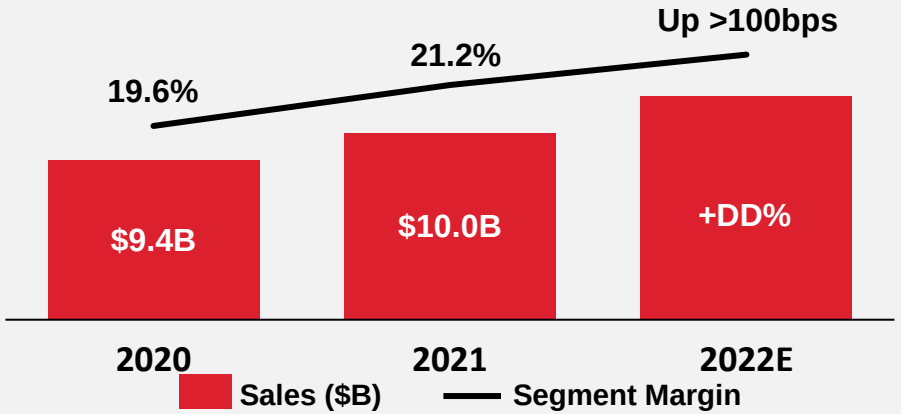

WELCOME TO
HONEYWELL UOP
INVESTOR TECHNOLOGY TOUR
Honeywell
UOP

PMT BUSINESS OVERVIEW

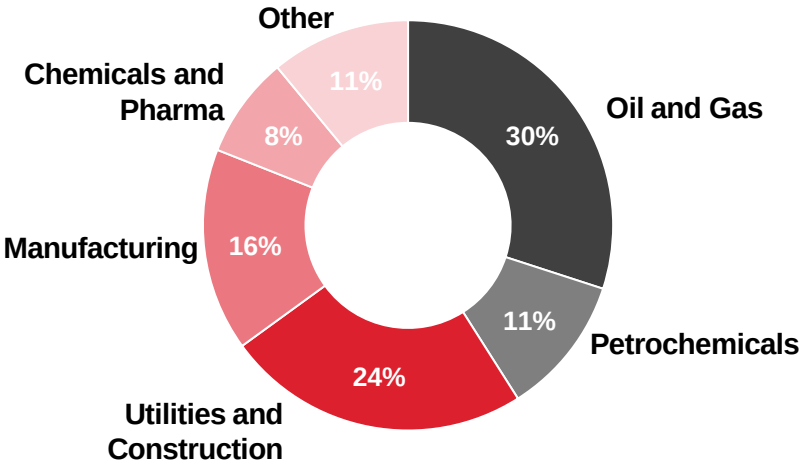
Financial Overview



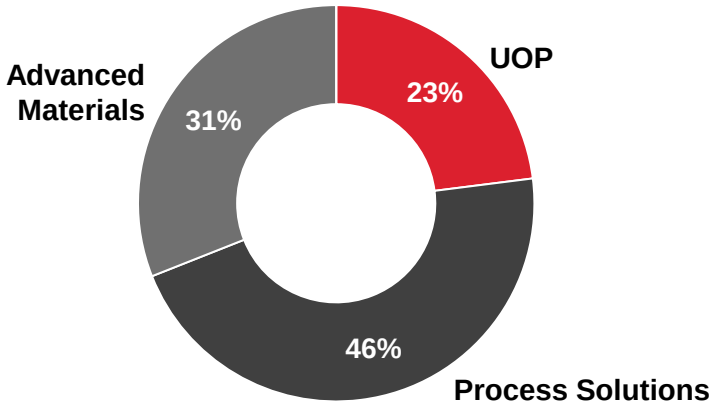
Growth Drivers

- ✓ Broad diversified portfolio, leader across segments, and positioned to capitalize on growth across a range of industrial end markets
- ✓ Execution discipline, innovation for greater value capture of installed base, and outcome-based recurring revenue and services focus of core growth
- ✓ Build upon customer investments and transformation in sustainability, digitalization, and life sciences

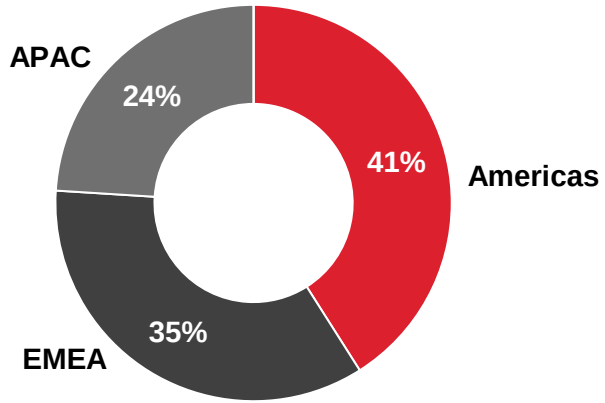
Business Breakdown



Business Overview



Geographic Sales



Double-Digit Sales Growth and >100 bps Margin Expansion in 2022

Pie chart data represents 2021 sales

2020 – 2022
RESILIENCE THROUGH A CHALLENGING MARKET

Despite Market Challenges…

COVID-19
- Airline travel down ~40% YoY
- Global GDP (3.5%) YoY, first drop in GDP since 2009

Energy Underinvestment
- Oil prices down over 40% in 2020 vs. 2018
- Refinery utilization down 11% YoY

Russia
- UOP majority of Honeywell's $300M excluded from backlog during 1Q22 due to suspension of business in Russia

…Strong Momentum Building in 2022

Market Dynamics Improving YoY

IRA	+45%	+4%	+3.2%	+~20%
Bill passed	Oil price	Refinery utilization	GDP growth	Air travel

2022 Momentum

80%+ win rates across projects

20%+ growth in catalyst sales

70% win rates within renewables offerings

>2x growth in catalyst takeaways

50%+ product vitality

Sources: FCE, Bloomberg, U.S. Bureau of Travel Statistics, UOP analysis.

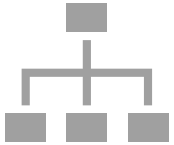
UOP
KEY MESSAGES

FAVORABLE GROWTH OUTLOOK

- 3,000+ UOP process units with recurring revenue
- 40% of revenue from new products launched in the last five years
- 3% - 4% long-term growth of petrochemicals
- 2x SAM expansion from sustainability and new markets

ENERGY TRANSITION LEADER

- Pioneer and leading position in renewable fuels (sustainable aviation fuel and renewable diesel)
- Key technologies for both Blue and Green Hydrogen
- Leading supplier of both solvents and adsorbents for CO_2 capture



ROBUST BUSINESS MODEL

- End-to-end model creates an annuity of recurring revenue
- Broad offerings across refining, petrochemicals, and renewables
- Proven recurring revenue business model for ready-now sustainability offerings

PROVEN TECHNOLOGY LEADERSHIP

- Leading position across majority of segments served
- 4,000+ patents in force, 1,400+ since 2019
- Consistent history of innovation and transformation over 108 years

Honeywell UOP's Comprehensive Portfolio is Leading the Energy Transition

SAM: Serviceable Addressable Market.

HONEYWELL

UOP AT A GLANCE

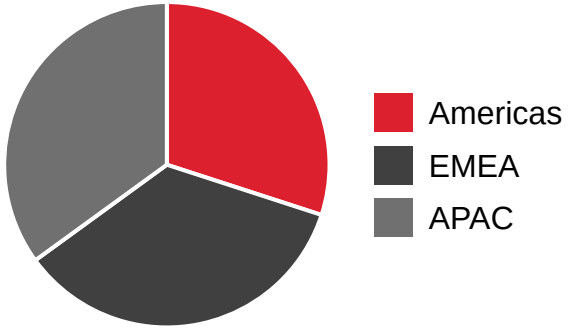
100+ Years of Global Expertise and Leading Technology Development

UOP TECHNOLOGY POWERS

- **90%** of biodegradable detergents
- **70%** of the world's polyester
- **60%** of the world's gasoline
- **60%** of the world's on-purpose propylene
- **60%** of the world's paraxylene
- **50%** of the world's renewable fuels
- **40%** of LNG processed
- **15** tons of captured CO_2

GLOBAL REACH

Diversified regional presence that can effectively react to changes in demand



NEW TECHNOLOGIES

Honeywell UOP creates new technologies that convert oil and natural gas into transportation fuels, energy, and petrochemicals

EXPERTISE

Broadest range of downstream refining and petrochemical technologies; leading process technology licensor

2,000
Engineers and scientists

4,900
Active patents and applications

LARGEST
process licensing organization
in the world

31 out of **36**
refining technologies in use today were developed by
UOP

BUILT OFF A CENTURY OF TRANSFORMATIONAL HISTORY

THE TRANSPORTATION REVOLUTION

Dubbs Cracking Process (1914)
Clean Circulation (1919)

THE AGE OF POWER

Alkylation, Isomerization, Polymerization (1938)
Fluid Catalytic Cracking (1944)

BIRTH OF PETROCHEMICALS

Synthetic Zeolites (1953)
Parex™ for Polyesters (1970)
CCR Platforming™ Process (1971)
Oleflex™ for Propylene (1990)
Methanol to Olefins (2008)

THE DRIVE FOR YIELD

Platforming™ Process (1949)
Unicracking™ Process (1955)
Solvent Deasphalting (1983)
Uniflex™ Process (2011)

NATURAL GAS REVOLUTION

Molsiv Adsorbents (1965)
Separex™ Membranes (1979)
UOP Russell (2012)
Modular LNG (2019)

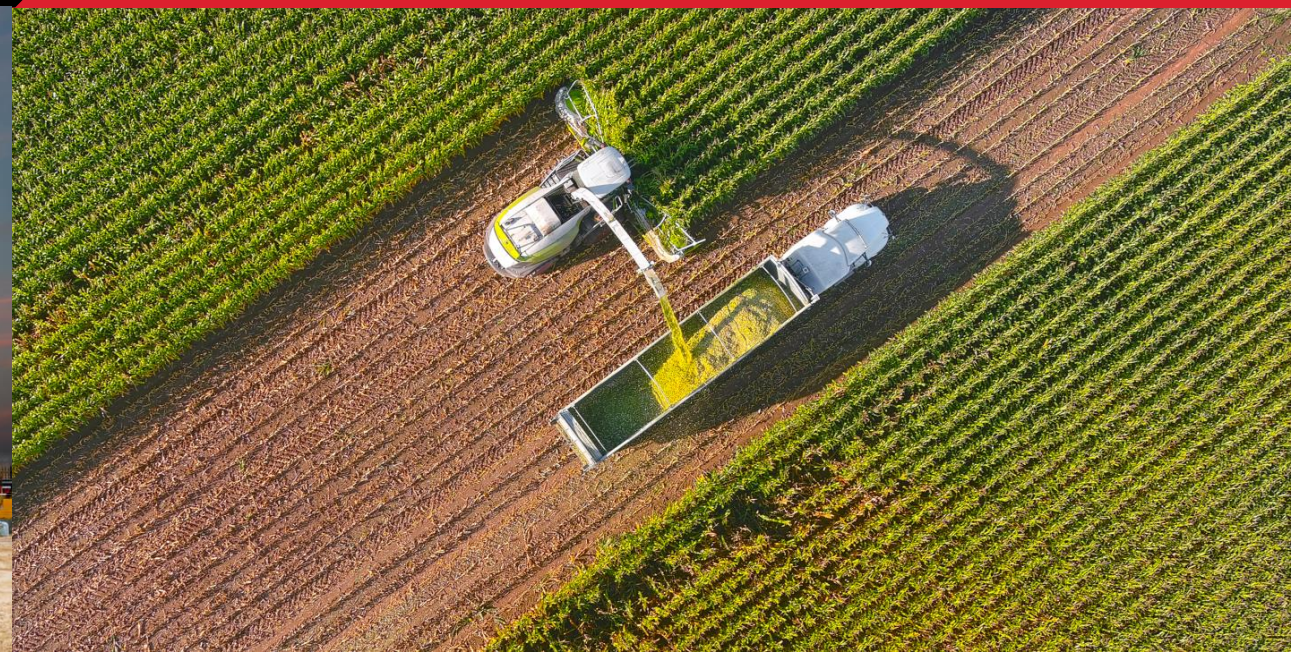
A BETTER ENVIRONMENT

Unleaded Gasoline (1960)
Biodegradable Detergents (1968)
Honeywell Renewable Diesel™ (2006)
Honeywell Ecofining™ / SAF (2008)
Carbon Capture and Sequestration (2021)
UpCycle Process Technology (2022)
Flow Battery Technology (2023)

TRANSFORMING
THE WAY THE WORLD MOVES

FROM

TO



DID YOU KNOW:

Honeywell UOP pioneered the development of Sustainable Diesel and Aviation Fuels as a low carbon alternative to conventional petroleum-based fuels in 2013, with 32 licenses and 20+ years combined operating data.

TRANSFORMING
THE WAY THE WORLD COOKS

FROM	TO
	

DID YOU KNOW:

Honeywell UOP is responsible for pretreating 40% of the world’s LNG

TRANSFORMING
THE WAY THE WORLD PRODUCES

DID YOU KNOW:

Honeywell's technology is used in the largest carbon sequestration project in the U.S., which will capture up to 1.65 million tons of CO_2 annually, or what 109,000 average Americans generate each year.

OUR PORTFOLIO

UOP SOLUTIONS FOR THE ENERGY TRANSITION

UOP Process Technologies

Process technologies, engineering, and equipment for the refining, petrochemicals, and gas processing industries

- Chemical feedstocks
- Transportation fuels
- Hydrogen recovery and purification
- Burners and flares
- Natural gas purification

Sustainable Technology Solutions

Ready-now technologies for renewable low-GHG fuels, targeted solutions for a majority of the world's GHG emitters, H_2, and plastic waste recycling

- Renewable fuels, Ecofining™, SAF
- Blue and Green hydrogen
- Carbon capture
- Plastics recycling – UpCycle technology
- Energy storage – Flow battery

Lifecycle Solutions and Technologies

Serving customers in the operational phase with catalysts, adsorbents, aftermarket equipment, and services

- Catalysts for refineries (including bio) and petrochemical plants
- Adsorbents for separations and purification
- Field services
- Equipment aftermarket
- Software-enabled services to advance project execution and improve plant operations

EXAMPLE COMPETITORS*

Axens SOLUTIONS

LUMMUS TECHNOLOGY

TOPSOE

CRITERION CATALYSTS & TECHNOLOGIES

GRACE Talent | Technology | Trust™

*Not an exhaustive list. GHG: Greenhouse Gas.

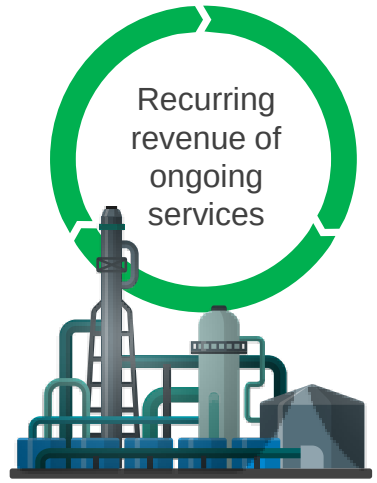
UOP

BUSINESS MODEL REVENUE TIMELINE

REFINING
PETROCHEMICALS
GAS
SUSTAINABILITY

YEAR -5 TO 0 BEFORE LAUNCH | STARTUP | YEAR 1 TO 30

- Proprietary configuration and feasibility studies
- Basic engineering design (Sch A)
- Next gen catalysts and adsorbents sales
- Ongoing services
- Process licensing
- Proprietary and modular equipment design / fabrication
- New unit startup services

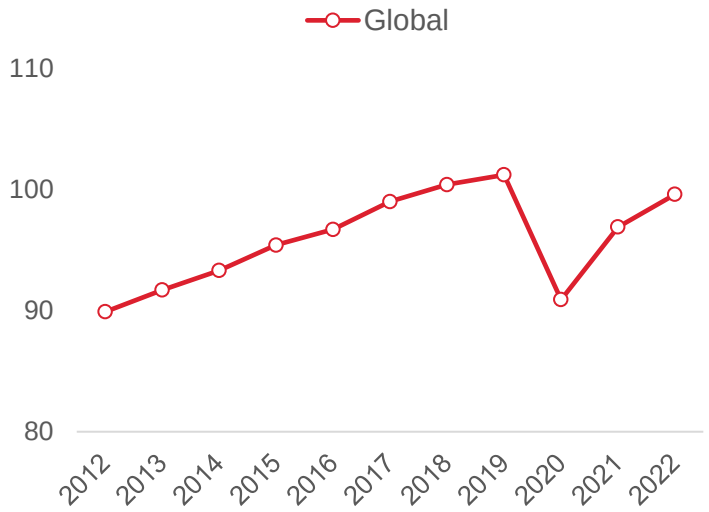


ONGOING SERVICES

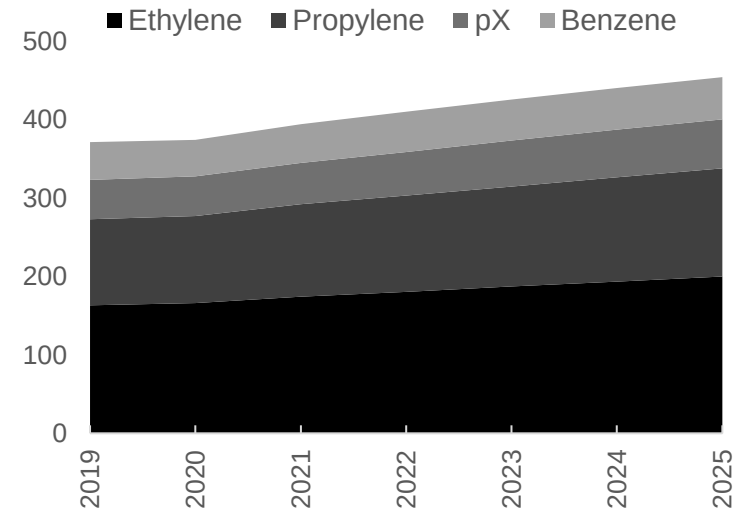
- Catalyst and adsorbents reloads
- Revamp studies
- Configuration studies
- Technical support
- Inspection, maintenance, reliability
- Digital solutions

2022 - 2023 MARKET OUTLOOK

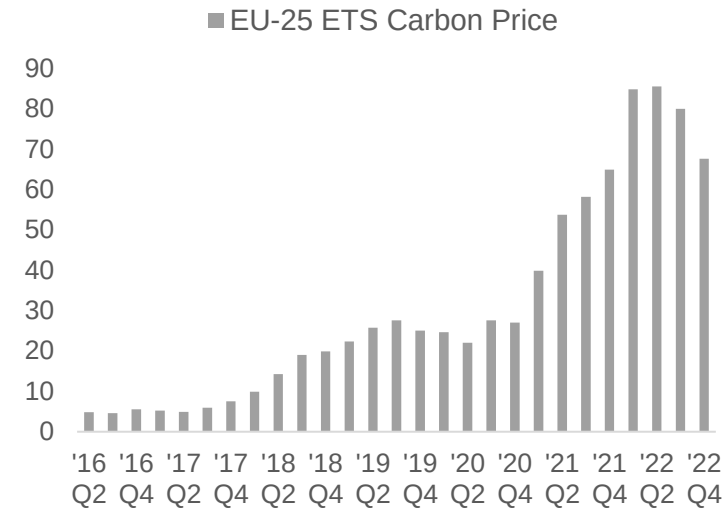
Global Oil Demand (MM BPD)



Global Petrochemicals Demand (mil MT/year)



Carbon Price ($/ton)



Market Evolution Driving Need for New and Improved Solutions

Source: WoodMac, S&P Global, IEA

UOP

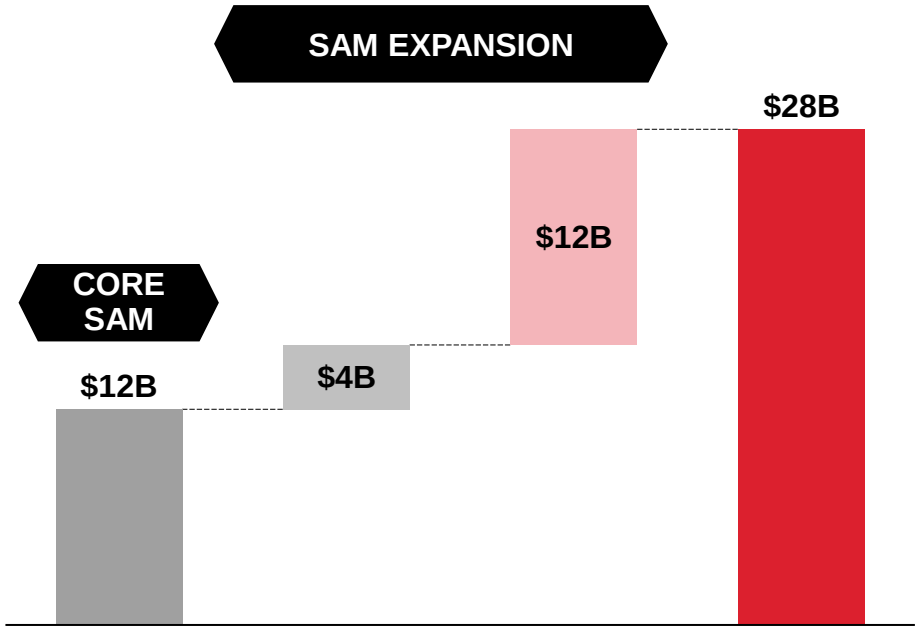
PROFITABLE GROWTH FRAMEWORK

- Refining to petrochemicals shift
- Asset base transformation
- Gas treatment and processing
- Comprehensive aftermarket portfolio
- Digital solutions

- Adsorbent applications
- Petrochemical adjacencies
- Materials innovation

- Renewables
- Carbon Capture
- Green H_2
- Plastics recycling

SAM AND MARKET GROWTH RATES

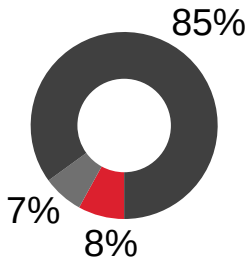


	Core	New Markets	STS	Total UOP SAM
Market CAGR 2022 - 2025	2/3 Opex (5% - 7%) 1/3 Capex (2% - 3%)	6% - 9%	18%+	~7%

Profitable Growth through Offerings and SAM Expansion

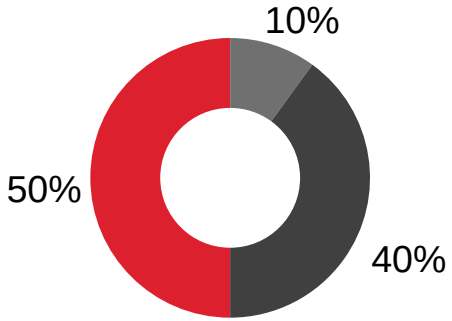
ONLY UOP CAN POWER
THE REFINING TO PETROCHEMICAL SHIFT

Today's Refinery
up to 15% petrochemicals



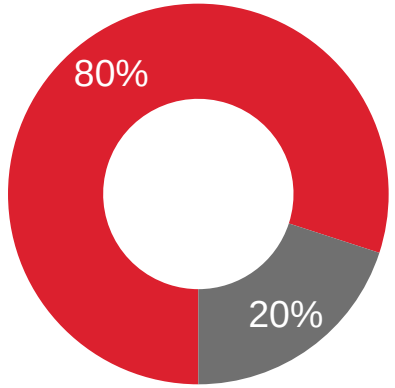
$8/BBL MARGIN[1]

Refinery Transformation
enabled by UOP technology



$25/BBL MARGIN
with UOP IOS Technology

Integrated Refinery of the Future
up to 100% petrochemicals



$43/BBL MARGIN
with UOP IOS Technology

Petrochemical yield
Fuels yield

Size of bubble expected margin/bbl

CASE STUDY

Refinery in Middle East

UOP's Integrated Olefin Suite
enabling Crude to Chemicals

~350 bps in IRR

Our Unique Molecular Management Experience Positions Us to Lead this Transformation

Honeywell margin and yield estimates based on average fuels and crude to chemicals plants.

ONLY UOP CAN POWER ECONOMIC AND ENVIRONMENTAL ASSET TRANSFORMATION

H_2 RECOVERY
reduce emissions, improve H_2 supply

ENHANCE
Recovery

CRUDE TO CHEMICALS
maximize light olefin production

IMPROVE
Conversion

NEXT GEN CATALYSTS
renewables, higher yield, and activity

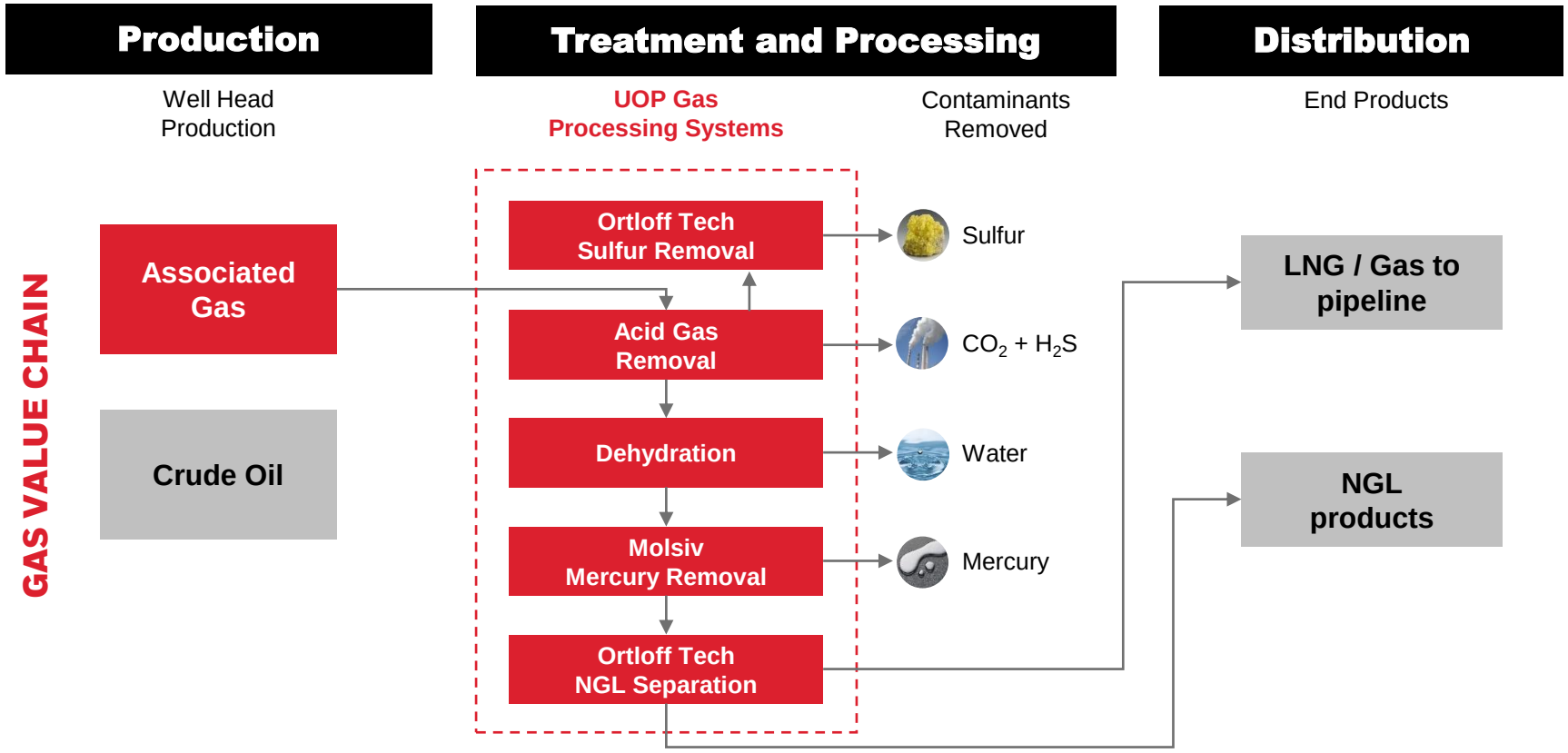
LOWER CO_2
per ton of product

DECARBONIZATION STUDIES AND REVAMPS
economic emissions reduction

REDUCE
scope 1, 2, and 3 emissions

UOP Positioned to Transform Existing Base with Technology and Experience

ONLY UOP CAN POWER
END TO END GAS TREATMENT AND PROCESSING SOLUTIONS



~40%

of global natural gas for LNG pretreated with UOP technology

~30%

of US NGL recovery

>60%

of off-shore CO_2 removal through UOP technology

Treatment and Processing for All Downstream Gas Applications

NGL: Natural gas liquid.

UOP
SCALABLE GAS WINS

KEY LNG PRODUCER IN THE MIDDLE EAST

UOP Integrated Gas Complex

6 full gas trains
End-to-end gas pretreatment
LNG

OFFERING: **License and Engineering**

CAPACITY: **8,400** MMSCFD

MAJOR MIDSTREAM PLAYERS

UOP Russell Cryo Plant

Plants installed in every major US gas basin

Modular Cryo Plants

156 modular plants installed

LEADING O&G E&P COMPANY IN LATAM

UOP Bulk CO_2 Removal

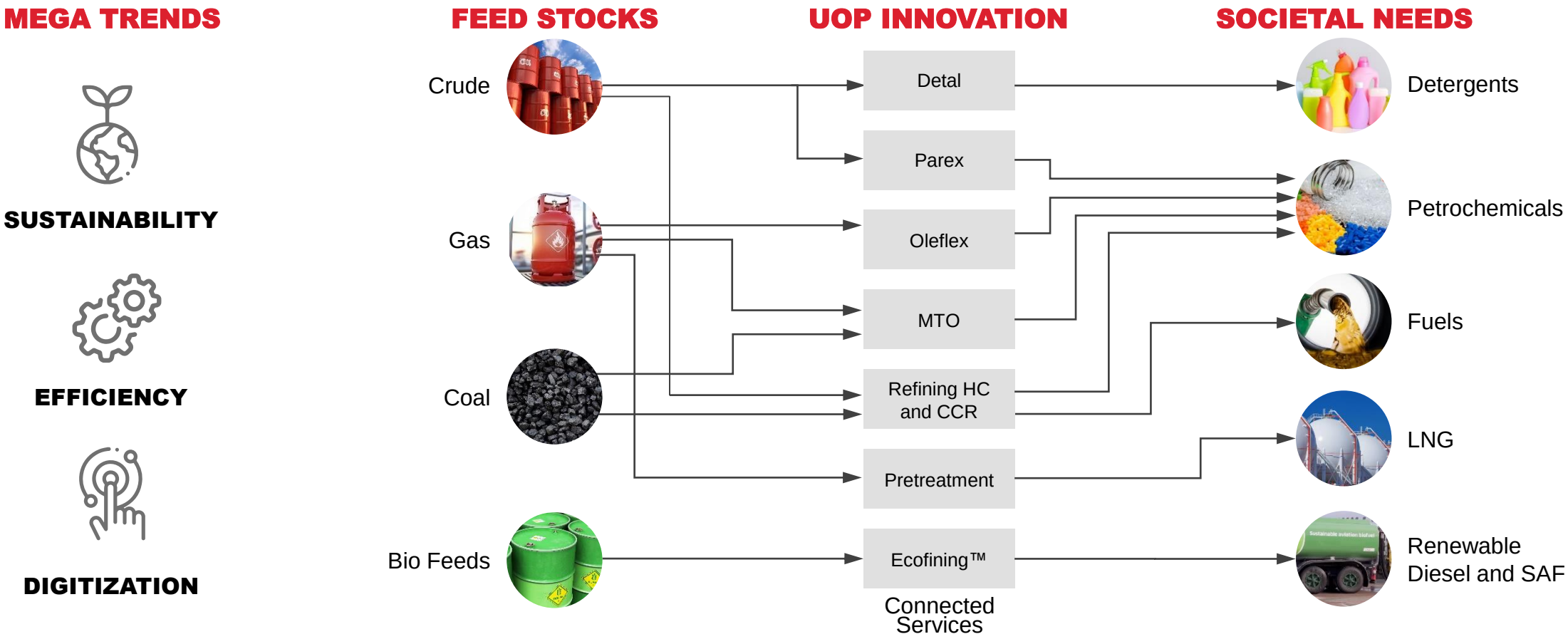
12 total FPSO projects
(8 in operation, 4 under construction)

Membrane Skids and Elements

2,600 MMSCFD

FPSO: Floating production storage and offloading. ME: Middle East. E&P: Exploration and production.

ONLY UOP CAN POWER
UNIQUE PORTFOLIO SERVING THE WORLD'S CRITICAL NEEDS



Catalyst Innovation Addressing Megatrends and Societal Needs

UOP
CATALYST GROWTH ENGINE

Catalyst Offerings		Product Vitality
Renewable catalysts	Renewable diesel and sustainable aviation fuel	100%
Refining catalyst	Naphtha catalysts for aromatics Hydroprocessing catalysts for distillate and low sulfur fuels	42%
Petrochem catalysts	Dehydrogenation catalysts for on-purpose propylene Aromatics catalysts and adsorbents for paraxylene	52%

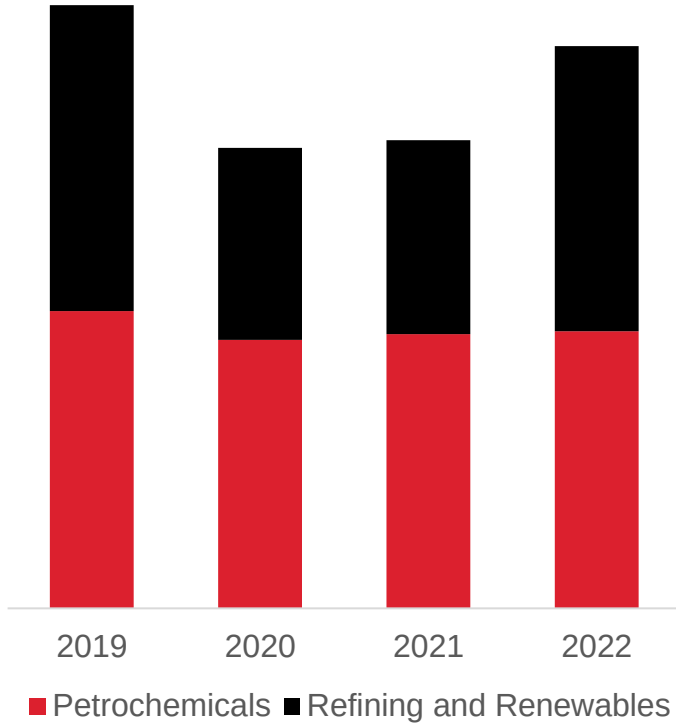
UOP HAS 9 GLOBAL MANUFACTURING SITES

Shreveport, Louisiana

Reggio, Italy

Over 150 unique materials used in our manufacturing process

REVENUE



Continuous Innovation Fueling Our Growth

ONLY UOP CAN POWER
CUSTOMER FOCUSED DIGITAL INNOVATION

CONNECTED SERVICES

Digitally enabled services that provide real-time proactive insights and prescriptive performance improvement

"Give me basic insights on how to run my plant better

OUTCOME SERVICES

KPI-driven optimization services that improve throughput, operating cost, and turnaround time

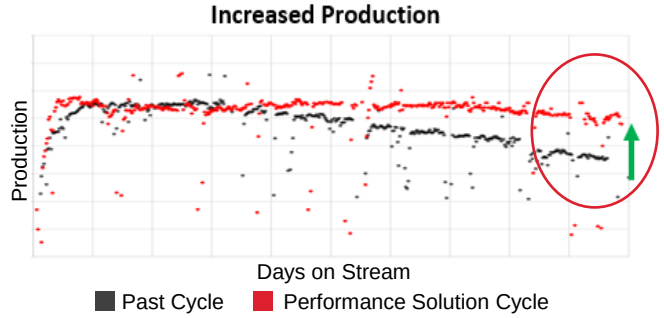
"Solve my problem with guaranteed outcome and shared risk

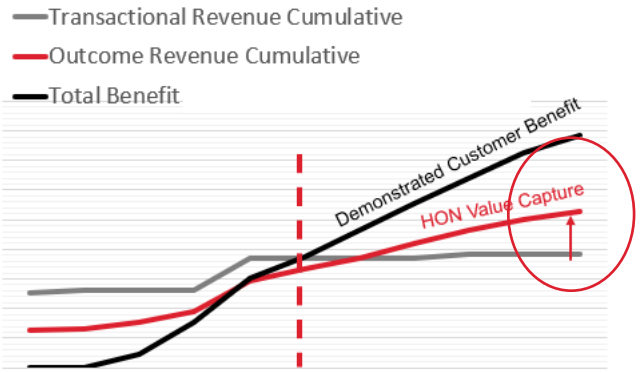
WORKFORCE COMPETENCY

Addressing the ongoing skill gap and *"great resignation"*

"Help my operators achieve and sustain required competency and improved performance

DIGITAL SERVICES VALUE CAPTURE MODEL





ONLY UOP CAN POWER
VALUE CREATION BY DIGITAL SOLUTIONS

MIDDLE EAST PETROCHEMICALS
PUSHING OLEFLEX RELIABILITY AND PRODUCTION

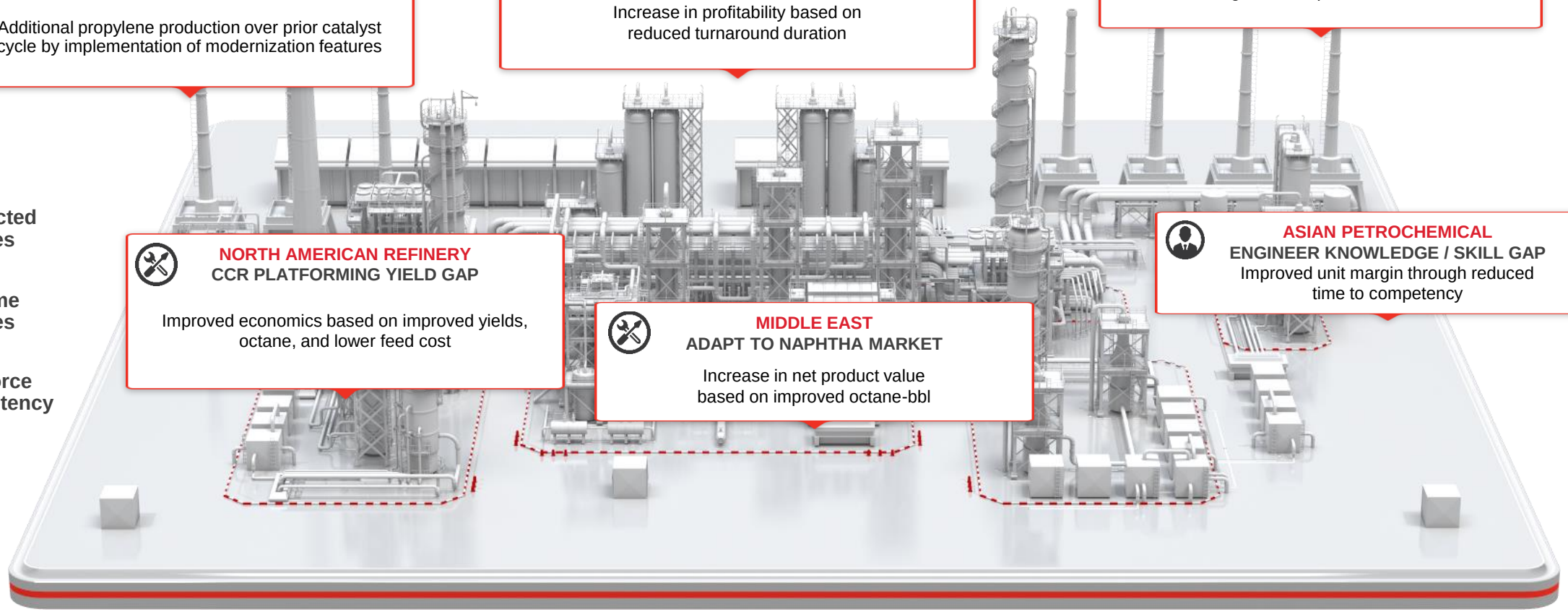
Additional propylene production over prior catalyst cycle by implementation of modernization features

US REFINERY
PAREX TURNAROUND EFFICIENCY

Increase in profitability based on reduced turnaround duration

ASIAN REFINERY
STARTUP DURING COVID

Remote services enabling on-time unit restart, avoiding losses in production revenue



NORTH AMERICAN REFINERY
CCR PLATFORMING YIELD GAP

Improved economics based on improved yields, octane, and lower feed cost

MIDDLE EAST
ADAPT TO NAPHTHA MARKET

Increase in net product value based on improved octane-bbl

ASIAN PETROCHEMICAL
ENGINEER KNOWLEDGE / SKILL GAP
Improved unit margin through reduced time to competency

- Connected Services
- Outcome Services
- Workforce Competency

CCR: Continuous catalytic reforming

ONLY UOP CAN POWER NEW CATALYST AND ADSORBENT MARKETS

Medical Oxygen

OXYSIV™

Honeywell UOP helps save lives by delivering life saving medical grade oxygen

- **Leading supplier** of adsorbents in global personal oxygen machines
- **4,700 metric tons sold**, potentially saving hundreds of thousands of lives since COVID-19 began

Polishing and Binders

VERSAL™

Honeywell UOP impacts daily lives via polishing slurries and coatings for surfaces

- **High quality** surface conditioning material
- **Superior results** through low macropore volume and high dispersibility
- Lower conversion temperatures mean lower opex than alternatives

Nuclear Remediation

IONSIV™

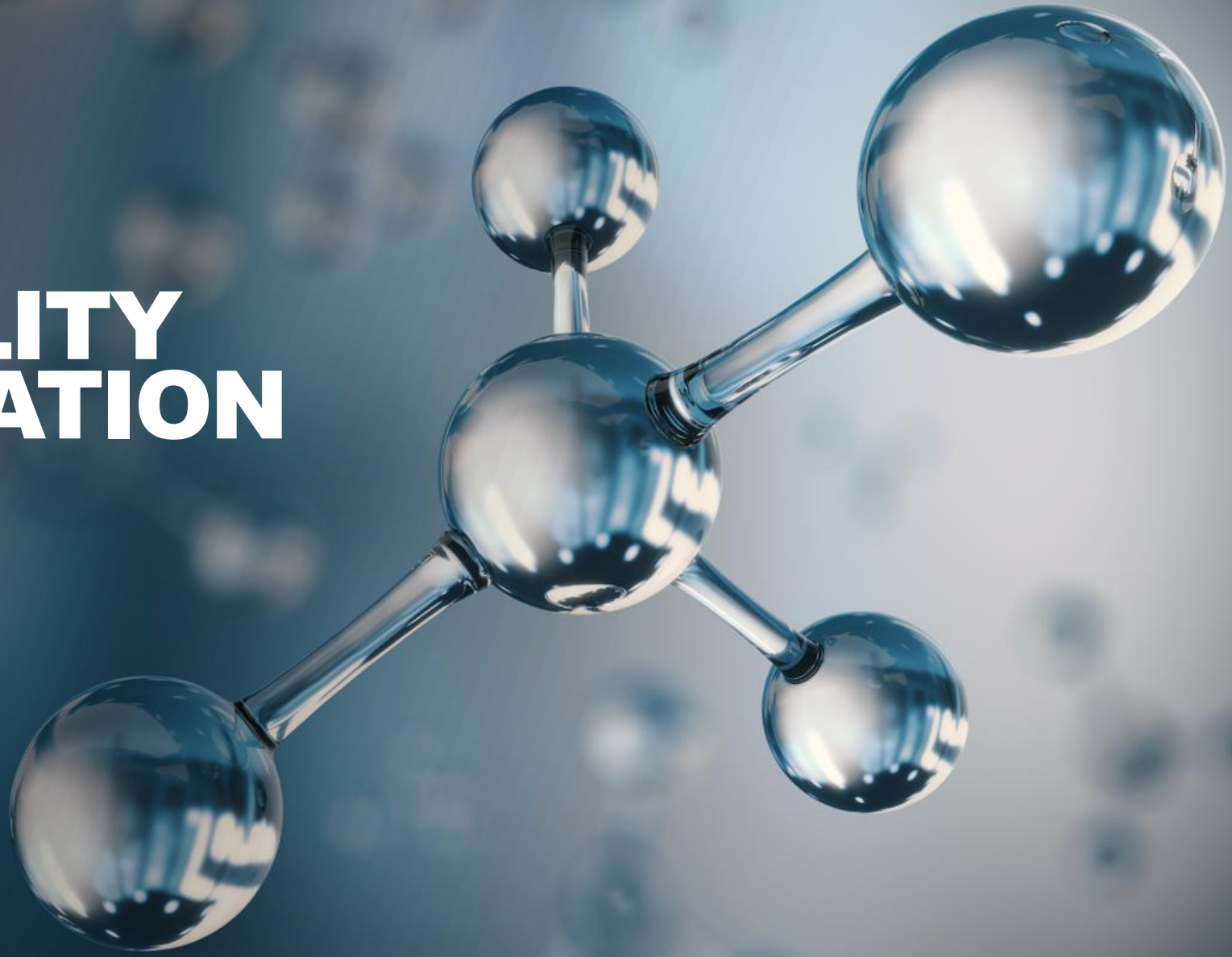
Honeywell UOP successfully remediates nuclear contamination

- **>100M** gallons of contaminated water treated
- IONSIV media outperformed the initial cesium removal facility by about **1.5x orders of magnitude**
- Waste volumes from cesium removal process in SARRY system **reduced by over 90%** vs. original cesium removal process treatment system

Diversification into High Growth Segments Beyond O&G

SARRY: Simplified active water retrieve and recovery system.

INNOVATION DRIVING THE SUSTAINABILITY TRANSFORMATION



GAVIN TOWLER
VP, CTO PMT & UOP

Honeywell
UOP

COMMITMENT TO INNOVATION
THE REFINERY OF THE FUTURE

Industry Transformation

Crude Processing: Fuels to Petrochemicals

TODAY

Crude

Refinery

Fuels

Petrochem Feedstocks

Petrochemical Complex

Petrochemicals

DEVELOPING

Bio-Feedstocks

Crude

Refining and Petrochemical Complex

Bio-Fuels

Fuels

Petrochemicals

LONG TERM

Bio-Feedstocks

Crude

Waste Plastic

Petrochemical Complex

Bio-Chemicals

Petrochemicals

Petrochemicals

Customer Needs

- Maximum transportation fuels (gasoline, diesel, and jet)
- Opportunistic petrochemicals

- Tighter fuel specifications
- Crude and product flexibility
- More petrochem:
  - Ideally: 75% olefins, 25% aromatics
- Higher capital efficiency
- Lower environmental footprint
- Renewable fuels

- Alternative routes to petrochemicals
- Net Zero emissions
- Highest capital efficiency
- Renewable chemicals
- Plastics circularity

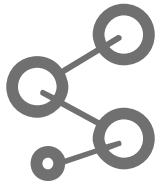
Size of arrow reflects the percentages and quality of the feedstock as compared to the whole

COMMITMENT TO INNOVATION

UOP RESEARCH AND DEVELOPMENT

EXPERIENCED TEAM

- 2,000 scientists and engineers from more than 50 countries
- 330 employees have at least one patent, 20 have more than 50 patents
- Most engineers have field service experience operating customer units



CUTTING EDGE TOOLS

- 150 pilot and semi-works plants in 8 sites globally
- 3.5B data points and 1,000 offline samples per day
- Proprietary CombiChem tools for high-throughput experimentation
- Advanced microscopy and materials characterization

UNIQUE CAPABILITY SET

- Materials discovery, catalyst, and membrane invention
- Adsorptive and membrane separations
- Process optimization and scale up
- Proprietary equipment designs
- Modular plant delivery

Continuous Innovation to Renew Core Technologies and Discover Breakthrough Chemistries

COMMITMENT TO INNOVATION
COLLABORATING WITH INDUSTRY PARTNERS

In 2021, United agreed to purchase **1.5B gal** of sustainable aviation fuel from Honeywell and Alder Fuels - which is one and a half times larger than the rest of the world's airlines' publicly announced SAF commitments combined

Honeywell's investment and increased collaboration with Electric Hydrogen allows Honeywell to better understand and support the needs of the electrolyzer industry

Honeywell entered into an agreement with The University of Texas at Austin that will enable the lower-cost capture of carbon dioxide emissions from power plants and heavy industry

4,025
Patents in force Worldwide

1,409
Patents granted since 2019

33 Active university and national lab partnerships in 10 countries

~50%
of R&D activity is directed towards sustainability outcomes, ~30% core renewal

95
Ongoing technology partnerships with customers and other companies

SUSTAINABLE TECHNOLOGY SOLUTIONS

BARRY GLICKMAN
VP, GM

Honeywell
UOP

ENERGY TRANSITION AND DECARBONIZATION

TRENDS IMPACTING ENERGY TRANSITION

Regulatory / Policy
Legislation limiting carbon emissions and creating a credit for capture increasingly making H_2 and CCUS more attractive

Energy Independence
Ability to repurpose current pipeline infrastructure and some blending of H_2 into current fuel streams without retrofits

Social Investing
Increasing focus on decarbonizing the energy sector and actively removing CO_2 from the atmosphere to tackle climate change

TRENDS IMPACTING DECARBONIZATION

Economics
Scale up of SAF production facilities coupled with new innovations and high fossil fuel prices increasing competitiveness

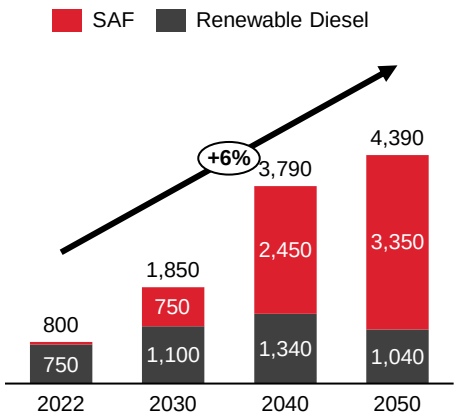
Stakeholder Demand
Airlines (and other hard-to-decarbonize industries) are looking for ways to reduce their carbon footprint and reach net-zero targets

Regulatory / Policy
Emissions limits coupled with regulatory requirements for certain SAF volumes driving increased adoption

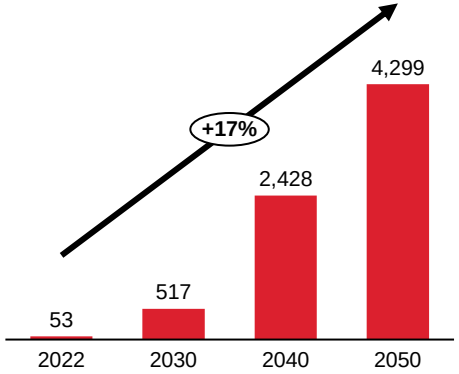
CCUS: Carbon Capture, Sequestration

SUSTAINABILITY OPPORTUNITIES

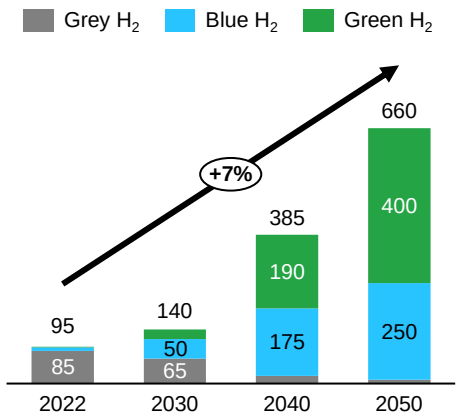
RENEWABLE FUELS DEMAND (KBPD)



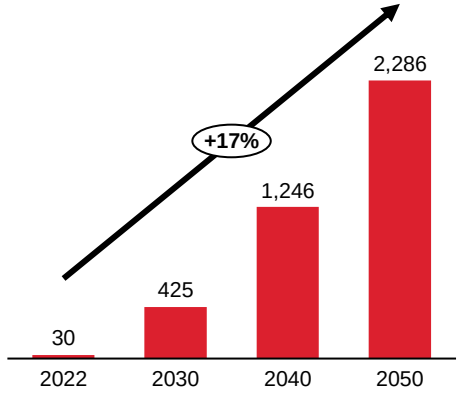
CAPTURED CARBON DIOXIDE (Mt CO_2)



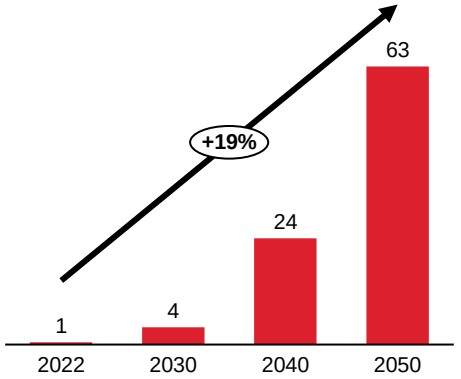
HYDROGEN DEMAND (Mt)



ENERGY STORAGE CAPACITY (GW)



CHEMICAL RECYCLING VOLUMES (Mt)



Commercialized Today

Pre-Commercialization

Renewable Fuels (RF)

- Production of drop-in, low carbon fuel replacements from alternative feedstocks
- Mandated RF blending volumes from the EU, the U.S. and other nations driving demand; production in the U.S. is expected to be driven by Tax Credit

Carbon Capture

- Carbon emission reduction for hard to abate industries: Steel, Cement, Refining, and Chemicals
- U.S. IRA improves CCUS project economics; could accelerate investment and increase attractiveness for hub projects

Hydrogen

- Grey / Blue to Green switching and cost optimization to drive green H_2 adoption
- The U.S. IRA and infrastructure acts include commitments for clean H_2 producers; EU's REPowerEU plan targeting 10Mt of domestic renewable H_2 production by 2030

Energy Storage

- U.S. and China continue to lead. The U.S. IRA and EU's response to energy crisis with ambitious renewable targets to support further capacity growth
- Technology innovations and commercial scale-up required for market adoption

Plastics Recycling

- Policy is underpinning a rise in recycling capacity. Several countries have recycled content targets
- Plastics producers and recyclers have increased their targets and capacity announcements

New Growth Opportunities for the Energy Industry

Source: RF: Biofuels Supply-Demand Outlook-2022; CCUS, ES: IEA-World Energy Outlook -2022, Announced Pledges Scenario; H_2: BNEF 2H 2022 Hydrogen Market Outlook; Plastics Recycling: BNEF: 2022 Petrochemicals Feedstock Demand Outlook; UOP Analysis. Growth %s represent CAGR from 2022-2050.

SUSTAINABLE TECHNOLOGY SOLUTIONS PORTFOLIO

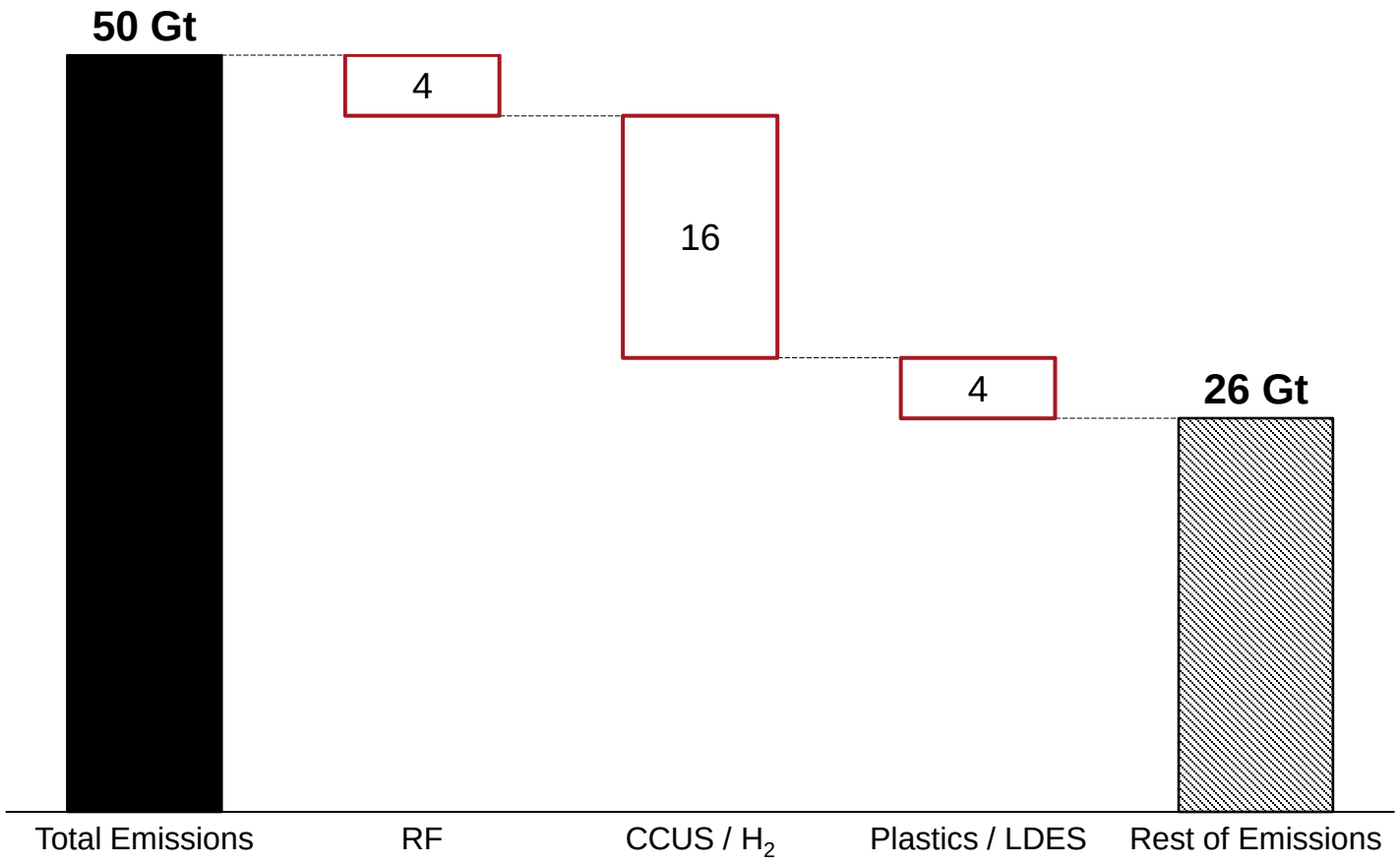
Renewable Fuels	Carbon Capture / Blue Hydrogen	Green Hydrogen	Plastics Circularity	Energy Storage
Renewable Diesel and Sustainable Aviation Fuel	**Pre- and Post-Combustion CO_2 Capture**	**Catalyst Coated Membranes for Electrolyzer OEMs**	**Modular, Integrated, Pyrolysis System for Plastic Films to Recycled Polymer Feedstock**	**Flow Batteries for Long-Duration Energy Storage**
UOP Ecofining™ can reduce **GHG emissions by 80%+** vs. fossil-based fuels	Broad range of ready-now technologies that can **reduce 95%+ of CO_2 emissions** for blue H_2 and industrial emission point sources	UOP-produced proprietary membranes and catalyst formulation that can **reduce electrolyzer stack capex by 25%+**	UpCycle Plastics Recycling **increases waste plastic circularity** and can expand pool of economically-recyclable waste plastic	**Lowest potential cost** flow battery storage system with better suited chemistry (vs. Lithium-ion) for **4+ hour cycles**

LEVERAGE CORE CAPABILITIES TO DECARBONIZE

Builds Upon Core Technologies

- Separation Technologies
- Automation and Controls
- Catalysts
- Process Engineering
- Reaction Engineering

Technologies Aligned Against ~50% of Global Emissions

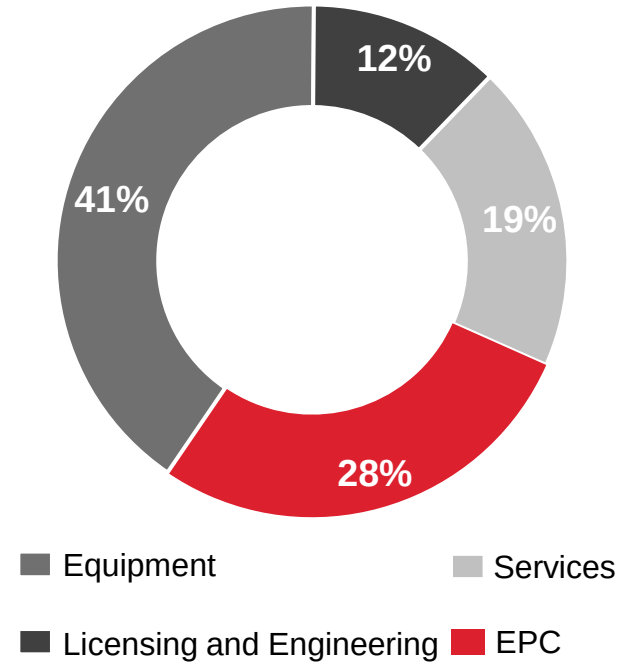


LDES: Long Duration Energy Storage

STS VALUE CHAIN AND PROFIT POOL

	Licensing and Engineering	Equipment	EPC	Services and Consumables
Renewable Fuels	✓	✓		✓
CCUS and Blue H_2	✓	✓		✓
Green H_2		✓		
Plastics Circularity	✓	✓		✓
Flow Battery	✓	✓		✓

Profit Pool Across Value Chain



STS Addressing 70%+ of the Total Profit Pool

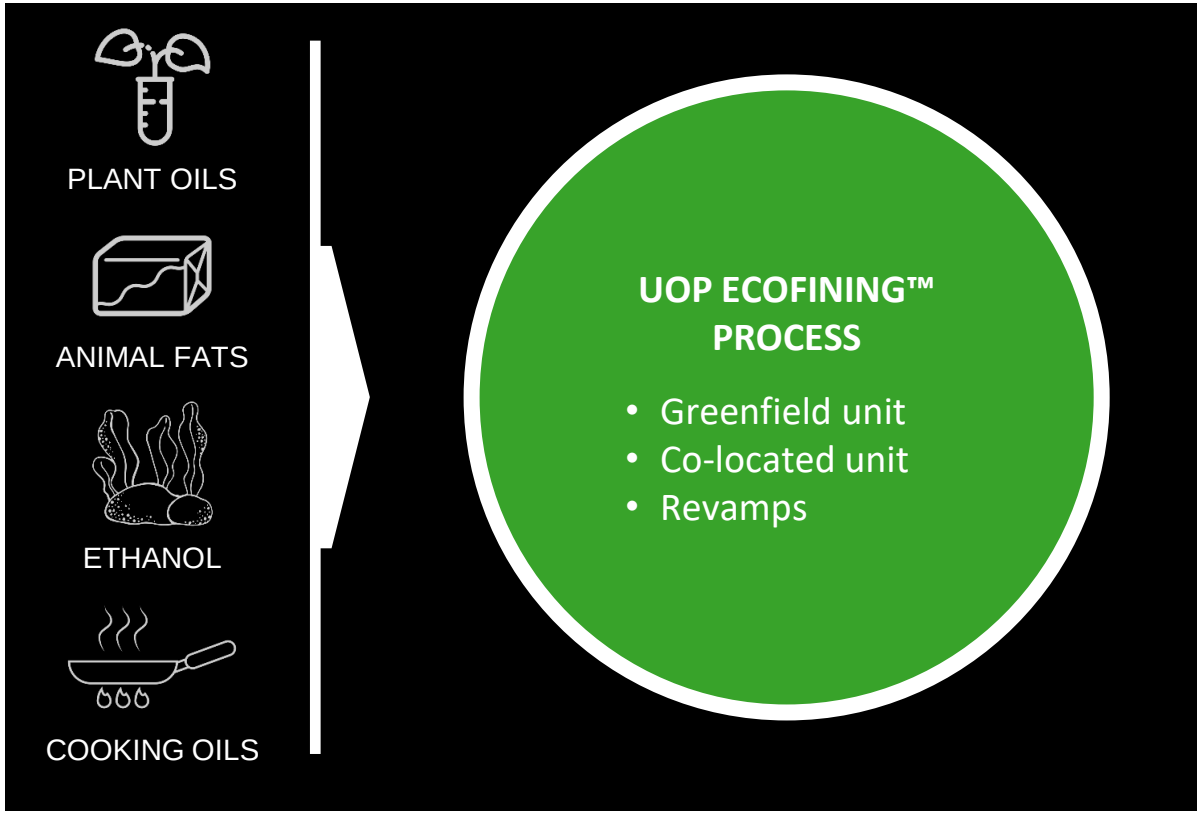
EPC: Engineering, procurement, and construction

RENEWABLE FUELS PERFORMANCE AT SCALE

HONEYWELL UOP IS THE MARKET LEADER

- **1st plant licensed in 2007, 8 years earlier than competition**
- **30+ plants** licensed since 2017 and 14 licensed since January 2021
- Industry **leader in plant performance**
- 6 plants in operation; 20 additional plants in design and construction phase
- Only supplier offering **modular equipment**
- **Broadest range of feedstocks capable** – 200+ oils tested in pilot plants
  - Ethanol to Jet launched in 2022
  - Biomass and CO_2 planned for 2023+
- **UOP sales potential, per plant[1]**
  - Recurring = $75M - $100M
  - One-Time = $25M - $100M

[1]*Based on 10k BPD capacity; operating for 20 years*



DIAMOND GREEN DIESEL® · eni · world energy · PERTAMINA

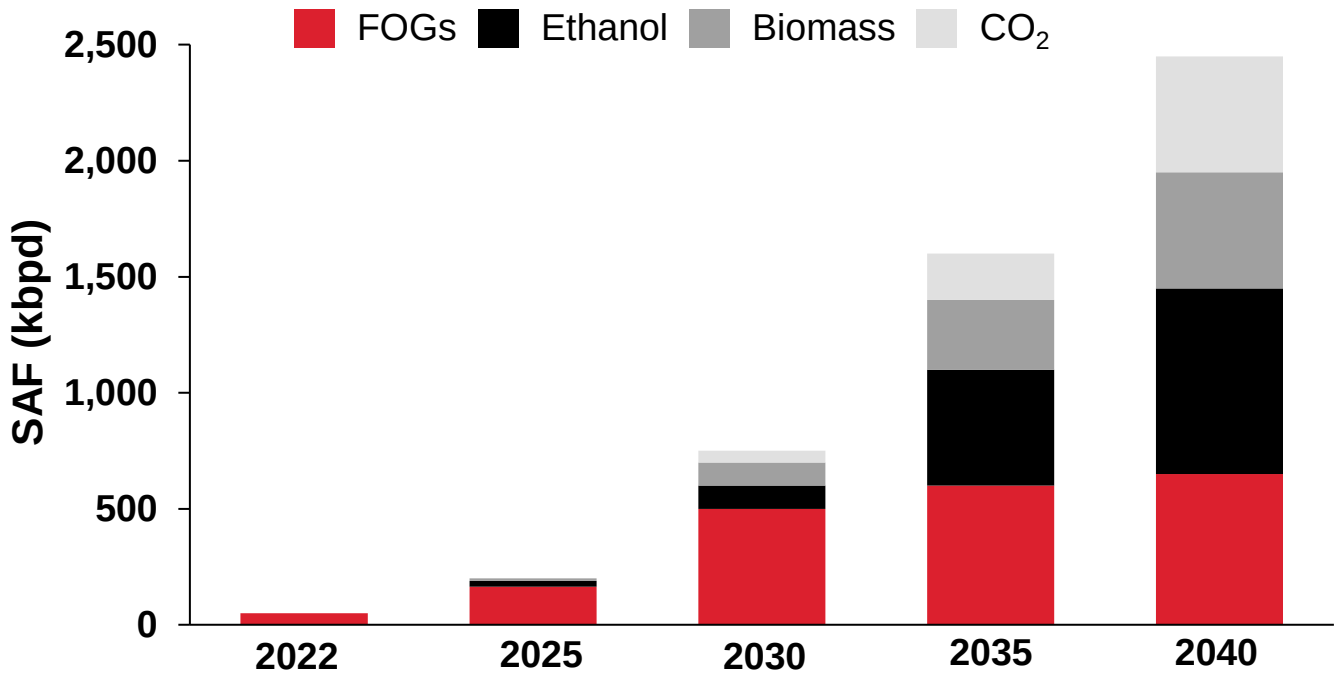
Most Commercial Operating Facilities in the Industry

bp · TOTAL · JGC · Tüpraş · OMV · JIAAO

New Project Awards for Renewable Diesel and Jet Fuel

SUSTAINABLE AVIATION FUEL
LEADING SOLUTIONS TO MEET DEMAND

Global SAF Consumption by Feedstock Type, thousand bpd



	2022	2025	2030	2035	2040
SAF as % of Total Jet	1%	3%	11%	22%	31%

Key Features by Feedstock

Fats, Oils, and Greases - Converting inedible FOGs via Ecofining™ and UOP Renewable Jet Fuel Processes

- Flexibility to process a wide range of sustainable oil and fat feedstocks into high-value fuels
- Delivering 3-4x typical industry profit margins for refining customers

Ethanol – UOP Ethanol to Jet Process

- High yields to jet and diesel from UOP's ETJ process, Produce SAF with a low cost of production (COP) comparable to HEFA SPK
- Based on commercially demonstrated technologies – enables fast scale up and quicker time to commercialization

Biomass to SAF (RTP® - Pyrolysis + Alder)

- Converts biomass to a feedstock (pyrolysis oil) that can be upgraded to SAF
- Co-investing with United Airlines in Alder to upgrade feedstock (e.g., pyrolysis oil) to SAF

CO_2 - Jet (PtL) via methanol, MTO

UOP is the Only Technology Supplier with Capability Across All Feedstocks

Global jet demand from IHS, SAF demand from UOP internal analysis. FOGs: fats, oils, and greases. HEFA: Hydrotreated esters and fatty acids. SPK: Synthetic paraffinic kerosene. RTP: Rapid thermal processing. PTL: Power to liquids. MTO: Methanol to olefins.

CARBON CAPTURE
READY-NOW SOLUTIONS

- **Broad range of ready-now technologies** for pre- and post-combustion carbon capture
- Offerings **leverage Honeywell's membranes, gas separation, controls, and digitization expertise**
- **Industry-leading performance** in Blue H_2 and post-combustion CO_2 capture
- **Capable of reducing 95%+ of CO_2** emissions[1]
- **Demonstrated performance** (already capturing 15M MT of CO_2 per year[2], equivalent to ~3M cars on the road), **addressing the top 5 world emitters:** Power, Cement, Refining, Steel, Chemicals
- Leveraging partnerships (e.g., Enlink) for CO_2 transportation and sequestration
  - ~4,000 miles of Louisiana pipeline and 710 mmcf/d operating processing capacity

University of Texas Austin Pilot Plant CCUS

- ***Honeywell establishes licensing agreement with Texas Carbon Management Program Group at The University of Texas at Austin***
- ***New Advanced Solvent technology will capture carbon dioxide generated from combustion flue gases from power, steel, cement, and other industrial plants***

- **UOP sales potential, per system[3]**
  - Recurring = $50M - $150M
  - One-Time = $25M - $150M

Honeywell UOP has Been the Leader in Carbon Capture for Over 20 Years

[1]Demonstrated at UT-Austin pilot plant and National Carbon Capture Center using flue gas from both coal and natural gas combined cycle sources. [2]Results calculated based on design capacity of delivered technology using multiple UOP solutions: Separex™ Membrane Systems, Amine Guard™ FS Process, SeparALL™ Process. [3]Based on 1.5 MTPA capture capacity; operating for 20 years.

CLEAN HYDROGEN
BROAD RANGE OF SOLUTIONS

Hydrogen techno-economics can vary based on industry, government incentives, energy costs, and infrastructure.

Our solutions can help customers with their decarbonization initiatives, regardless of where they are in their journey or location.

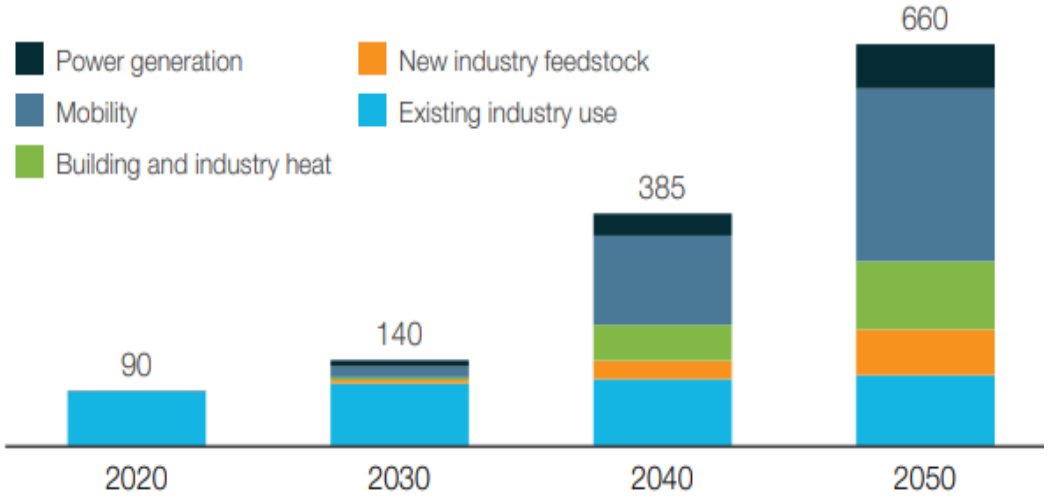
Blue H_2

- **Lowest cost of CO_2 per ton captured** for retrofits and new units
- **Broadest range of SMR / ATR OEM partnerships**

Green H_2

- **CCMs** for Proton Exchange Membrane (PEM) and Anion Exchange Membrane (AEM) electrolyzers
- **Enables higher electrolyzer efficiency and current density** through UOP's **breakthrough proprietary membrane catalyst**
- HON CCM can **reduce electrolyzer stack cost by 25%+**
- Can achieve 30% higher hydrogen production than commercially available CCMs[1]

IN A DECARBONIZED WORLD, H_2 DEMAND COULD GROW UP TO SEVENFOLD

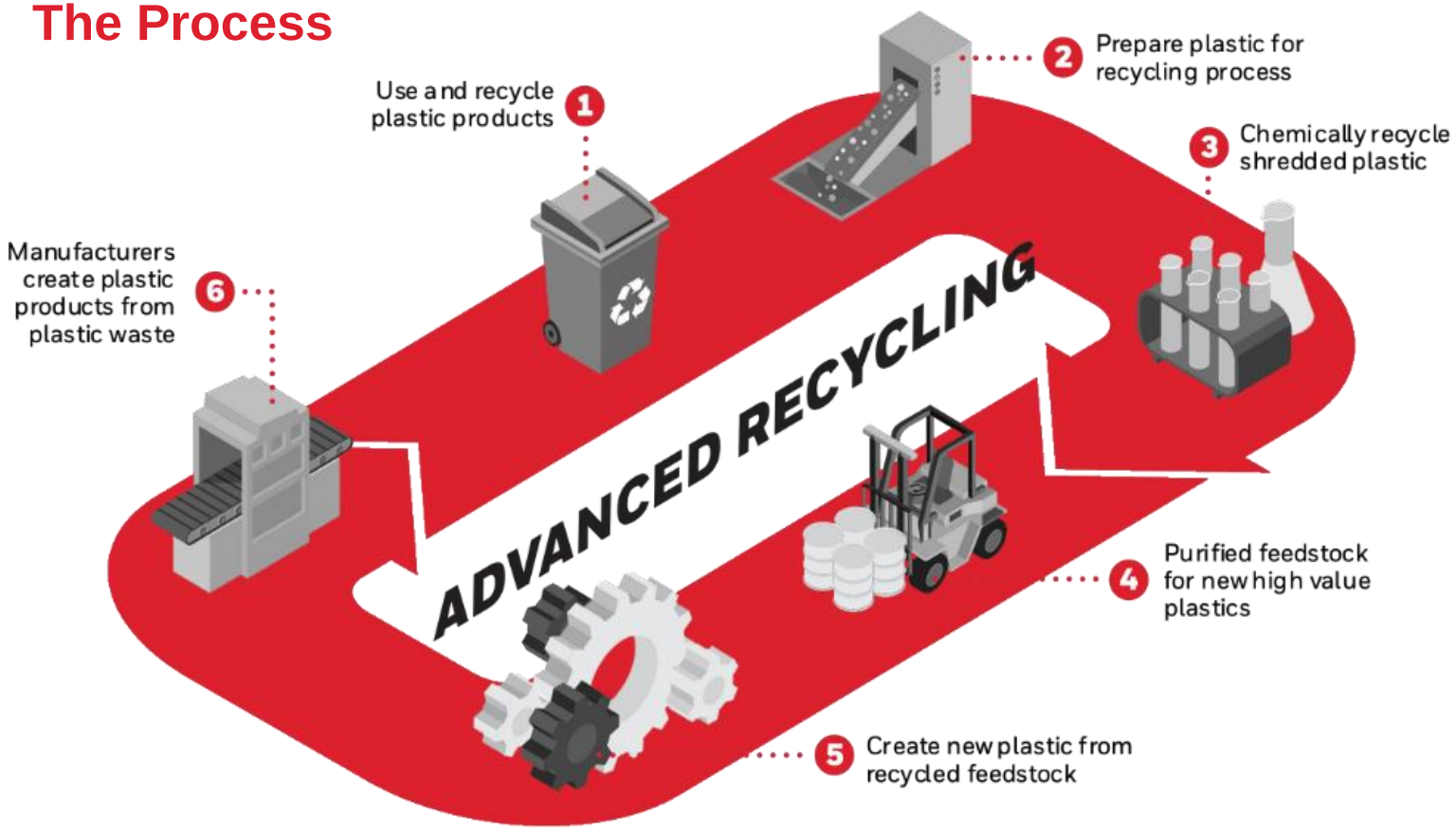


Honeywell UOP is Well-Positioned in Clean Hydrogen

[1]*Based on a PEM water electrolysis system using renewable power to produce 2,300 MT H2/y with 5,000 operating hours per year. Source: Hydrogen council: scaling up, McKinsey. SMR Steam methane reforming. ATR: Autothermal reforming. CCM: Catalyst-coated membrane.*

PLASTIC CIRCULARITY
UPCYCLE

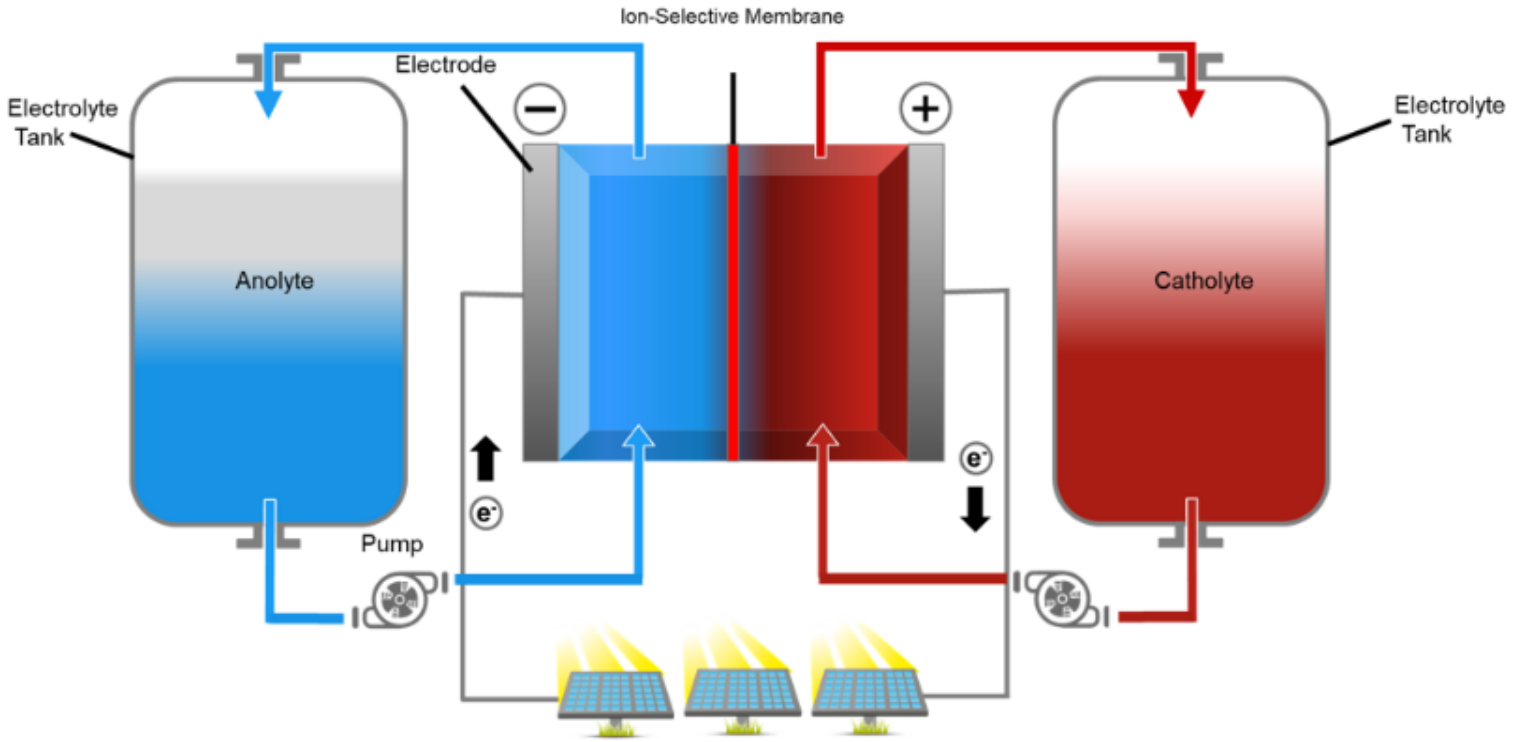
The Process



- **Demonstrated technology**
- **Expands the types of plastics that can be recycled**
- Waste Management Customers looking for low-risk, fast implementation, single-provider solution to monetize plastics
- Commercial-scale projects planned for 2023
- **UOP sales potential, per plant[1]**
  - Recurring = $20M - $60M
  - One-Time = $30M - $60M

[1]*Based on 30k MTPA capacity; operating for 20 years.*

ENERGY STORAGE
FLOW BATTERY

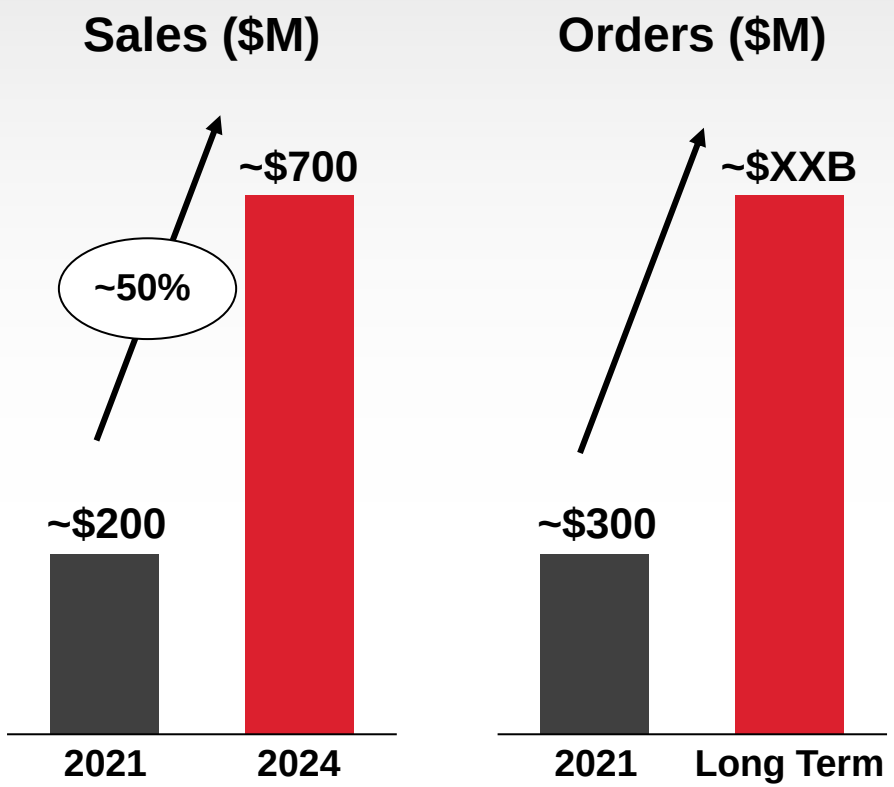


- **Proprietary Honeywell membrane AND advanced electrolyte system = Lowest cost of storage**
- **Non-flammable** electrolyte designed with **recyclable** components and **easy-to-source** materials

Benefits

- Long duration
- Safe, non-flammable electrolyte
- No degradation
- Multiple cycles per day
- 20-year lifetime
- Low levelized cost of storage

STS SUMMARY



- STS portfolio is a mix of ready-now and in-development technologies
- All offerings derived from Honeywell's core competencies, including separation, catalysis, automation, and controls
- Business model built on licensing and equipment, modular equipment, and services
- High-margin, high-recurring sales
- Sales growth driven by
  - Inflation Reduction Act
  - Renewable fuel and sustainable aviation fuel mandates
  - New product introduction

On Track to $700M Sales Target

CLOSING

Honeywell
UOP

UOP

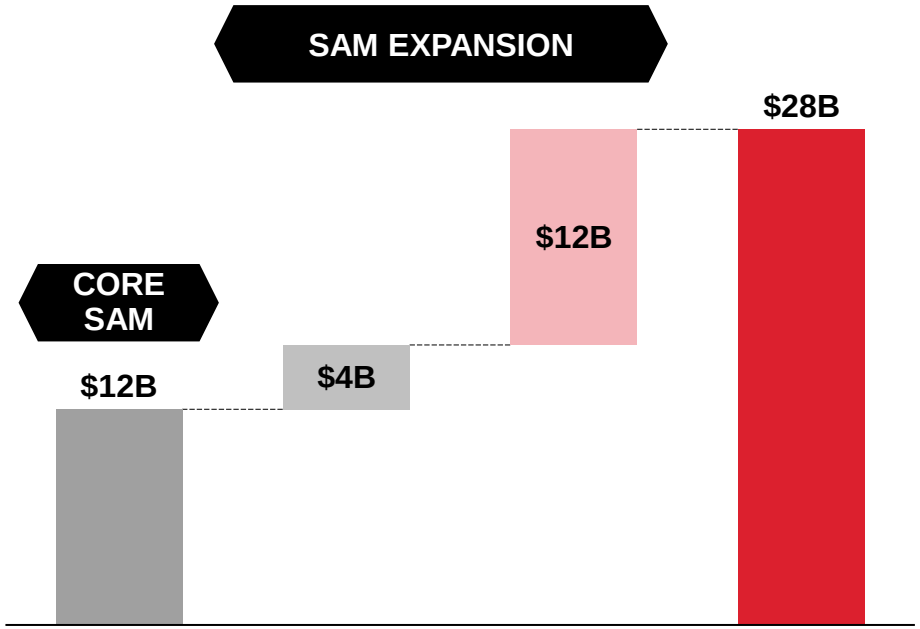
PROFITABLE GROWTH FRAMEWORK

- Refining to petrochemicals shift
- Asset base transformation
- Gas treatment and processing
- Comprehensive aftermarket portfolio
- Digital solutions

- Adsorbent applications
- Petrochemical adjacencies
- Materials innovation

- Renewables
- Carbon Capture
- Green H_2
- Plastics recycling

SAM AND MARKET GROWTH RATES



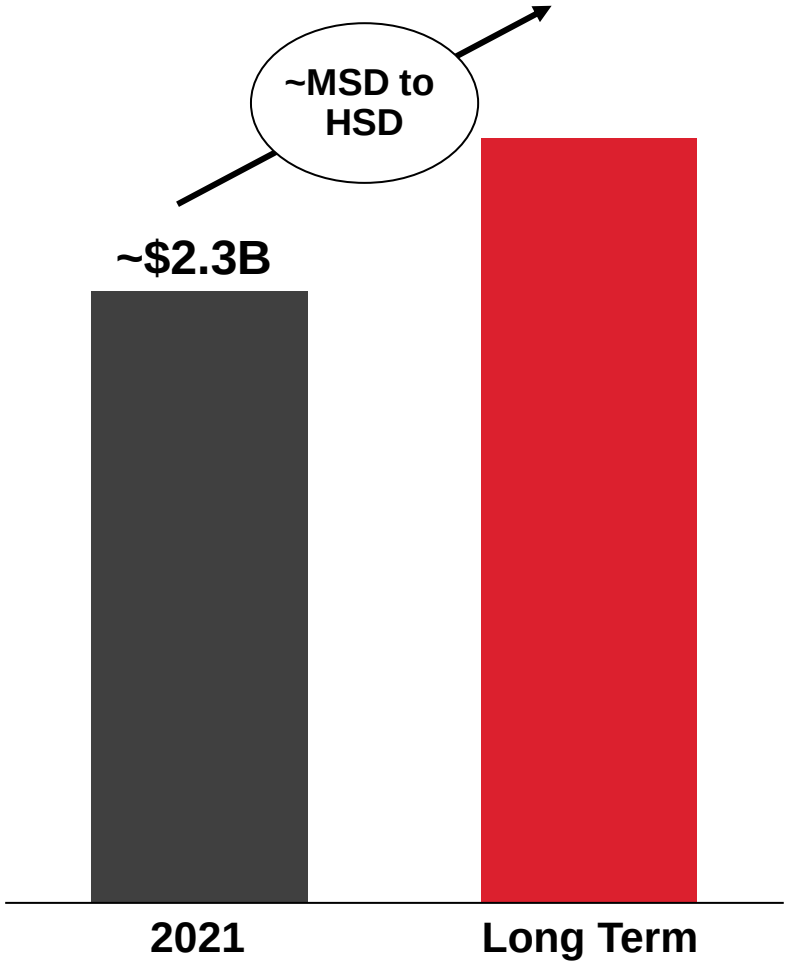
	Core	New Markets	STS	Total UOP SAM
Market CAGR 2022 - 2025	2/3 Opex (5% - 7%) 1/3 Capex (2% - 3%)	6% - 9%	18%+	~7%

Profitable Growth through Offerings and SAM Expansion

UOP

LONG TERM GROWTH FRAMEWORK

UOP SALES GROWTH PROFILE



GROWTH OUTLOOK

- Robust backlog entering 2023
- Recurring revenue from installed base
- Foundational technologies enable continuous innovation, asset transformation
- Deep renewable fuels and membrane knowledge
- Strong Ecofining™ unit growth drives recurring catalyst stream
- Well-positioned for transition to low carbon and accelerating growth in sustainability
- Expanding margins through commercial excellence and productivity initiatives

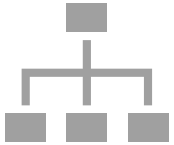
UOP
KEY MESSAGES

FAVORABLE GROWTH OUTLOOK

- 3,000+ UOP process units with recurring revenue
- 40% of revenue from new products launched in the last five years
- 3% - 4% long-term growth of petrochemicals
- 2x SAM expansion from sustainability and new markets

ENERGY TRANSITION LEADER

- Pioneer and leading position in renewable fuels (sustainable aviation fuel and renewable diesel)
- Key technologies for both Blue and Green Hydrogen
- Leading supplier of both solvents and adsorbents for CO_2 capture



ROBUST BUSINESS MODEL

- End-to-end model creates an annuity of recurring revenue
- Broad offerings across refining, petrochemicals, and renewables
- Proven recurring revenue business model for ready-now sustainability offerings

PROVEN TECHNOLOGY LEADERSHIP

- Leading position across majority of segments served
- 4,000+ patents in force, 1,400+ since 2019
- Consistent history of innovation and transformation over 108 years

Honeywell UOP's Comprehensive Portfolio is Leading the Energy Transition


Honeywell