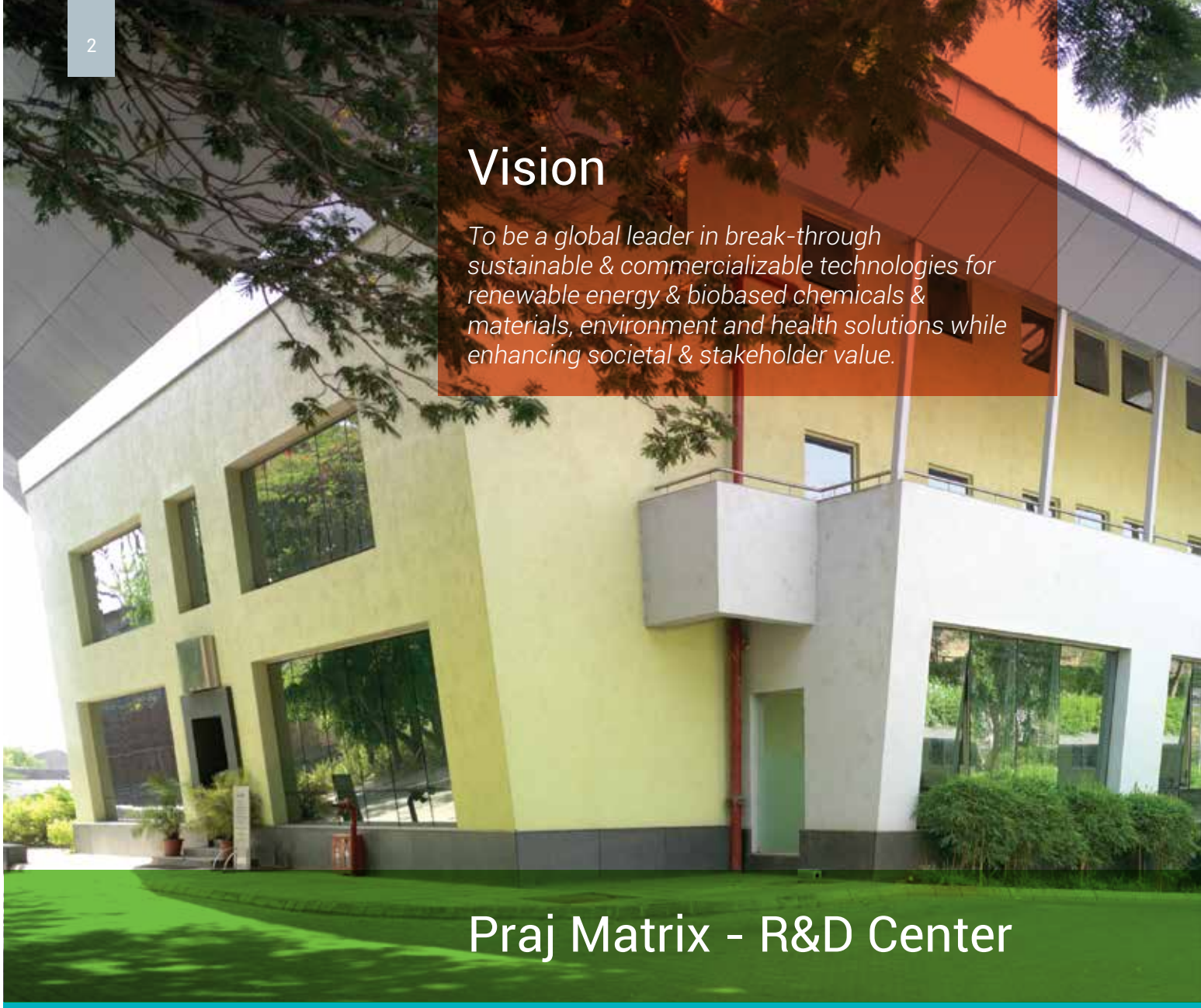







From Life
For Life

praj | Matrix
R & D Center
Division of Praj Industries Ltd.



Vision

To be a global leader in break-through sustainable & commercializable technologies for renewable energy & biobased chemicals & materials, environment and health solutions while enhancing societal & stakeholder value.

Praj Matrix - R&D Center

Praj Matrix, the innovation engine for Praj, is a state-of-the-art facility certified by the Govt of India's Dept of Scientific and Industrial Research. It is equipped with 16 laboratories for molecular biology, microbiology and bioprocess technology, process engineering &
scale-up, and chemical sciences.

More than 90 Ph.D.s and technologists 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.

The Center has more than 80 national and international patents to its credit.

Matrix's main area of focus is renewable chemicals & materials, enzyme production and biofuels.

On the back of a formidable track record of its Bio-Mobility™ platform for renewable transportation fuel globally, Praj entered the Renewable Chemicals and Materials (RCM) industry through its newly launched Bio-Prism™ portfolio. Praj's interest in RCM stems from its philosophy of 'sustainable decarbonisation through circular economy'. Bio-Prism™ portfolio comprises a basket of technologies for production a variety of bio-industrial products, including bio plastics as a priority, along with cellulose-lignin refinery products and specialty products.

Leveraging the ability of Praj to scale up and commercialize different technologies, Praj Matrix is poised to play a key role in the sustainable and profitable growth of Praj.

Recent Awards & Recognition

2020 George Washington Carver Award for Innovation in Industrial Biotechnology and Agriculture by Biotechnology Innovation Organization (BIO) and IowaBio presented to **Dr. Pramod Chaudhari.**

Ranked No 1 among the Best Places to Work in the advanced bio economy 2020 by Biofuel Digest, USA.

Winner of 3R award by CII under **Excellence in Design, Innovation & Developing Product.**

2020

Bagged the prestigious **"Golden Peacock Eco-Innovation Award 2019"** in recognition of 'enfinty(TM)', **Praj's 2G technology by Institute of Directors, India.**

Praj Industries jumped to **8th position** in the list of **TOP 50 Hottest Companies in Advanced Bio-economy** for 2019 by Biofuels Digest, USA.

Won **"Industrial Green Chemistry World Award"** for Praj's improved technology development for **furfural** at the **6th Industrial Green Chemistry World Convention and Ecosystem.**

2019

Best Biotechnology R&D Specialists:
Asia award by Global Health & Pharma magazine.

2017

Praj Matrix is a recognized research centre by Department of Scientific and Industrial Research (DSIR), Government of India

PRAJ Matrix bestowed with the ABLE Tenth Anniversary Award under the BioIndustrial category for it's efforts and dedication towards Biotechnology

2013

Bio-Excellence Award
Praj matrix awarded the Bio-Excellence Award 2012 for it's outstanding contribution to BioIndustrial Sector

2012

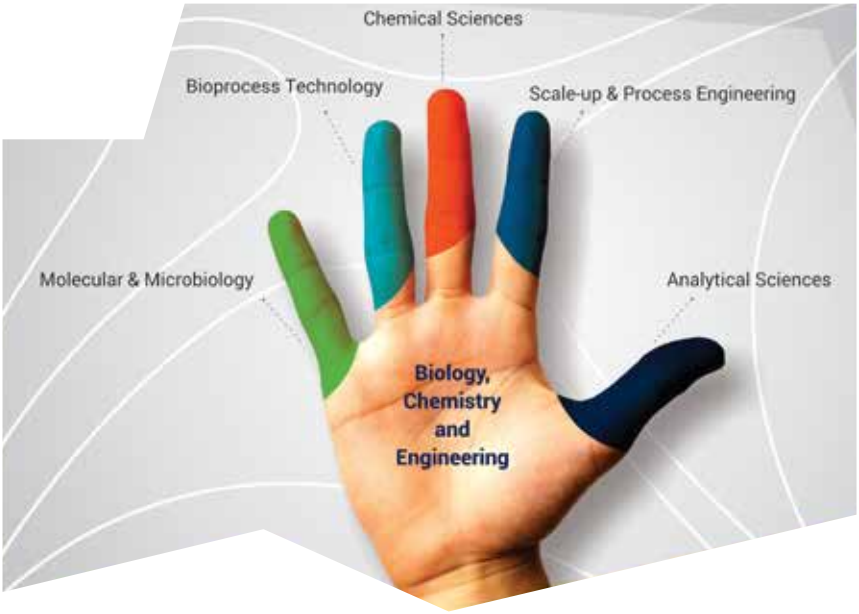
Clean Room Facility

- 9000 sq ft of Clean Room Facility housing 6 research laboratories to conduct research on microbiology and molecular biology research
- Screening of micobes using High Throughput Screening facility for novel activities.
- Infrastructure and expertise for handling Aerobic, Microaerobic and strictly Anaerobic microorganisms
- Development of engineered strains for Biofuels and Biochemicals.
- Enzyme characterization and Assay development.
- Well equipped with thermal cyclers for PCR, Real time PCR, Electrophoresis and Electroblotting units, Gel Documentation systems, Electroporation and Cell Fusion Systems, Chromatography systems, Ultra Centrifuges, Spectrophotometers, Biosafety cabinets, Anaerobic glove box, Lyophilizers, and Ultra deep freezers to carry out strain development work

Chemical Process Development Facility

- High Pressure Stirred tank reactors from 700 mL to 25 L scale under one roof for rapid process scale up and validaion
- SCADA controlled Dual Fix Bed Reactor system
- Catalyst forming machines such as Granulator, Fluidized Bed Drier and Hydraulic Press
- Downstream processing equipments for Continuous and molecular distillation, Liquid-Liquid extraction and Crystallization
- Fully equipped to generate commercial grade samples for various applications

Centres of Excellence (CoE)



- Praj Matrix employs a Centre of Excellence (CoE) model as its operating mechanism
- Each of the CoEs brings a particular technology specialization to the fore
- Technology programs utilize resources from various CoEs any given time

Focus Areas

BioFuels

- Ethanol-1G, 2G
- Isobutanol and jetfuels
- Renewable natural gas
- Biodiesel

Advanced Strain Development

Pathway Engineering and Genetic Modification of micro-organisms for the production of BioFuels and BioChemicals

BioPrism™ Renewable chemicals & materials

- Hexose Sugars
- Pentose Sugars
- Lignin
- Waste gases
- Glycerol

Health and Wellness products

- Phytochemicals
- Functional foods
- Peptides
- Cosmetic ingredients
- Flavouring and fragrance molecules

Pilot/Demo plants

- 1 MT(dry basis) per day
- Processing capacity of various
- Cellulosic feedstock
- Equipped with material handling section, pretreatment section
- 500 L (6 Nos.) Enzymatic Hydrolysis Reactors
- 1000 L (2 Nos.) Fermenters
- Distillation & Evaporation Section
- Diverse types of S/L separation units

- Catalytic & Fermentation end–to-end process designing
- Equipped with 30bar high pressure reactor, Glass lined reactor, Fermenters (100L-1000L) and DSP equipment
- Supported by High pressure IBR boiler and Chilling facility (-20 °C)
- High temperature (300 °C) thermic Fluid heating facility
- High vacuum (0.01 Torr)
- RO water & cooling water
- Air compressor & Nitrogen plant

Facilities

Analytical Facility

- ISO 9001:2015 Certified Analytical facility for analysis of wide range of samples including sugar and starch-rich feedstock and biomass, biochemicals and specialty chemicals, oleochemicals and nutraceuticals, wastewater samples
- Dedicated laboratories for Wet chemistry, Instrumentation, Organoleptic and Microbiological analysis with processing capacity upto 300 samples per day
- Fully equipped facility with multiple HPLC, GC, GC-MS, Ion Chromatography, ICP, TGA, DSC, FTIR, FTNIR, UV-VIS spectrophotometer, Rheometer, Cloud & Flash point Apparatus, Rapid acid digestion units, Anton parr, Lyophilizer and COD Digester

Bioprocess Development Facility

- State-of-the-art sterile fermentation facility for bioprocess development
- Fully automated fermentors 2 L to 100 L scale under one roof for rapid process scale up and validation
- Multipurpose facility flexible for various downstream processing configurations
- Fully equipped to generate commercial grade samples for various applications
- Balancing equipment/systems for producing different grades of alcohol
- Downstream processing facility equipped with solid/ liquid separators, membrane separation units, chromatography columns, Liquid-Liquid extractors, Crystallizer, Vacuum evaporators, Dryer and leaching apparatus, and simple and molecular distillation unit.

Praj Worldwide

India | Philippines | Thailand I USA

praj

Innovate • Integrate • Deliver

Praj Industries Limited,
Praj Tower, 274 & 275/2, Bhumkar Chowk-Hinjewadi Road,
Hinjewadi, Pune-411057. INDIA
T : +91 20 71802000/22941000
E : info@praj.net | Website : www.praj.net

PIL/CORP/PRAJ-MATRIX/V3/NEW/JAN21/50