AspenTech Overview

May 2023

The Dual Challenge

Meeting the increasing demand for resources from a growing population with rising standards of living, while also addressing sustainability goals.

GLOBAL ENERGY DEMAND GROWTH

50%

by 2050 [4]

GLOBAL ELECTRICITY GENERATION GROWTH

75%

by 2050, 90% renewables [8]

METALS FOR ELECTRIFICATION

600%

production growth in lithium by 2035 [5]

Global Population [1]

2022	2050
8.0B	9.7B

Net-Zero Carbon Emissions by 2050

GLOBAL CHEMICALS DEMAND GROWTH

300%

by 2050 [6]

INFRASTRUCTURE GROWTH

$150T

energy sector investment by 2050 [7]

1. International Institute for Sustainable Development, SDG Knowledge Hub, Aug 2020
2. IEA - For the first time in decades, the number of people without access to electricity is set to increase in 2022, Oct 22
3. Visualizing the Future of the Pharma Market Visual Capitalist, Jan 2019
4. EIA projects nearly 50% increase in world energy usage by 2050, International Energy Outlook 2021, EIA, Oct 21
5. Lithium supply from mineral will lead the growth, Wood Mackenzie Mar 22
6. WEF — Global Chemical companies collaborate in pivotal move to net zero Oct 21
7. IRENA — World Energy Transitions Outlook 2023 Preview
8. World Energy Outlook Report 2021 — IEA Rev Dec 21
9. When will the global consumer class recover?, K.Wu and M.Thomasberger, Brookings, Nov 2020

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AspenTech At-a-Glance

World Leader in Industrial Software for Asset-Intensive Industries

Optimizing assets to run safer, greener, longer and faster

3000+	3700+	40+	170+
CUSTOMERS WORLDWIDE	EMPLOYEES	YEARS OF INNOVATION	ESTABLISHED PARTNERSHIPS

Annual Customer Value Delivered **$59B** PROFIT **16Mt** * CO_2e EMISSIONS REDUCTION
*IN GLOBAL REFINING

Mt = million metric tons | CO_2e = CO_2 equivalent of various GHG

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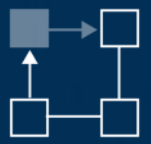
Asset Optimization — Extending the Lifecycle

DESIGN → **OPERATE** → **MAINTAIN**

Pushing the Boundaries of What's Possible	Running to the Limits of Performance	Driving Uptime Through Actionable Insights



Performance Engineering

Manufacturing & Supply Chain

Asset Performance Management

Subsurface Science & Engineering

Digital Grid Management

Industrial Data Management

Data Insights

Data Management, AI/ML,
Advanced Analytics

Domain Expertise

Engineering Fundamentals
Industry Experience

Industrial AI

Insights | Guidance | Automation

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Convergence of Industrial Automation Technology Enablers

Quantum Computing

Generative AI

AR/VR

Hyperscale Computing

Cloud and Edge Computing

High Performance Computing

Robotics

Industrial Data Management

5G

Sensors

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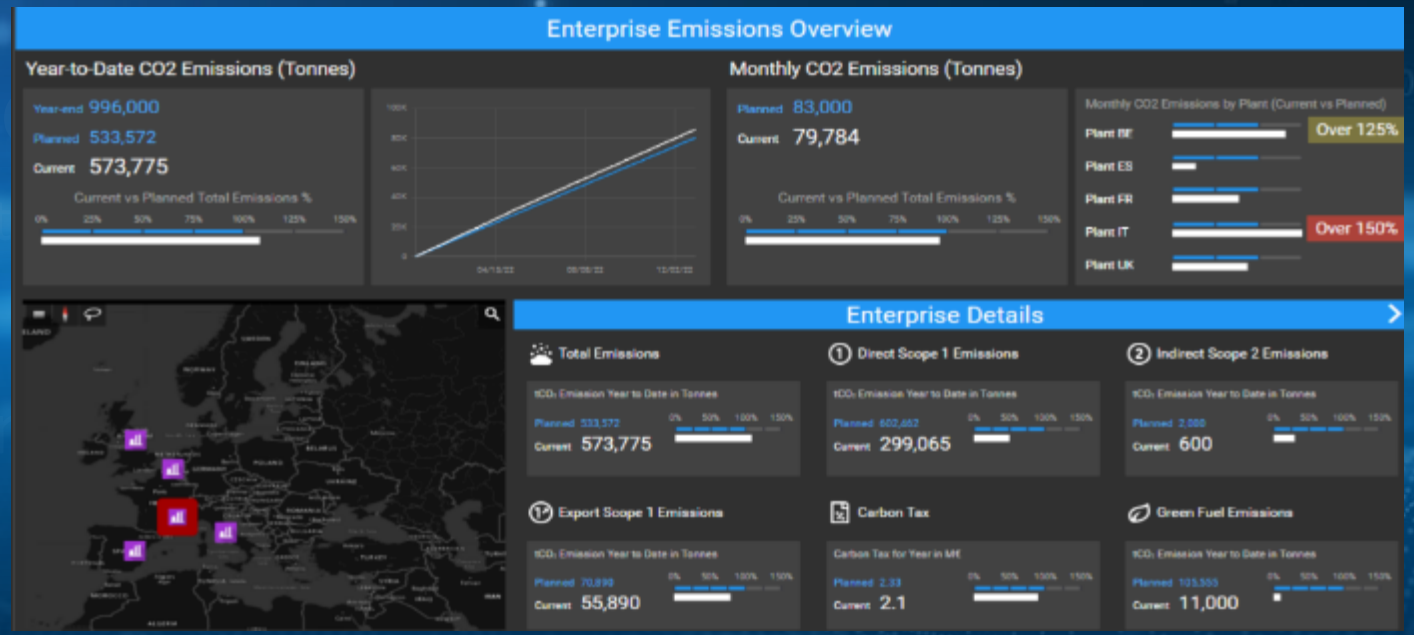
Convergence of Industrial Automation Technology Enablers

AspenTech Emissions Management Solution

Reduce Emissions and Maintain Margins



Energy and CO_2 Tracking, Forecasting and Decision Making

The Self-Optimizing Asset

Safer Operation

More Sustainable

Higher Margins

Improved Reliability

The Path to Greater Operational Autonomy

Technologies and processes that work together to predict future state and prescribe or automate actions to help meet operating and sustainability goals

Self-learning

Self-adapting

Self-sustaining

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Co-Innovating to Meet the Dual Challenge

Partnerships

EMERSON

Energy Transitions Commission

ALLIANCE TO END PLASTIC WASTE

aws

Microsoft

IBM

EY

McKinsey & Company

ECP

Customers & Customer Advisory Boards

EVONIK POWER TO CREATE

OGE

FMG Fortescue

SARAS

Dow

Worley energy | chemicals | resources

Saint John Energy 100 YEARS AND COUNTING

SNP

eni

KBR

سوناطراك sonatrach

Shell

سابك sabic

aramco

ADITYA BIRLA HINDALCO

ExxonMobil

أدنوك ADNOC

BASF We create chemistry

AspenTech Academy Board

Carnegie Mellon University

CityU 香港城市大學 City University of Hong Kong

UNIVERSITY OF DELAWARE

COLUMBIA | ENGINEERING The Fu Foundation School of Engineering and Applied Science

UC RIVERSIDE

Joint solution development **Customer priorities and use cases** **Ideation and feedback**

New Business and Operational Models

Require **Organizational Excellence** to Achieve and Sustain Value

And Support for a **New Generation of Users** with High Expectations for Software Applications

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Sustainability Pathways to Address the Dual Challenge

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AspenTech Sustainability Pathway: CCS/CCUS

Development & Project Execution

Optimization & Monitoring

Research & Develop New Processes

Scale-up & Execute Projects

Optimize CO_2 Capture & Utilization

Optimize CO_2 Transport to Storage

Characterize Geological Storage

Design Storage & Injection

Optimize Storage Operations

Ensure Proper Storage & Site Closure

CCS, Green H_2 & Bio-Feedstocks

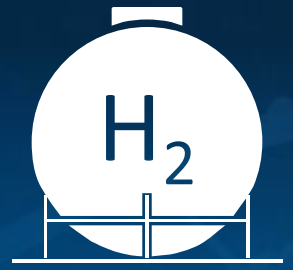
Surge of Sustainability Projects

Major Energy and Chemical Companies are Investing in Sustainability

Carbon Capture

193 global project announcements since 2020

Total value of **$226B**



Green Hydrogen

451 global project announcements since 2020

Total value of **$588B**

Bio-feedstocks

152 global project announcements since 2020

Total value of **$62B**

Source: EIC DataStream 2023

Enabling Customer Competency Development

Energy Efficiency	SUS-H101/P101 Estimate energy consumption	SUS-E101 /102/201 Improve process & equipment efficiencies	SUS-U101 Plan utilities to optimize energy usage	AFR101 Prevent unplanned events efficiency loss	MES101/AEI101 Report energy usage and monitor KPIs
Emissions Management	SUS-H101/P101 Estimate emissions through process modeling	EAP301 Model Digital Twin to control and optimize emissions	SUS-R101 Select crudes to minimize CO2 emissions	AUS101 Plan operations to control emissions at the sources	SUS-H202 Design safe and effective flare networks
Electrification	G-310 OSI Forecast including load and renewable forecast	G-232 OSI Real-time generation control including firm and renewable generation management	G-250 OSI Integra DERMS (Distributed Energy Resource Management)		
Bio-Based Feedstocks	SUS-P207 Leverage on solid handling capabilities to characterize biomass feedstock	SUS-P101/EAP2311 Analyze the process to create bio-oil from renewable sources through custom modeling	SUS-R101 Sustainable planning for refinery feedstock		
Hydrogen Economy	SUS-P205 Model alkaline electrolysis process in hydrogen production	SUS-P2051 Model solar cells as a renewable energy source to produce green hydrogen	SUS-P101/EHY250/SCM201 Ensure feasibility and safety of liquefaction for storage and transportation	AFR101 System de-risk to prioritize investment return	
Carbon Capture & Storage	SUS-P203 Evaluate carbon capture technologies via simulation	SUS-S101 Model geology for carbon capture and storage	EEE101/EEE103/SUS-E101 Evaluate economic feasibility	EAP301 Optimize efficiency with adaptive control using Digital Twin	AFR101 System de-risk to prioritize investment return
Materials Circularity	SUS-P207 Leverage on solid handling capabilities to model waste pyrolysis	SUS-P208 Model production of renewable fuel from waste oil	AFR101 Evaluate reliability to avoid unplanned shutdowns and disruptions that create waste	SCM201 Plan distribution for complex supply chains	

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