AUCTION

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تحالف الإنجاز

POLYSILICON-SA.COM

00966 551 5000 35

PTC

Polysilicon Plant



PTC Polysilicon Plant

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CLICK!

Factory Video

CLICK!

Virtual Tour

CLICK!

Electrical Diagrams

CLICK!

Expansion Layout

CLICK!

Factory Site Plan

CLICK!



At the heart of Jubail Industrial City stands one of the region's most prominent advanced manufacturing projects : PTC Polysilicon Plant. This industrial landmark was established to serve as a vital link in global value chains, focusing on three key industries that form the backbone of modern technology Photovoltaics, Semiconductors, and Silicon Polymers.

1- Polysilicon The Foundation of Future Industries



Polysilicon is a fundamental material in the production of solar cells, semiconductor wafers, and various advanced chemical products. Through its integration with both local and international supply chains,
the PTC plant represents a vision of industrial excellence in the Kingdom and a powerful contributor to Vision **2030** by localizing advanced technologies and supporting clean energy solutions .

Polysilicon The Foundation of Future Industries



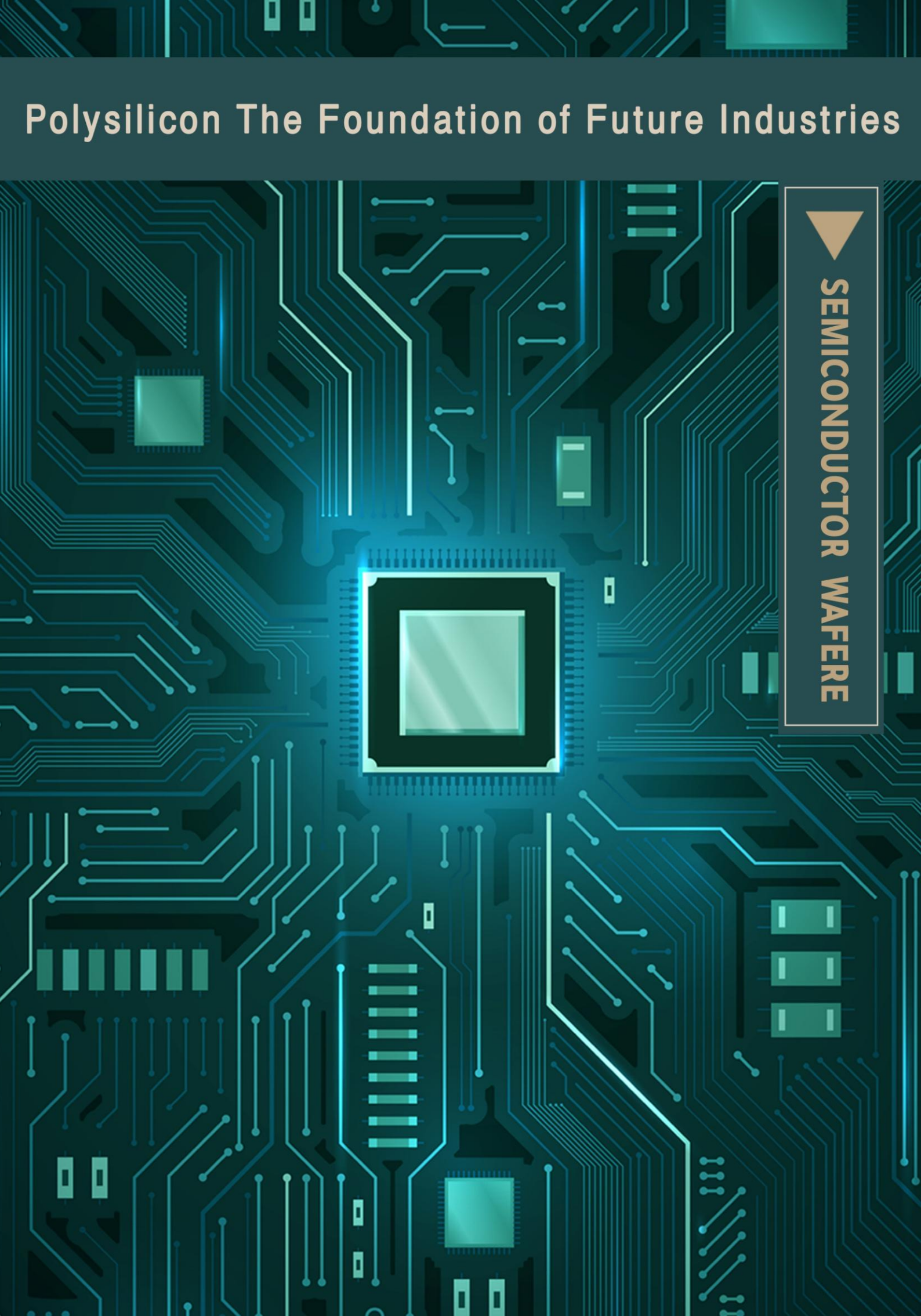
Polysilicon The Foundation of Future Industries

SOLAR CELLS

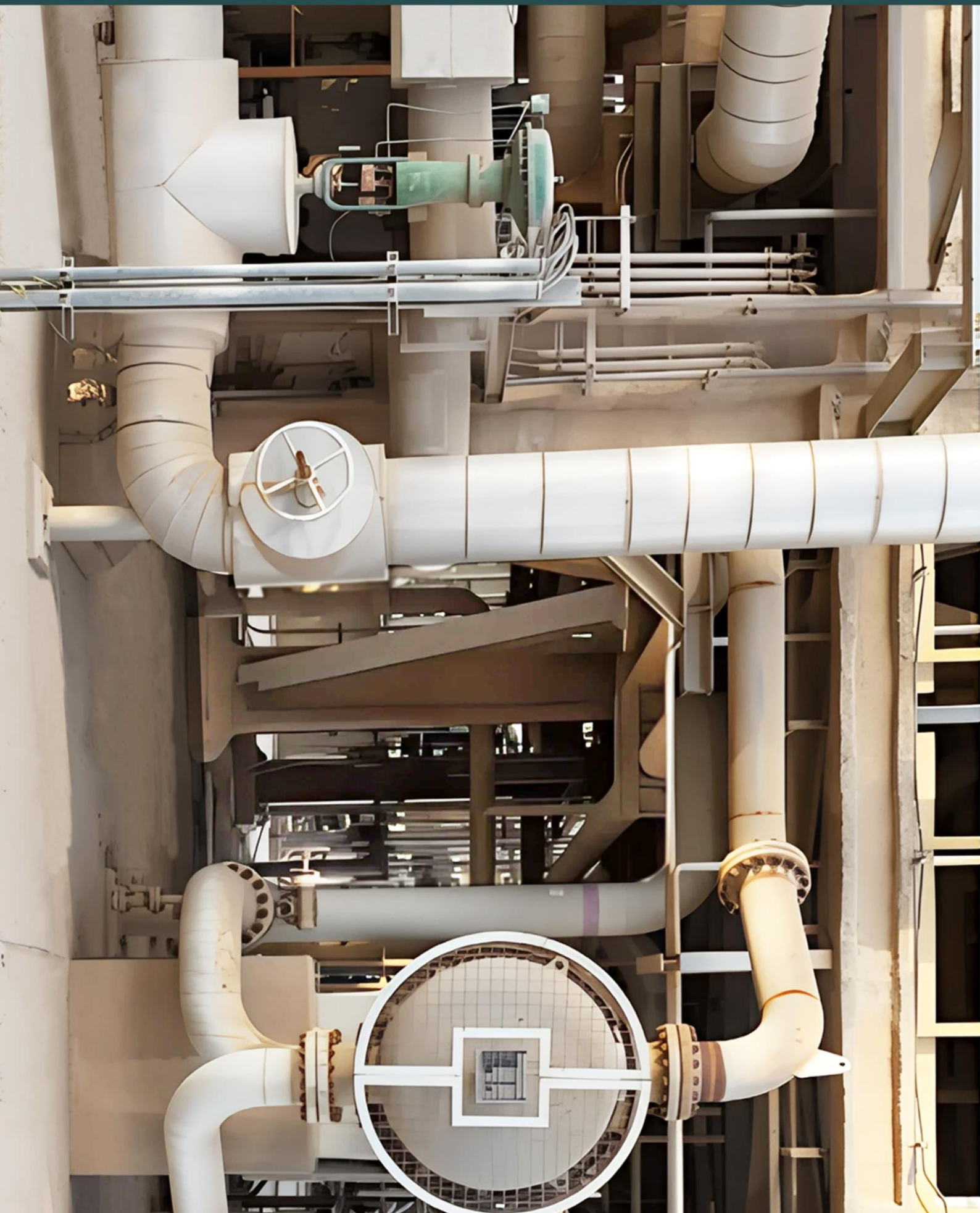


Polysilicon The Foundation of Future Industries

Polysilicon The Foundation of Future Industries



Polysilicon The Foundation of Future Industries



Polysilicon The Foundation of Future Industries

ADVANCED CHEMICAL PRODUCTS





(2)

Company History

&

Project Evolution

2 - Company History & Project Evolution

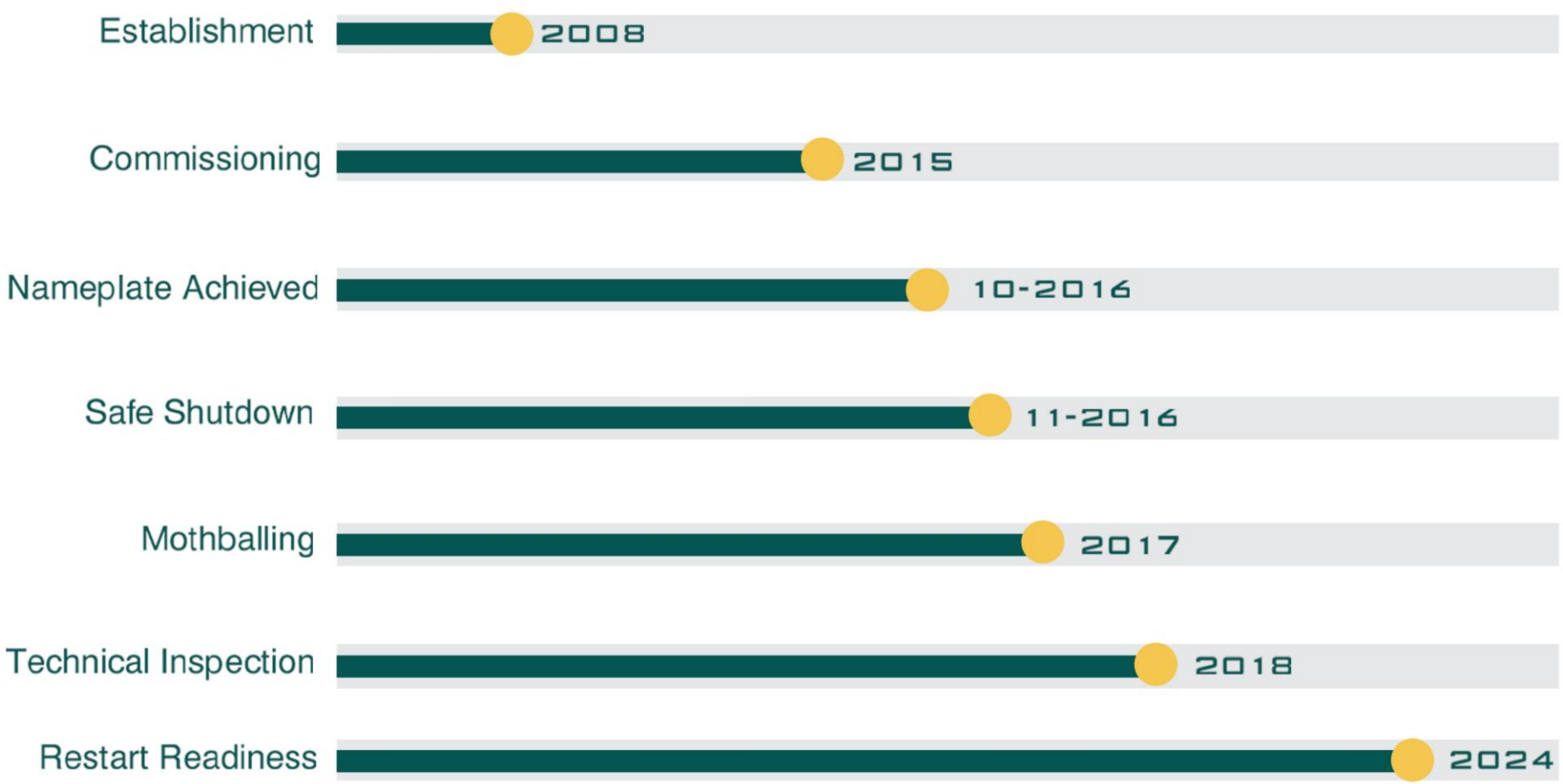


Photo - May 2025



2-1: Establishment

The PTC Polysilicon Plant was established as a strategic industrial project aligned with Saudi Arabia's vision to localize renewable energy technologies and silicon-based value chains.




2008
24

2015

2-2 :Commissioning

Trial operations began, and the plant

successfully produced 9N+ high-purity polysilicon

at full operational efficiency

— becoming the first facility in the region to reach

this level of product quality.




24
POLYSILICON
HIGH-BURTY SIUCON
Net Veigh: 500g
Prod-date: 852024

10-2016

2-3 : Safe Shutdown

The plant achieved its full nameplate capacity with the targeted product specifications.

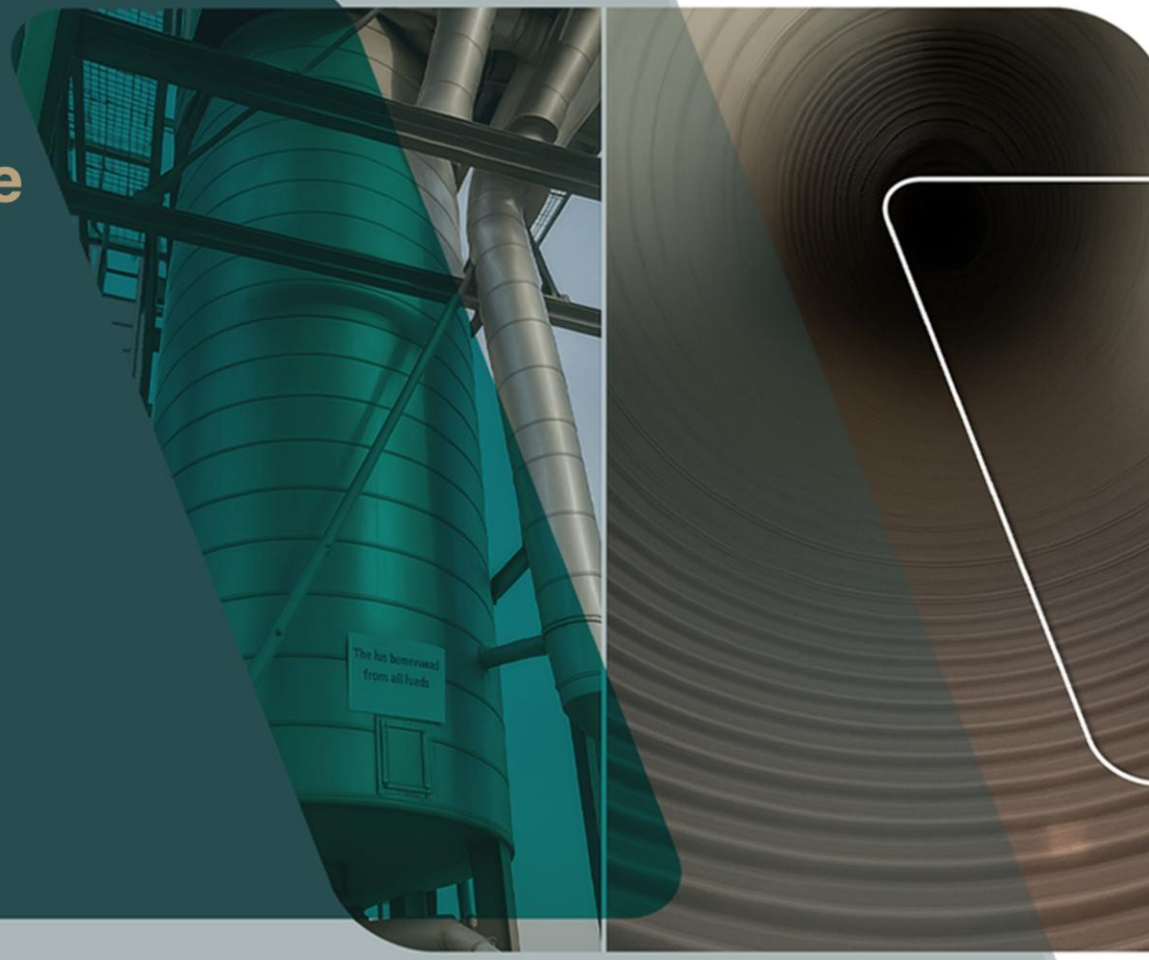




11-2016

2-4 : The facility underwent a safe and organized shutdown

- Draining of all process gases and liquids.
- Installation of blind flanges to seal equipment.
- Protection of systems using inert nitrogen gas.





2017

2-5 : Mothballing

The facility underwent a safe and organized shutdown

In 2017, PTC implemented full mothballing procedures with precision, aiming to preserve the plant's equipment and infrastructure for long-term inactivity.

- Sealing of all process systems and auxiliary lines to prevent exposure and corrosion.
- Drying of pipes, tanks, and vessels to eliminate moisture.
- Isolation and protection of sensitive instruments and control systems.
- Lubrication of mechanical parts to avoid rust and degradation.
- Establishment of scheduled monitoring routines for periodic inspections.





2018 (March & July)

2-6 : Technical Inspection

Two site visits were conducted by KCC engineers to assess the technical status and readiness of the plant's assets.





2024 (January & February)

2-7 : Restart Readiness

KCC Technical Assessment – 2024

In January and February 2024, KCC conducted a comprehensive technical inspection of the plant and concluded that the assets remain in good condition, and restart is feasible following a detailed technical assessment.







（3）
Product
&
Technology

3-1 : Core Product – High-Purity Polysilicon

- The PTC plant produces polysilicon with a purity level of +9N (i.e., more than 99.99999 %).
- It is the first plant in the region to achieve this exceptional level of quality.
- The first on-spec production batch was successfully completed in June 2015.
- The plant reached its full nameplate capacity in October 2016.



PTC was able to produce on-spec 9N+ purity polysilicon in June **2015**,

PURITY

+9N

99,999 %

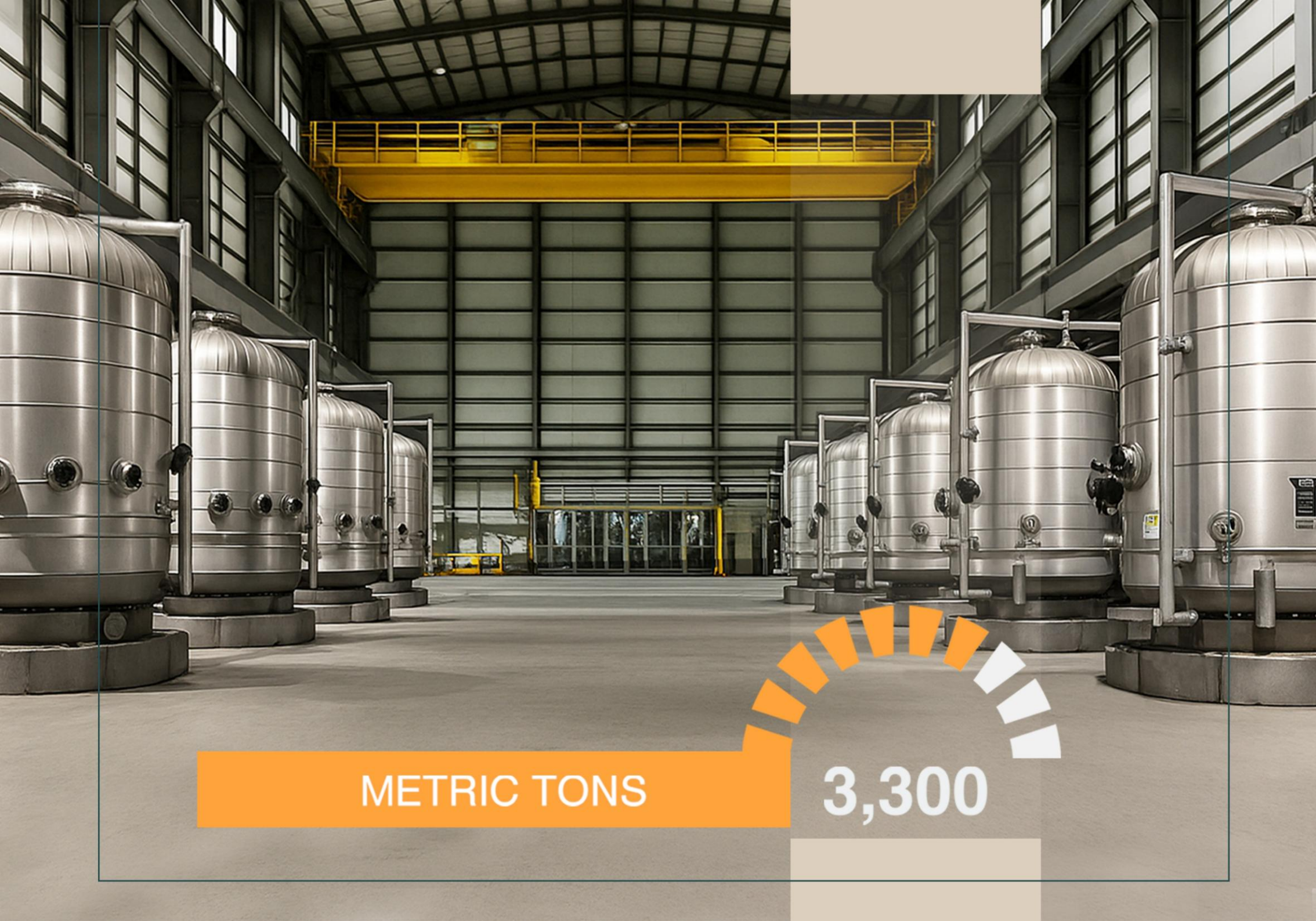
3-2 : Production Capacity

- The plant was designed with an annual production capacity of 3,300 metric tons of polysilicon.

- This capacity is based on 10 Siemens CVD reactors of the SDR-400 GTAT model.

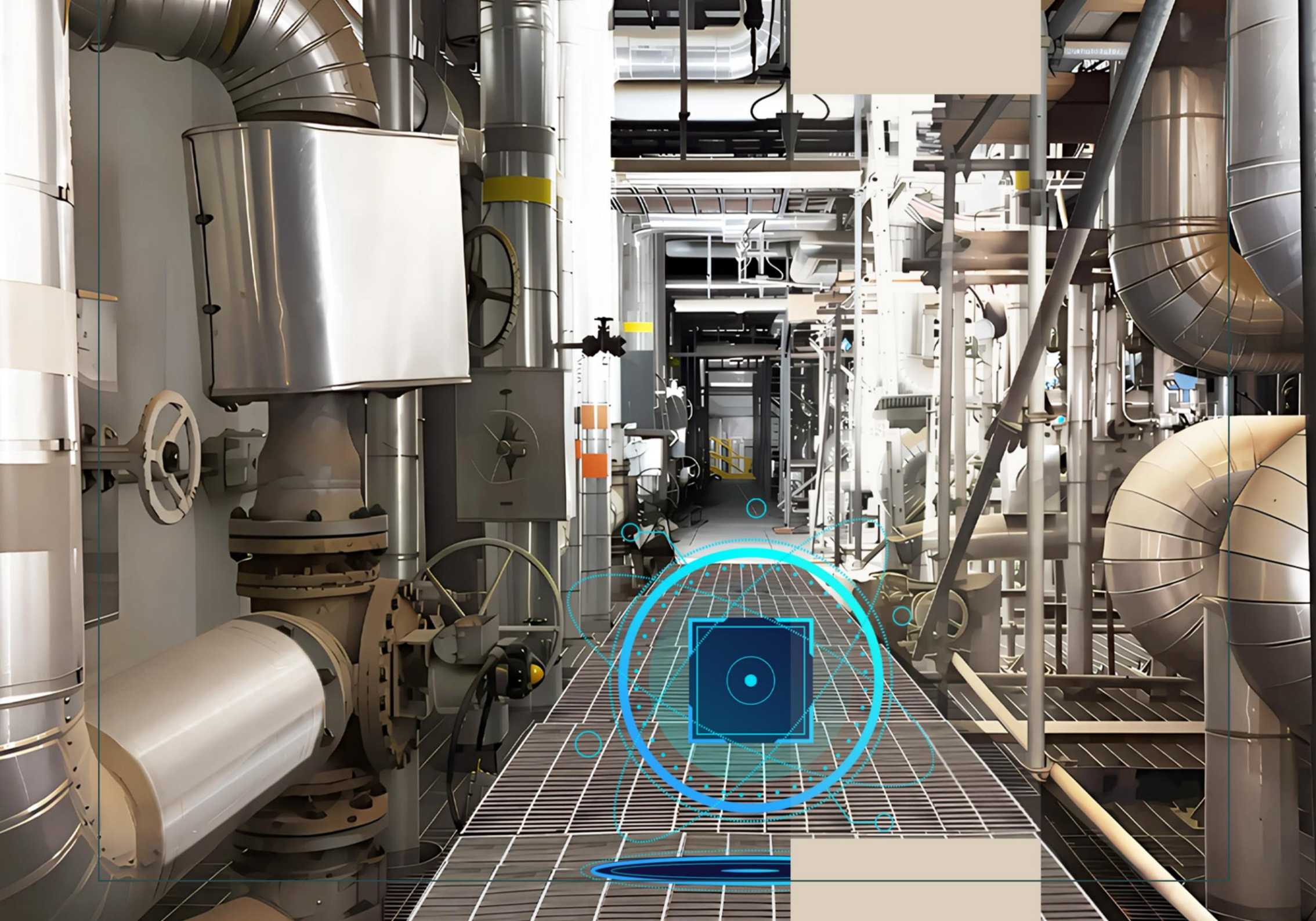
- The infrastructure allows for the expansion to 12 reactors within the same footprint.

- This upgrade supports a potential capacity of approximately 4,500 tons per year.


METRIC TONS
3,300

3-3 : Production Technology

- Siemens CVD (Chemical Vapor Deposition) technology is used.
- Integrated TCS (Trichlorosilane) unit with **9,000** kg/hr capacity.
- Infrastructure supports future upgrades to:
- FBR (Fluidized Bed Reactor): REC, MEMC, GCL
- Plasma Reactor: Schmid



(4)

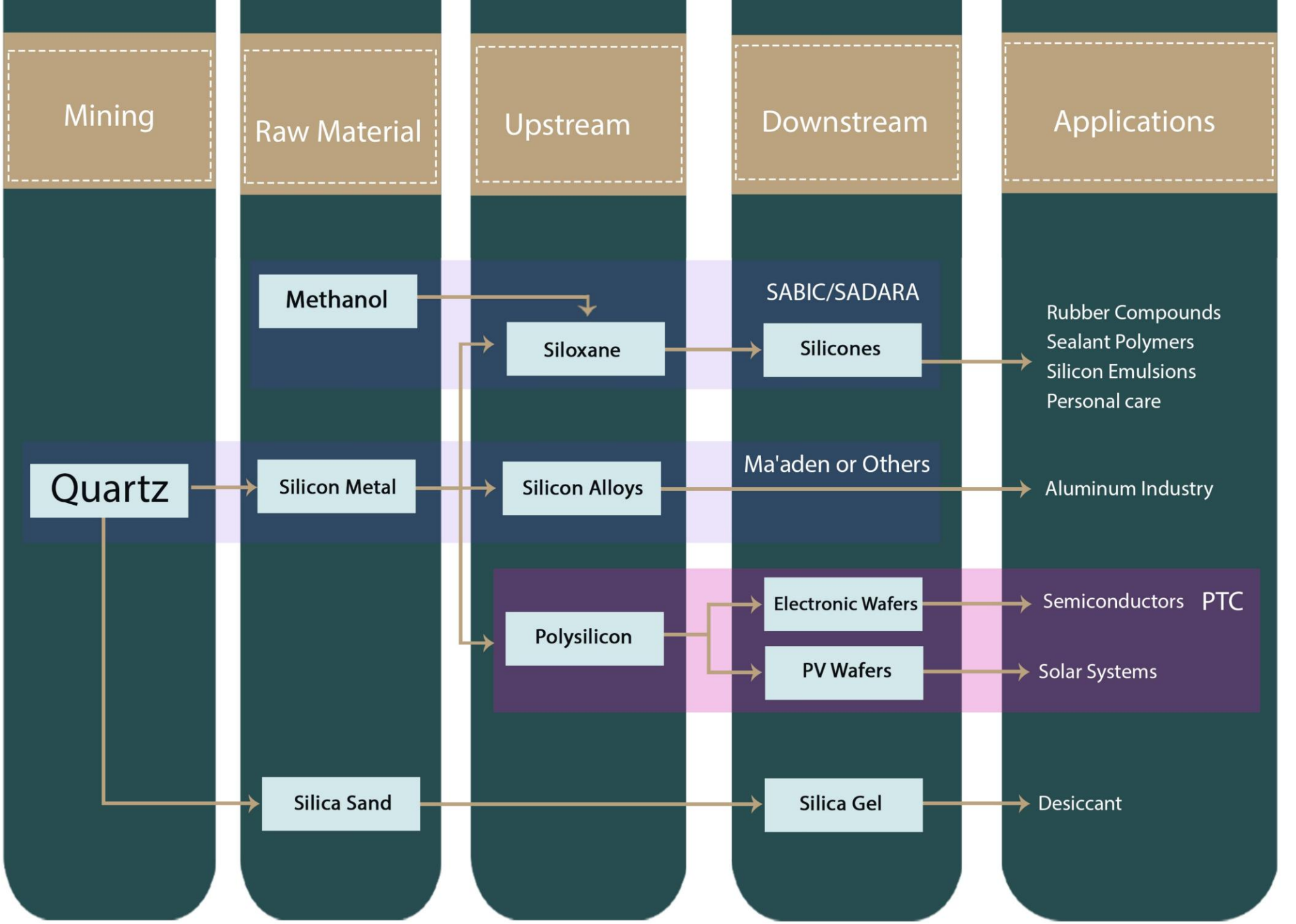
Value Chain Integration

4-1 : PTC sits at the heart of three key value chains :

- Photovoltaic (Solar)
- Semiconductors
- Silicon-based Polymers

It acts as a midstream processor, converting metallurgical-grade silicon into high-purity polysilicon used in:

- Solar cell manufacturing
- Semiconductor wafer production
- Industrial silicones and related products


Mining
Raw Material
Upstream
Downstream
Applications
Methanol
Siloxane
SABIC/SADARA
Silicones
Rubber Compounds
Sealant Polymers
Silicon Emulsions
Personal care
Quartz
Silicon Metal
Silicon Alloys
Ma'aden or Others
Aluminum Industry
Polysilicon
Electronic Wafers
Semiconductors
PTC
PV Wafers
Solar Systems
Silica Sand
Silica Gel
Desiccant

4-2 : Raw Materials and Upstream Integration

• Primary Raw Material :

The PTC plant relies on high-purity silica (quartz sand)

as the primary raw material forpolysilicon production.



• Local Availability :

- This raw material is commercially

available within Saudi Arabia, supporting local manufacturing .

- The raw materials for the plant are available in local mining

regions within the Kingdom, enhancing domestic integration.



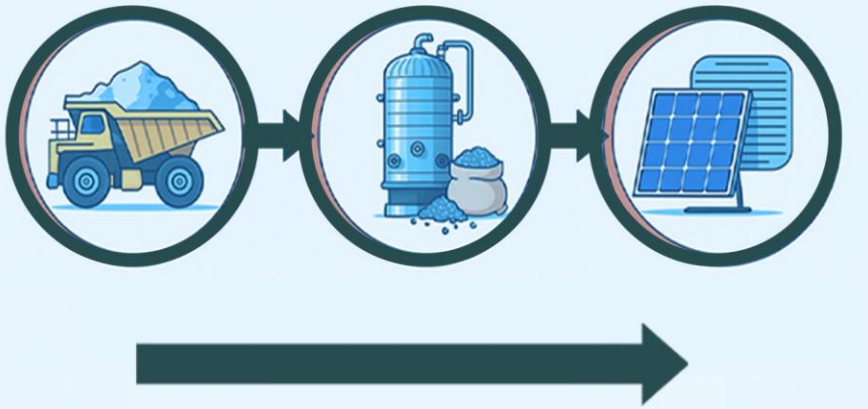
Strategic Importance:

The availability of silica locally helps to reduce import dependency, streamlining the supply chain and supporting production sustainability.



Industrial Integration:

The local availability of raw materials supports vertical industrial integration, progressing from raw material extraction to final polysilicon production.





(5)
Strategic Location
&
Advantages

5 -1 : Geographic Location

The plant is located in Jubail Industrial City, one of the Kingdom of Saudi Arabia's foremost industrial zones, placing it at the heart of the National Industrial Hub. This strategic location offers the plant multiple advantages, including



Infrastructure

Integrated industrial infrastructure supporting all stages of



Manpower

Easy access to skilled workforce and operational services



Direct Support

Direct support from relevant government entities



Prime Location

Close proximity to suppliers and industrial clients within

Jubail is recognized as one of the largest and most advanced industrial cities in the world, known for its scale and industrial integration. Comparable to global industrial giants like Houston (USA), Rotterdam (Netherlands), and Ulsan (South Korea), Jubail continues to attract significant international investments and major manufacturing operations across various sectors.

5 -2 : Power Supply

- **Power Infrastructure at PTC**

- The plant has been equipped with a dedicated power connection, ready to support high-energy operations required for polysilicon manufacturing. The system is scalable and designed for future expansion without major upgrades.

- **Power Reliability in Jubail Industrial City**

⊠ Jubail Industrial City offers stable and reliable electricity, tailored to meet the demands of high-load industrial operations such as petrochemicals and advanced manufacturing.





5 -3 : Water Availability:

- Industrial Water Supply

-The plant includes an internal Water Treatment Plant (WTP) as shown in the master layout.

⊠ The plant has a fully integrated infrastructure, ready for industrial operation with all required utilities.



5-4 : Industrial Connectivity

Located within Jubail Industrial City, PTC benefits from ready connections to essential utilities and surrounding industries. This setup ensures:

- Smooth integration with key sectors like petrochemicals and aluminum.

- Fully developed infrastructure for utilities and expansion: Including electricity, natural gas, treated water, process water, and nitrogen — all pre-engineered to support up to **12,000** tons/year of production.

-Flexibility to support multiple polysilicon technologies.

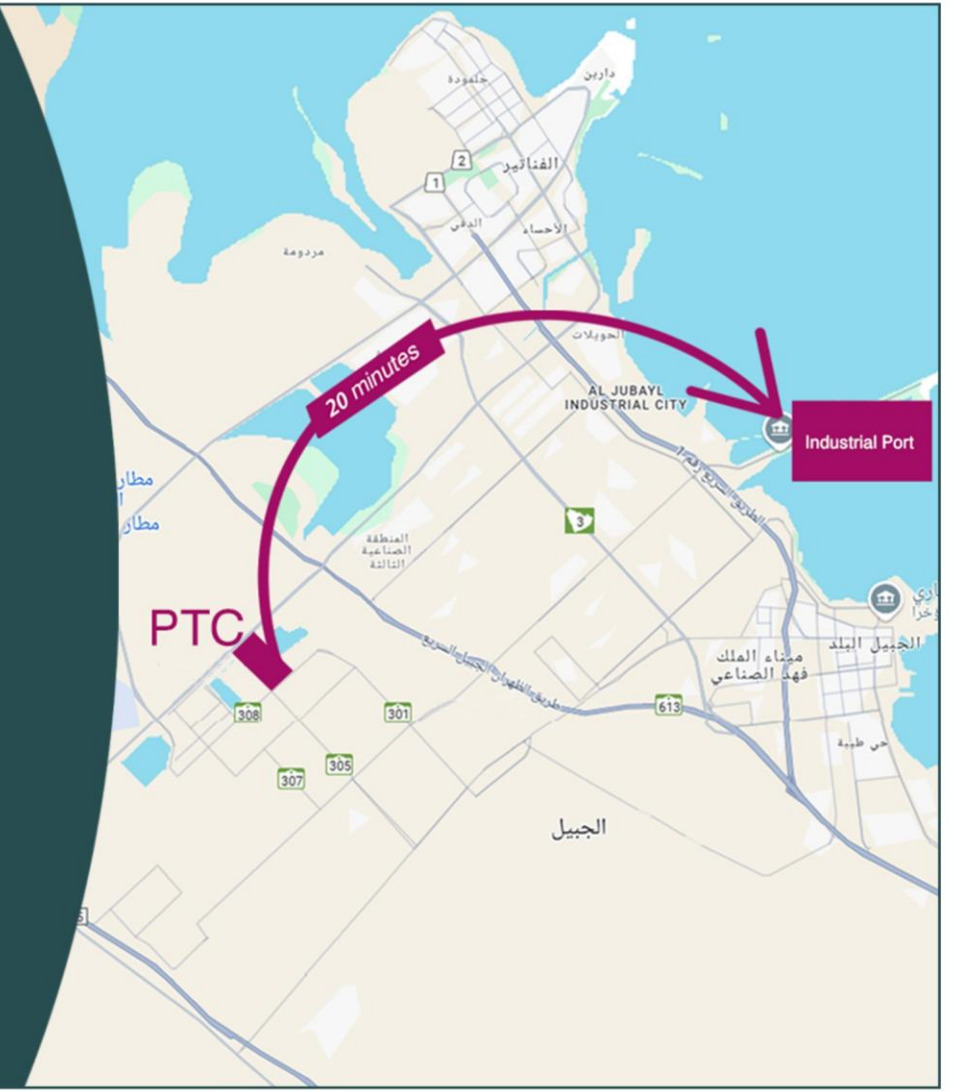
- Fast restart potential within **12–15** months.



5 - 5 : Logistics Access

PTC enjoys strategic access to logistics infrastructure, enabling efficient supply chain operations:

- Close to Jubail Industrial Port for easy import/export.
- Connected to national highway networks.
- Located within a logistics-ready industrial zone.





(6)
Product Quality
&
Client Approvals

6-1 : Product Quality



- In **2015**, PTC successfully produced high-purity polysilicon with a certified +9N purity level (**99.9999999%**) a milestone in regional production standards.

- This ultra-pure material significantly reduces recombination centers, which are atomic-level defects where electrons lose energy.

- By minimizing these defects, **9N+** polysilicon enhances light-to-electricity conversion efficiency, a critical factor in the performance of modern photovoltaic (PV) systems.

6-2 : Importance of +9N Purity Level



- Achieving +9N purity (99.9999999%) is a key milestone that qualifies PTC for high-efficiency solar markets and proves its compliance with global standards.

- This level is required by top manufacturers worldwide and is vital for advanced electronic applications.

- It gives PTC a higher market value and positions it competitively for global expansion and partnerships with major manufacturers such as LONGi, Trina Solar, Jinko, and Hyundai Heavy Industries, who require 9N+ purity for their production lines.

- Conclusion :

Achieving 9N+ purity positions PTC among world-leading producers, making its product suitable for integration into global supply chains for top-tier solar and electronics manufacturers.

Comparison Metric	Low-Purity Polysilicon	9N+ High Purity Polysilicon
Usage	Low-efficiency solar panels	High-efficiency solar cells
Market Value	Low	Very high
Global Market Acceptance	Limited	Globally demanded
Industrial Applications	Limited	Advanced (Energy – Electronics)

6-3: Product Approvals – International Certifications



After producing +9N purity polysilicon, product samples were sent to leading international manufacturers for quality validation. The testing process covered :

- Chemical purity
- Physical consistency
- Compatibility with industrial production lines .

The product received formal approvals from major global solar manufacturers across key international markets.

These approvals serve as direct proof of product reliability and pave the way for integration into global supply chains.

Internationally Approved Clients :

Country	Approved Companies
China	Trina Solar – Jinko – Longi – Taiheng Jinghong – Shangpin
Korea	Hyundai Heavy Industries (HHI)
Japan	Respect
Canada	Targray

（7）
Expansion Potential
&
Future Outlook

PTC is strategically positioned for large-scale expansion, supported by advanced infrastructure and ample industrial space. The plant is designed to evolve into a central hub within the global polysilicon value chain. The future expansion plan includes ：

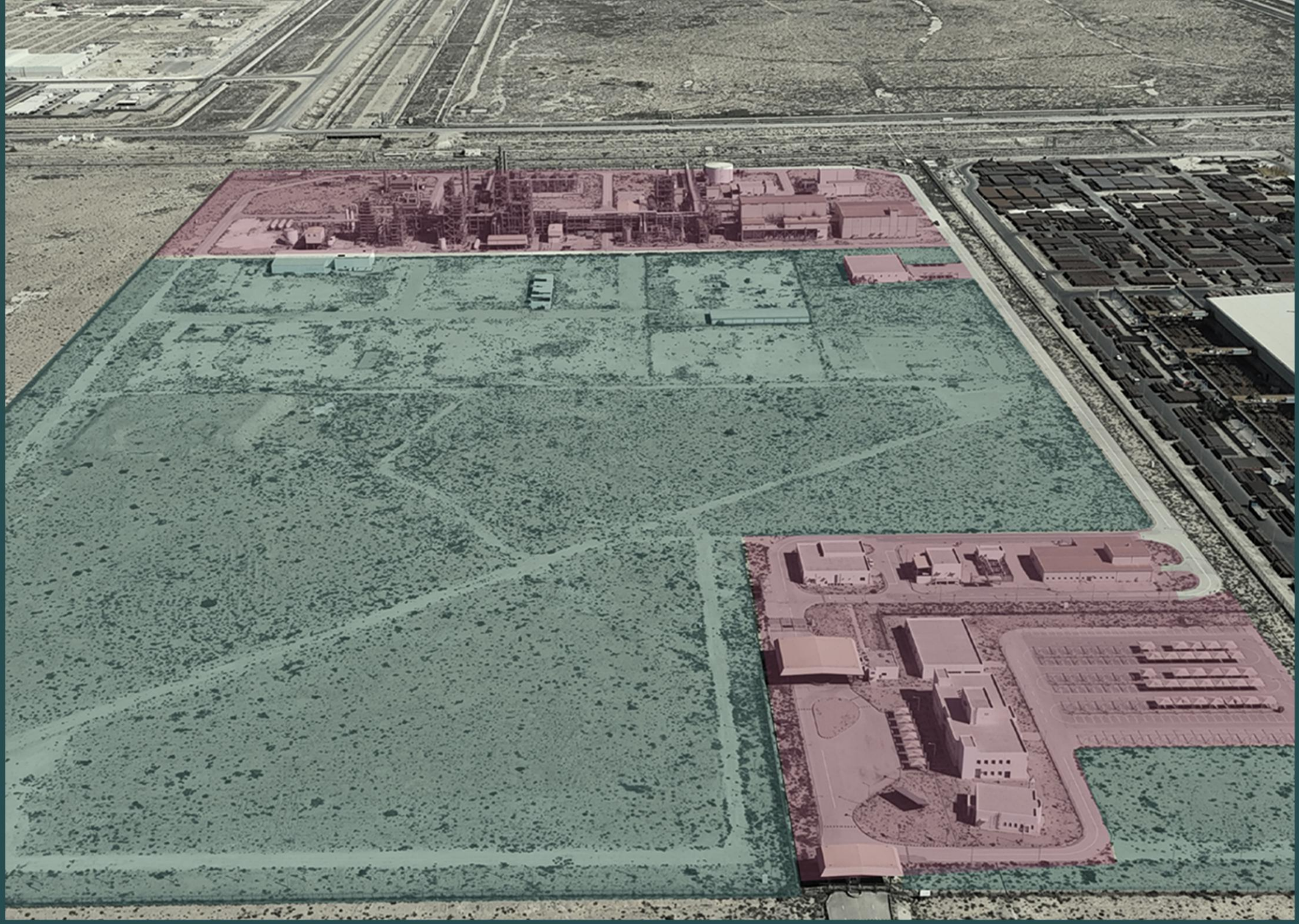
7-1 : Production Capacity Expansion:

- The facility is capable of scaling up from the current 3,300 metric tons to 55,000 metric tons per year.

- Out of a total 600,000 m^2 land allocation, only 180,000 m^2 has been utilized so far, offering vast room for growth.

Future Expansion Areas

Currently Utilized Areas



7-2 : Utilities & Offsites :

All core utility systems are already designed and installed to support production capacities of up to **12,000** metric tons/year, including :

Electricity



Natural Gas



Process Water



Sweater cooling water



Nitrogen





7-3 : Reactors Hall :

Reactors Hall Readiness:Currently equipped with **10** SDR-**400** GTAT reactors, with the infrastructure prepared to accommodate up to **12** reactors, enabling a potential increase of +**4,500** MT/year in production.....

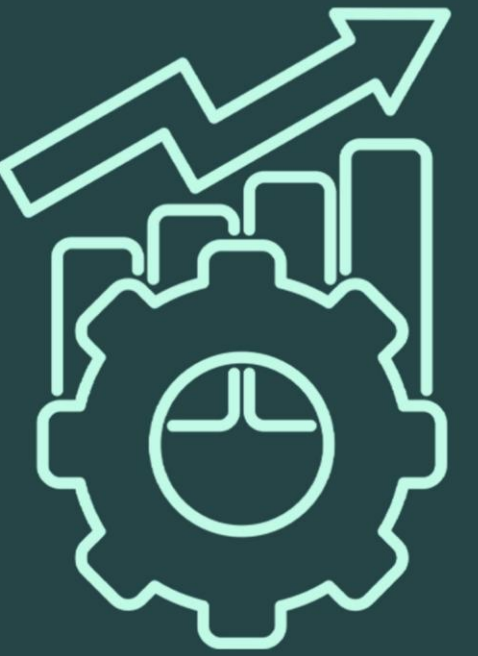




(8) PTC & Vision 2030



- The plant was designed as part of Saudi Arabia's localization plan for renewable energy, launched in collaboration with Germany during the **2010** conference titled "A Path to Renewable Energies."



- The primary goal was to produce **20,000** to **30,000** metric tons of polysilicon annually to meet local demand and support renewable energy initiatives such as ARAMCO's REPDO projects, which aim for **40** GW over **17** years — equivalent to at least **14,000** metric tons of polysilicon per year.



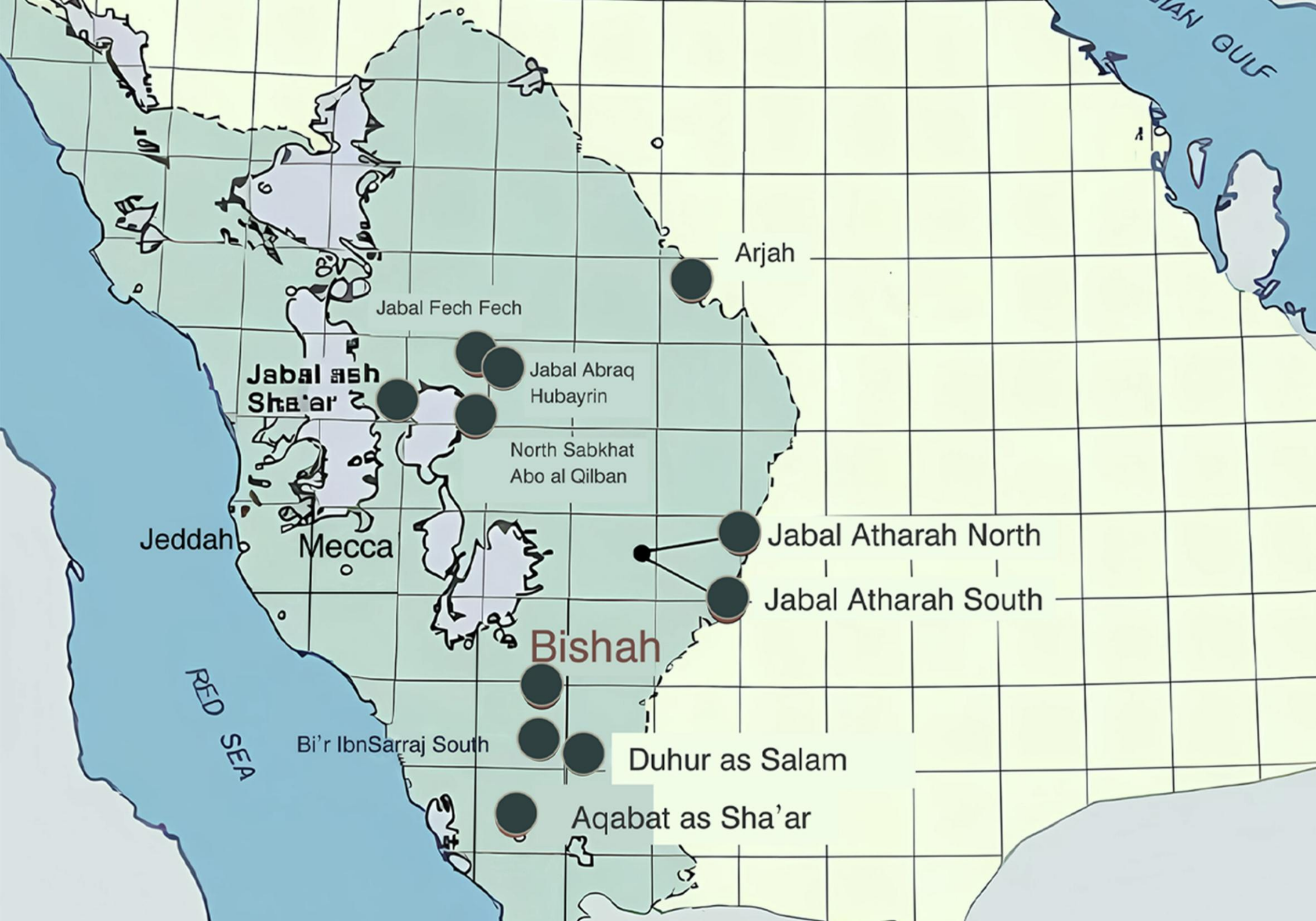
- Integration with Saudi Natural Resources

- The PTC plant is strategically aligned with the Kingdom's rich geological resources, particularly the high-purity quartz reserves -located in key regions, including :

- Jabal as Sayirah al Bayda
- Jibal Lumaiz Rak

- Jabal as Sayirah al Bayda
- Jibal Lumaiz Rak




Arjah
Jabal Fech Fech
Jabal Abraq
Hubayrin
North Sabkhat
Abo al Qilban
Jeddah
Mecca
Jabal Atharah North
Jabal Atharah South
Bishah
RED SEA
Bi'r IbnSarraj South
Duhur as Salam
Aqabat as Sha'ar

وزارة الاستثمار
Ministry of Investment

(9)

Investment Opportunities in the Polysilicon Sector in Saudi Arabia

Saudi Ministry of Investment Report

Public / متاح

POLYSILICON

INVESTMENT OPPORTUNITY SCORECARD

MINING & METALS

INVEST SAUDI

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Ministry of Investment

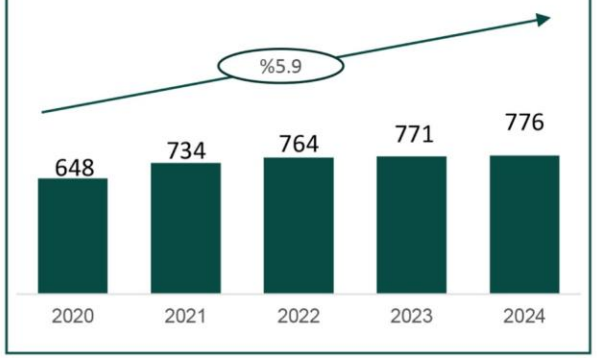
MINING & METALS
Polysilicon

High Potential | Moderate Potential | Low Potential

OPPORTUNITY'S DESCRIPTION: Opportunity to develop 10 KTPA polysilicon plant to supply the domestic market

DEMAND

GLOBAL MARKET SIZE, KT



INVESTMENT OVERVIEW

INVESTMENT HIGHLIGHTS

- Expected investment size of 1,100 USD Mn
- Plant capacity: 10 ktpa

VALUE PROPOSITION

- Mining and Metals industry set to become the "third pillar" of the Saudi industrial base due to KSA's rich deposits of minerals
- KSA's geographical advantage and trade agreements with neighboring countries make exporting favorable
- KSA is working to develop sustainable and globally competitive value-added semi-finished and finished metal industries (downstream) that support the Kingdom's goals of diversification
- Opportunity to cater demand created through giga projects in KSA
- In line with Saudi Vision 2030, KSA aims to maximize local production of silicon and supply primary raw material to the local silicon-based industries

KEY DEMAND DRIVERS

- KSA plans to localize the solar value chain, including polysilicon production
- Located in the middle of the "sun belt", KSA is ranked as the 6th country with the highest potential for production of solar energy
- Led by Vision 2030, KSA has significant plans to increase solar PV installations and has ambitions to localize the value chain. NREP targets 40 GW of installed capacity by 2030

MARKET OVERVIEW

GLOBAL TRENDS

- Global Polysilicon Market is estimated to reach USD 14.7 billion by 2027 at a CAGR of 11.8%
- Solar PV cells account for around 90% of all polysilicon end-use, while semi-conductors account for around 10%.
- China is the main polysilicon consumer, as the country accounts for ~90% of global solar PV wafer production
- The rising need for alternate energy source due to the depletion of fossil fuels is expected to increase the demand for solar photovoltaics, which in turn will drive the market

INVEST SAUDI

Sources for Global Trends: Intrado GlobeNewswire

MINING & METALS
Polysilicon

SUPPLY

SCALABILITY AND LOCALIZATION

Grade: Low | **Medium** | High

- Low cost of construction, labor wages and utility fees to support low capital and operating expense for the investor and enable extending geographic footprint
- End-to-end logistics connectivity exists in KSA to support investment development
- Local content policies to favor Saudi based manufacturers

IMPORT DEPENDENCY

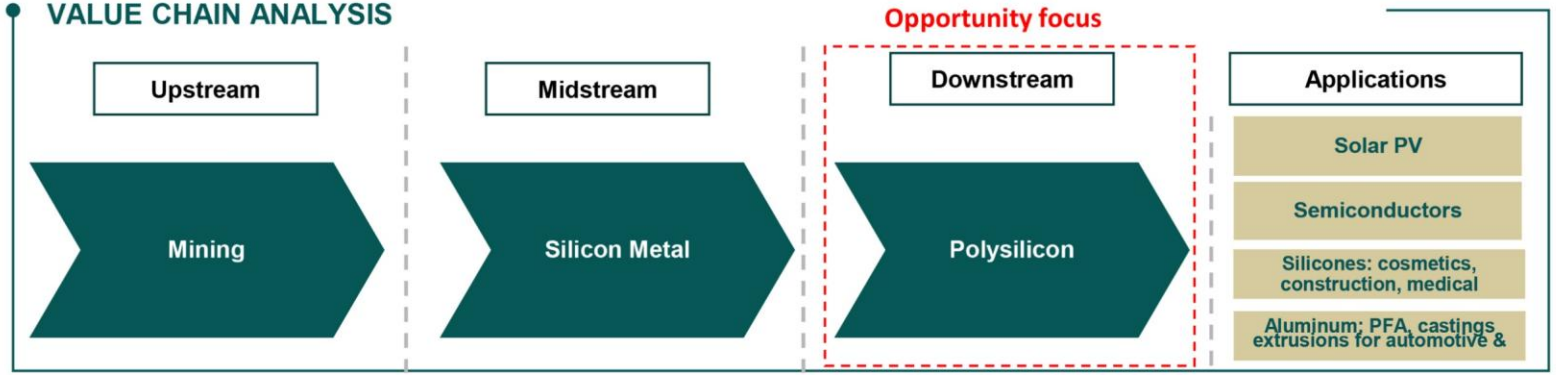
- Polysilicon is currently not produced in KSA. Hence, KSA is fully reliant on import of polysilicon

ENABLING FACTORS

ENABLERS

- Up to 75% of project financing by Saudi Industrial Development Fund (SIDF) and 2-year grace period for the repayment of loans
- HRDF covers monthly salaries for 30-50% of Saudi employees (extra 10% for females) for 2 years, provided it does not exceed USD 4,000

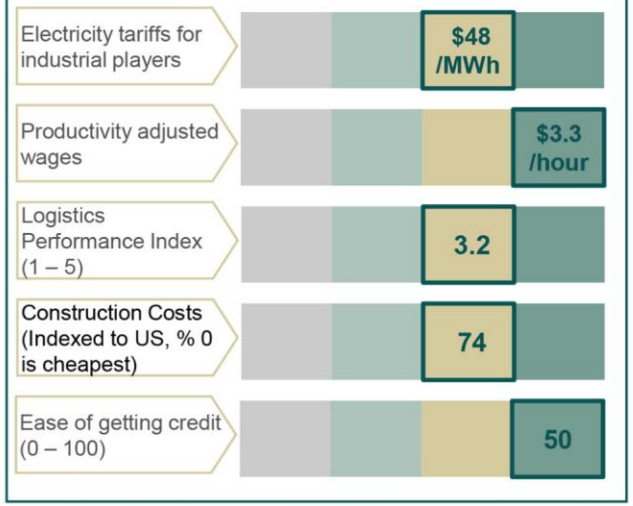
VALUE CHAIN ANALYSIS



KEY STAKEHOLDERS

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COST OF DOING BUSINESS IN KSA



INVEST SAUDI

Sources for Cost of Doing Business: EIU, World Bank

DEFINITIONS

#	SCORECARD SECTION	DEFINITIONS
1	Market size	Size of market in value/volume in KSA and/or Region (MENA/GCC) covering future projections based on available estimates from published /government sources
2	Demand drivers	A select number of factors that will influence future demand for the related product/service
3	Investment highlights	An overview of key financial metrics summarizing the investment opportunity along with the expected return based on the suggested investment size
4	Value proposition	Summary of key differentiators that position KSA as a strategic choice over other regional/global peers
5	Market readiness	An overview of KSA market structure, market maturity and level of participation by local and global players
6	Competitor analysis	List of the local & international players manufacturing the underlying product in Saudi Arabia and their market share
7	Global trends	Latest business developments within the sector/product category
8	Scalability and localization	Ease of scaling the business across the value chain or into new adjacent products or geographies that would maximize the opportunity's investment returns and the ability and potential to locally manufacture the product and its components
9	Import dependency	An overview of the countries from which Saudi Arabia is importing the product and their value/volume and share in total imports
10	Value chain analysis	The process or activities that would potentially need to be carried out to deliver the underlying product or service
11	Key stakeholders	Government institutions, organizations, and/or authorities that participate or influence the market for the underlying product/service
12	Enablers	Factors that enable investment in the underlying opportunity
13	Cost of doing business in KSA	Key factors that position KSA as a competitive destination for investment in the region. Productivity adjusted wages do not include cost of $1.23/hour towards annual recurring charges including work permit, resident identity (iqama) and health insurance

DEFINITIONS

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