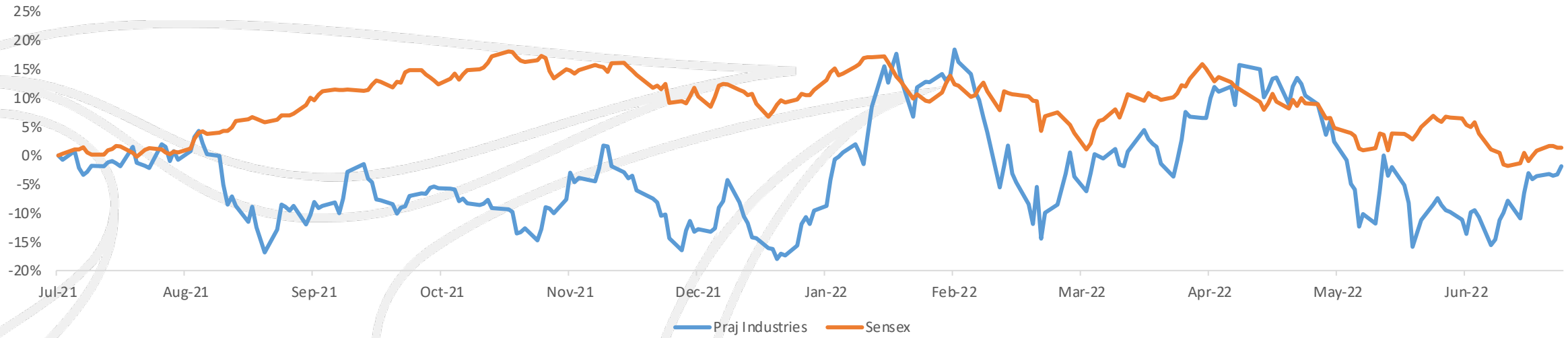
Q1-FY23 Geographical Order backlog



Note: Engineering businesses include critical process equipment & skids, brewery and Zero liquid discharge segments.

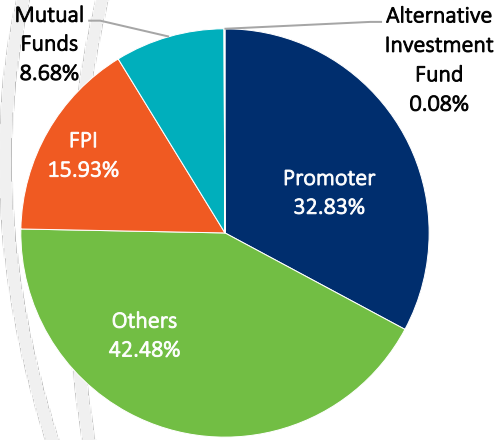
Capital Market Data

1-Year Stock Performance up to 30th June 2022

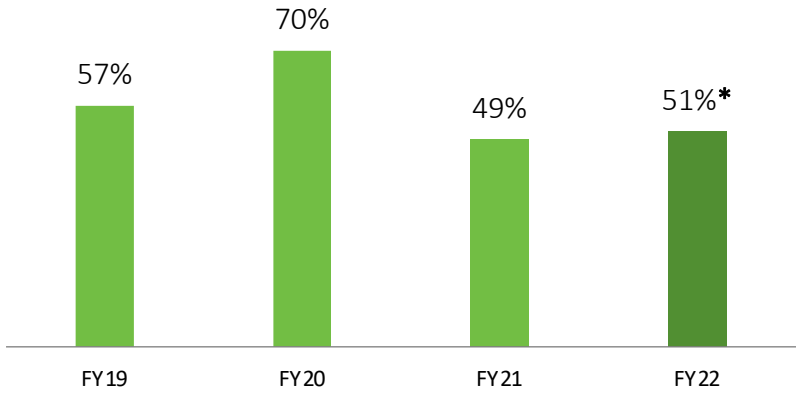


PRICE DATA (As on 30th June 2022)	
Face Value (INR)	2
Market Price	363.3
52 Week H/L (INR)	448.2/289.0
Market Cap. (INR Mn)	66,737.6
Equity Shares Outstanding (Mn)	183.7
1 Year Avg. trading volume ('000)	1,219

Shareholding Pattern (As on 30th June 2022)



Dividend Pay out ratio (%)



* Proposed dividend subject to shareholder approval

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