DEVELOPMENT AND UTILIZATION OF GEOTHERMAL SOURCES

DIRECTION: Green Energy

Geothermal energy is one of the most reliable and environmentally friendly sources of renewable energy. It harnesses the Earth’s internal heat for electricity generation, heating, and cooling, effectively replacing fossil fuels

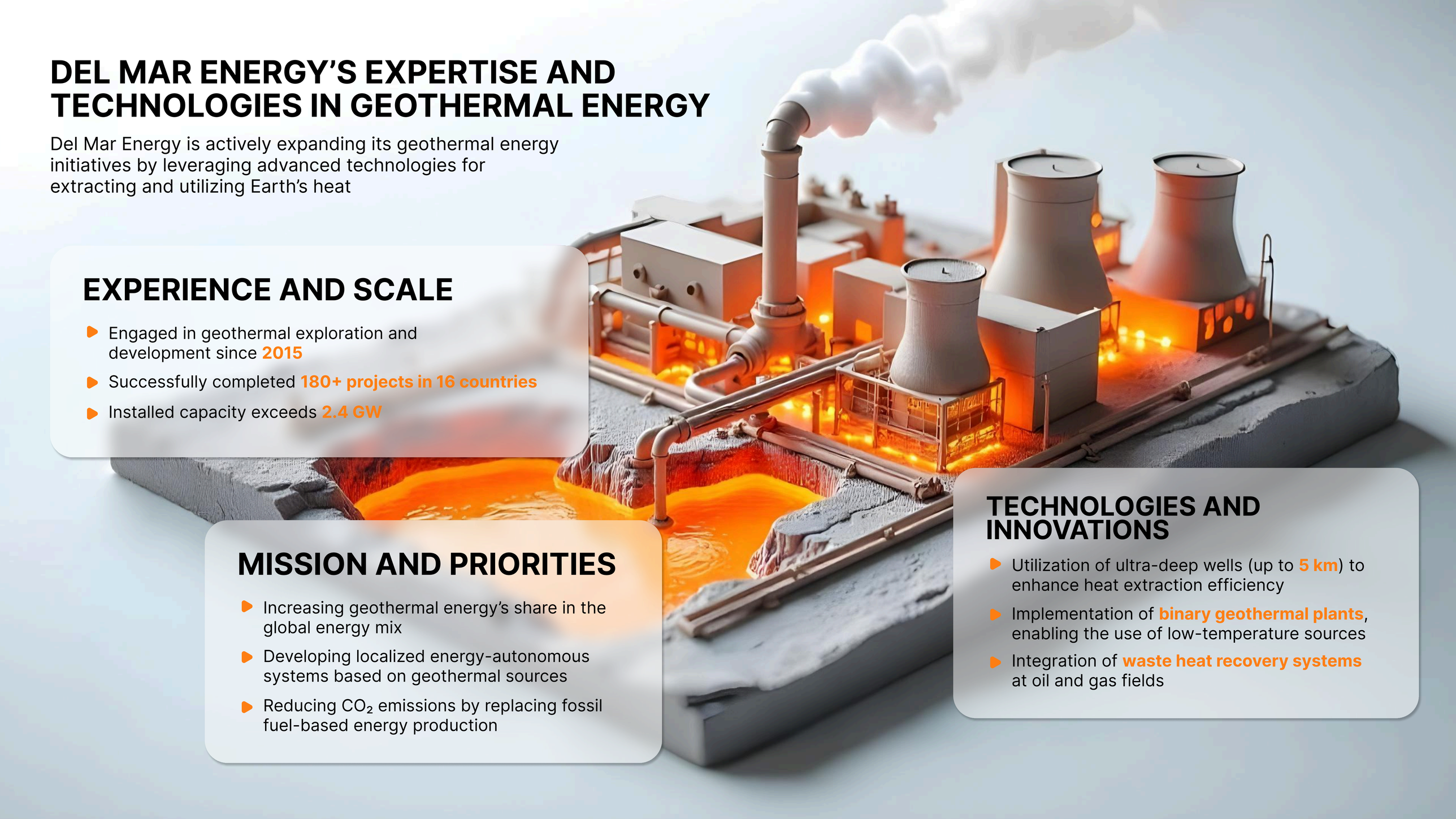
Geothermal power plants emit minimal greenhouse gases and operate 24/7, ensuring stable energy supply. Their capacity utilization factor exceeds 75%, significantly higher than that of solar and wind installations

Currently, geothermal energy accounts for less than 1% of global energy consumption, but its share is rapidly increasing. In 2022, approximately 92 billion kWh of electricity was generated from geothermal sources across 24 countries

The leading nations in this sector are the United States (~3.9 GW), Indonesia (~2.4 GW), and the Philippines (~1.95 GW). In Kenya, geothermal energy supplies 45% of total electricity production, while in Iceland, over 90% of heating needs are met using Earth’s thermal energy

DEL MAR ENERGY'S EXPERTISE AND TECHNOLOGIES IN GEOTHERMAL ENERGY

Del Mar Energy is actively expanding its geothermal energy initiatives by leveraging advanced technologies for extracting and utilizing Earth's heat



EXPERIENCE AND SCALE

- Engaged in geothermal exploration and development since **2015**
- Successfully completed **180+ projects in 16 countries**
- Installed capacity exceeds **2.4 GW**

MISSION AND PRIORITIES

- Increasing geothermal energy's share in the global energy mix
- Developing localized energy-autonomous systems based on geothermal sources
- Reducing CO_2 emissions by replacing fossil fuel-based energy production

TECHNOLOGIES AND INNOVATIONS

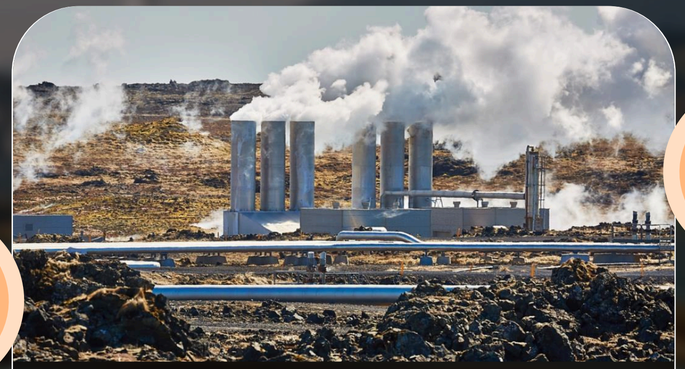
- Utilization of ultra-deep wells (up to **5 km**) to enhance heat extraction efficiency
- Implementation of **binary geothermal plants**, enabling the use of low-temperature sources
- Integration of **waste heat recovery systems** at oil and gas fields

GEOTHERMAL POWER PLANTS: OPERATING PRINCIPLES AND KEY TECHNOLOGIES

Geothermal power plants generate electricity using Earth's heat. Depending on the temperature of geothermal sources, different generation technologies are applied

MAIN TYPES OF GEOTHERMAL POWER PLANTS:

Dry Steam Plants – Operate on steam directly extracted from underground without additional heating. Used in regions with high-temperature sources (180°C and above)



Flash Steam Plants – Utilize 120-180°C geothermal water. Under high pressure, the water turns into steam, driving a turbine

Binary Cycle Plants – Use working fluids with low boiling points, enabling efficient utilization of 80-150°C low-temperature sources and expanding the geographic range of geothermal power stations

KEY TECHNOLOGIES:

Closed-Loop Systems – Prevent steam emissions into the atmosphere, minimizing environmental impact

Heat Exchangers and Binary Cycles – Improve plant efficiency by utilizing hot water energy without losses

Deep Drilling – Reaches geothermal reservoirs at depths exceeding 4-5 km

GROWTH AND PROSPECTS OF GEOTHERMAL ENERGY

Geothermal energy is rapidly evolving due to technological advancements and increasing investments in renewable energy. Leading countries are implementing large-scale projects, and the sector's future promises significant growth

GLOBAL MARKET AND INDUSTRY LEADERS

- **United States, Iceland, Indonesia, the Philippines, and Kenya** are key countries actively utilizing geothermal energy
- **The U.S.** leads globally with an installed capacity exceeding **3.7 GW**
- **Iceland** supplies **90%** of homes with geothermal heating
- **China and Germany** are expanding **binary cycle plants** to utilize low-temperature geothermal sources

INDUSTRY OUTLOOK

- **Ultra-Deep Geothermal Wells** – Drilling beyond 10 km will enable heat extraction even in regions without traditional geothermal reservoirs
- **Enhanced Geothermal Systems (EGS)** – Artificially created geothermal reservoirs in areas with high thermal gradients
- **Geothermal Energy and Hydrogen** – Using geothermal heat for hydrogen production opens new opportunities for energy storage and transportation

By 2050, geothermal energy is expected to supply up to 5% of global energy demand, with investment volumes surpassing $1 trillion

GEOTHERMAL POWER PLANTS: Technologies and operating principles

Geothermal power plants harness Earth's heat to generate electricity, providing stable and environmentally friendly energy production. Modern technologies enable efficient utilization of various geothermal resources

MAIN TYPES OF GEOTHERMAL POWER PLANTS

DRY STEAM PLANTS

Utilize direct dry steam from geothermal sources to drive turbines

Applied in regions with high-temperature reservoirs (180°C and above)

Example: The **Geysers** in **California, USA** – the world's largest geothermal complex

Modern geothermal plants achieve efficiency rates of up to 50%, ensuring continuous energy output without reliance on weather conditions

FLASH STEAM SYSTEMS

Superheated water under pressure rises to the surface, where rapid pressure reduction turns it into steam

Allows utilization of medium-temperature sources (120-180°C)

Commonly used in **Indonesia**, the **Philippines**, and **Japan**

BINARY CYCLE PLANTS

Utilize heat from low-temperature (90-150°C) geothermal sources

Water transfers heat to a working fluid with a low boiling point (e.g., isobutane or pentane), which vaporizes and drives a turbine

Widely used in **Germany**, **China**, and **Turkey**

KEY TECHNOLOGIES AND INNOVATIONS

Enhanced Geothermal Systems (EGS) – Artificial reservoir creation to enhance power plant productivity

Co-Generation – Simultaneous electricity and heat production for urban heating

Hybrid Solutions – Combining geothermal and solar energy to maximize efficiency

ECONOMIC VIABILITY OF GEOTHERMAL ENERGY

Geothermal energy is not only environmentally sustainable but also a cost-effective energy source. Unlike fossil fuels, it features low operating costs and high stability

INVESTMENT BENEFITS IN GEOTHERMAL ENERGY

MINIMAL FUEL COSTS

- No expenses for fossil fuel extraction and transportation
- Energy availability is independent of oil and gas market fluctuations

LONG-TERM PROFITABILITY

- Geothermal plants have a lifespan exceeding 50 years
- Average payback period: 7-10 years

GOVERNMENT SUPPORT AND TAX INCENTIVES

- The U.S. Investment Tax Credit (ITC) reduces the cost of geothermal system installations
- Several states offer grants for businesses and municipal geothermal projects

HIGH RELIABILITY

- Unlike solar and wind energy, geothermal power operates 24/7 without interruptions

GEOTHERMAL ENERGY AND DECENTRALIZED ENERGY SYSTEMS

Geothermal energy is becoming a key component of decentralized energy systems, providing reliable and independent power supply for cities, industrial facilities, and remote areas

How geothermal energy is transforming the energy system →

MICROGRIDS AND LOCAL GENERATION

- Geothermal plants can operate independently, ensuring uninterrupted power supply for small towns, factories, and agricultural complexes
- Reduce strain on central power grids and enhance energy resilience

HYBRID ENERGY SYSTEMS

- Combining geothermal energy with solar panels and battery storage increases energy flexibility
- Optimizes load balancing and reduces reliance on traditional energy sources

ENERGY INDEPENDENCE AND SECURITY

- Geothermal power stations help countries reduce dependence on imported oil and gas
- Amid global energy crises, businesses and municipalities are investing in local energy sources for stable power supply

SUPPORTING SMART CITIES

- Geothermal energy integrates with smart city infrastructure, powering transportation, utilities, and digital technologies
- Development of thermal networks enables geothermal sources to provide heating and cooling for buildings

THE FUTURE OF DECENTRALIZED ENERGY

- By 2035, over 30 percent of global cities are projected to adopt localized geothermal power for energy and heating, reducing demand on traditional grids

Geothermal energy is the foundation of autonomous energy systems, delivering independence, stability, and cost savings

GEOTHERMAL ENERGY IN INDUSTRY

Geothermal technologies are widely used in industrial sectors, providing reliable and cost-effective energy solutions for various applications

HOW INDUSTRIES UTILIZE GEOTHERMAL ENERGY

METALLURGY AND HEAVY INDUSTRY

- High-temperature geothermal sources are used for metal heating, smelting, and raw material processing
- Reduces coal and natural gas consumption, lowering CO_2 emissions

OIL AND GAS INDUSTRY

- Geothermal energy supports oil refining, chemical processes, and mineral extraction
- Companies implement geothermal systems to cut heating and cooling costs for drilling equipment

CEMENT AND CONSTRUCTION INDUSTRY

- Geothermal steam accelerates the production of construction materials like concrete and bricks
- Helps reduce greenhouse gas emissions by replacing traditional hydrocarbon-based heat sources

FOOD INDUSTRY

- Geothermal heat is used for drying grains, milk processing, food preservation, and distillation
- Factories rely on geothermal energy for stable temperature control in food production

PHARMACEUTICALS AND BIOTECHNOLOGY

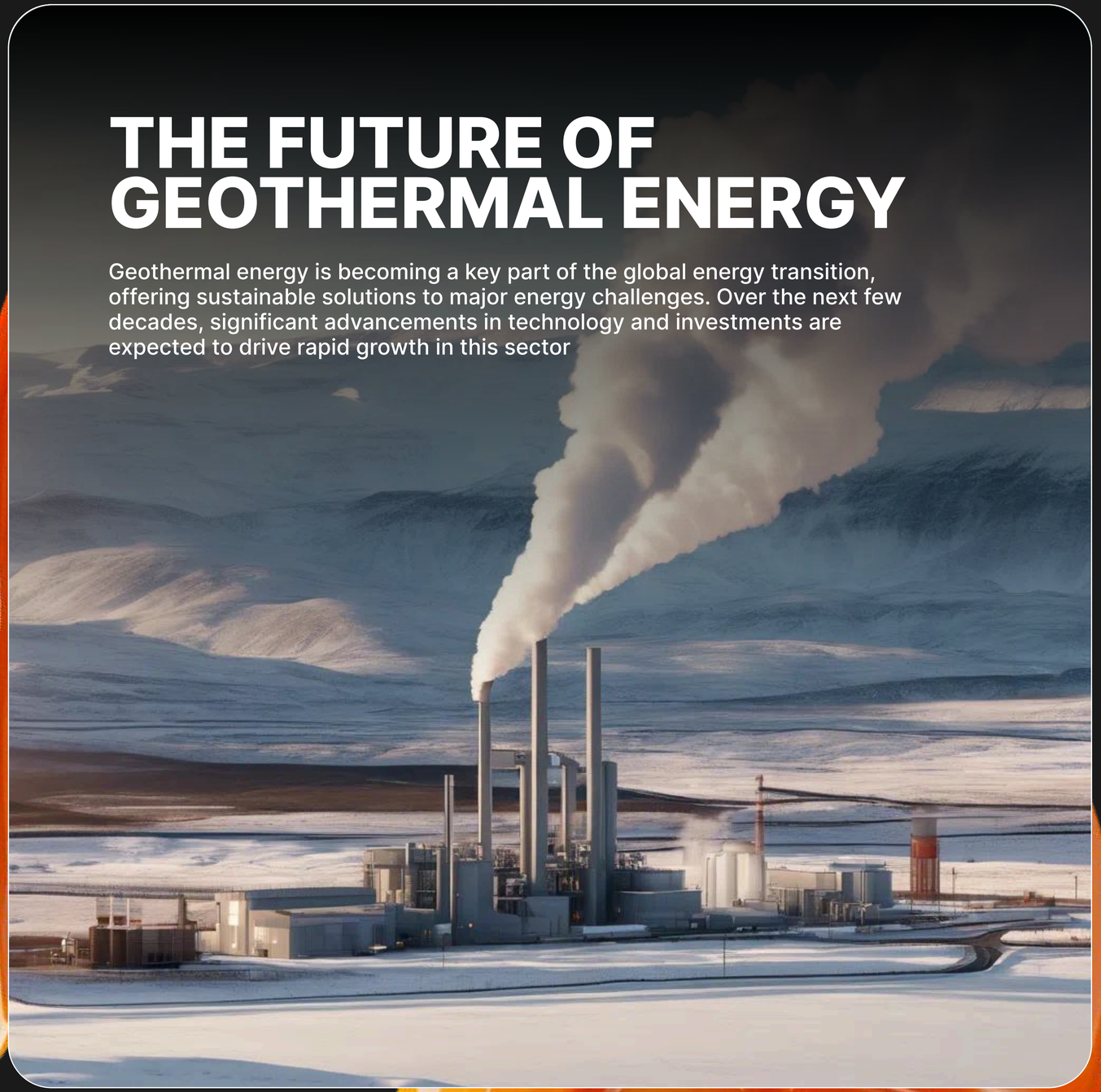
- Geothermal plants provide stable temperatures for laboratories and sterilization of medical instruments
- Used for cultivating bacteria and microorganisms in biotechnological production

BENEFITS FOR INDUSTRY

- **Lower operational costs** – Geothermal heat is more cost-efficient than conventional energy sources
- **Energy security** – Reduces dependence on fluctuating global gas and oil prices
- **Reduced emissions** – Meets strict environmental regulations

THE FUTURE OF GEOTHERMAL ENERGY

Geothermal energy is becoming a key part of the global energy transition, offering sustainable solutions to major energy challenges. Over the next few decades, significant advancements in technology and investments are expected to drive rapid growth in this sector



KEY TRENDS AND FUTURE PROSPECTS:

Deep Drilling Innovations – Advanced methods like plasma drilling will enable heat extraction from depths exceeding 10 km

Hybrid Power Plants – Integration of geothermal energy with solar and wind farms will ensure year-round energy supply

Modular Geothermal Stations – Compact and efficient systems will allow installation in remote areas without complex infrastructure

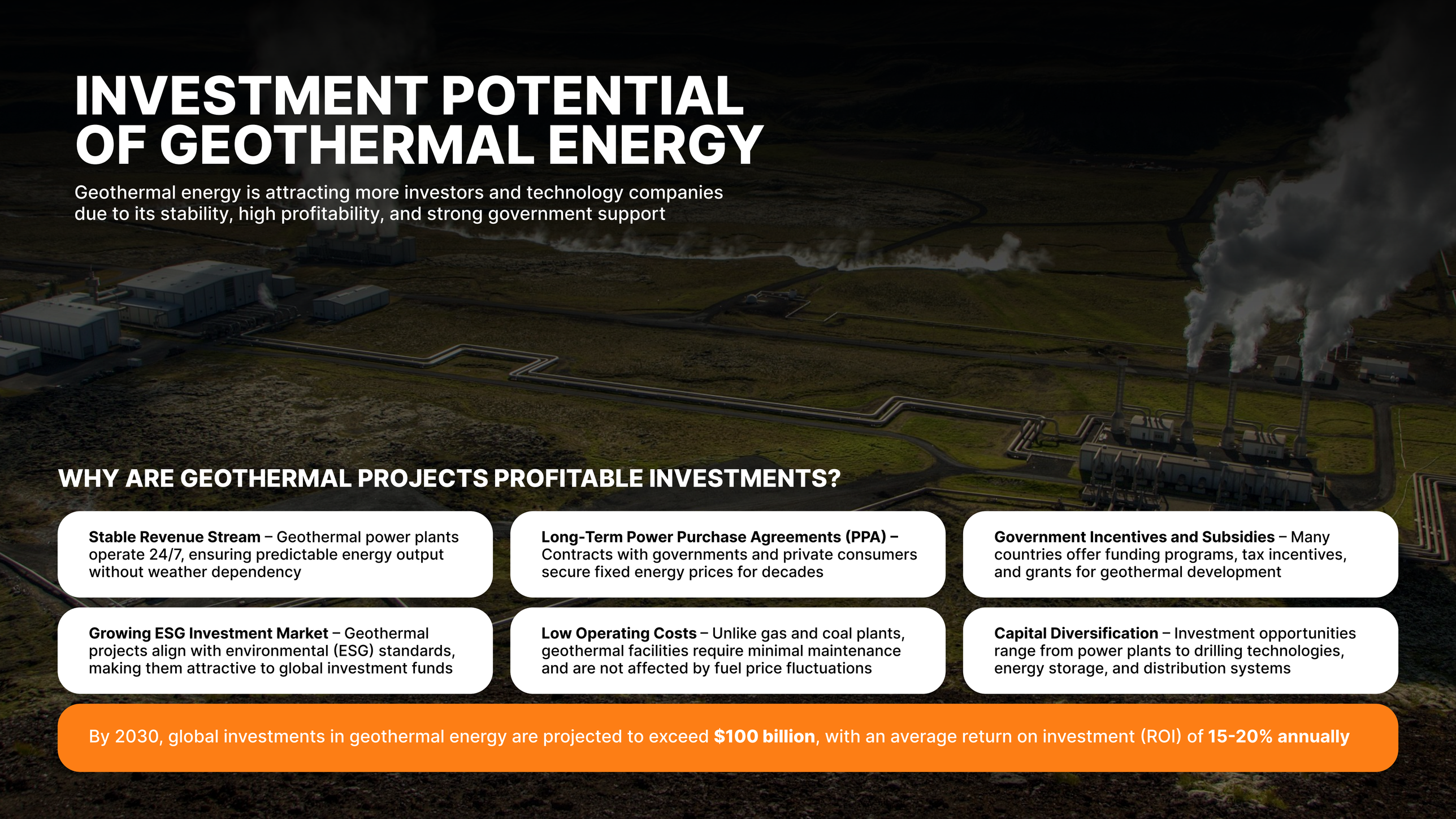
Breakthroughs in Heat Storage – The use of phase-change materials and ultra-efficient heat exchangers will enhance energy storage and distribution

Global Market Expansion – Leading geothermal nations (U.S., Iceland, Indonesia) plan significant capacity expansions

By 2050, geothermal energy could supply up to 10% of global energy demand, positioning itself as a major renewable energy source

INVESTMENT POTENTIAL OF GEOTHERMAL ENERGY

Geothermal energy is attracting more investors and technology companies due to its stability, high profitability, and strong government support



WHY ARE GEOTHERMAL PROJECTS PROFITABLE INVESTMENTS?

Stable Revenue Stream – Geothermal power plants operate 24/7, ensuring predictable energy output without weather dependency

Long-Term Power Purchase Agreements (PPA) – Contracts with governments and private consumers secure fixed energy prices for decades

Government Incentives and Subsidies – Many countries offer funding programs, tax incentives, and grants for geothermal development

Growing ESG Investment Market – Geothermal projects align with environmental (ESG) standards, making them attractive to global investment funds

Low Operating Costs – Unlike gas and coal plants, geothermal facilities require minimal maintenance and are not affected by fuel price fluctuations

Capital Diversification – Investment opportunities range from power plants to drilling technologies, energy storage, and distribution systems

By 2030, global investments in geothermal energy are projected to exceed **$100 billion**, with an average return on investment (ROI) of **15-20% annually**

MONETIZATION STRATEGIES FOR GEOTHERMAL ENERGY

The development of geothermal resources offers a broad range of financial models, ensuring stable revenue and long-term profitability for investors and companies

KEY MONETIZATION STRATEGIES

ELECTRICITY SALES VIA LONG-TERM CONTRACTS (PPA)

Signing Power Purchase Agreements (PPA) with government agencies and large enterprises

Fixed energy pricing for decades, protecting against market volatility

DECENTRALIZED ENERGY SUPPLY (MICROGRID SOLUTIONS)

Direct energy supply to local households, businesses, and farms

Integration with solar and wind systems to enhance grid stability

GREEN HYDROGEN PRODUCTION AND TRADE

Using geothermal energy for electrolysis and clean hydrogen production

Selling hydrogen to industrial sectors, transportation, and energy storage systems

ENERGY STORAGE AND GRID BALANCING

Investment in storage solutions (batteries, thermal reservoirs)

Selling excess energy during peak demand at premium prices

HEAT UTILIZATION AND DISTRICT HEATING

Providing heating and cooling for cities, greenhouses, and industrial facilities

Using heat pumps to improve energy efficiency in commercial buildings

CARBON CREDITS AND ESG STRATEGIES

Selling carbon credits to corporations aiming to offset CO_2 emissions

Participating in global ESG investment funds and climate initiatives

Companies that implement multiple monetization strategies generate higher revenue, diversify risks, and adapt more effectively to market changes

INNOVATIVE TECHNOLOGIES IN GEOTHERMAL ENERGY

Key Innovations:

Plasma drilling
reduces the cost of deep wells and accelerates heat extraction

Nanotechnology in heat exchangers
enhances heat transfer efficiency and minimizes heat loss

Geothermal cogeneration
enables simultaneous production of electricity and heat for industrial and urban use

Autonomous geothermal units
allow energy generation in remote areas without relying on national grids

Geothermal energy is evolving rapidly thanks to cutting-edge technological advancements

The integration of new technologies is making geothermal energy more accessible and cost-effective

GEOTHERMAL ENERGY AND DIGITAL TECHNOLOGIES

The integration of digital solutions is enhancing the efficiency of geothermal projects

Del Mar Energy is actively implementing digital technologies to enhance the efficiency of its geothermal projects

Key Digital Technologies in the Industry:

Artificial intelligence and machine learning

optimize station operations, predict energy output, and extend equipment lifespan

IoT (Internet of Things)

real-time sensors monitor station performance and detect faults

Blockchain in energy

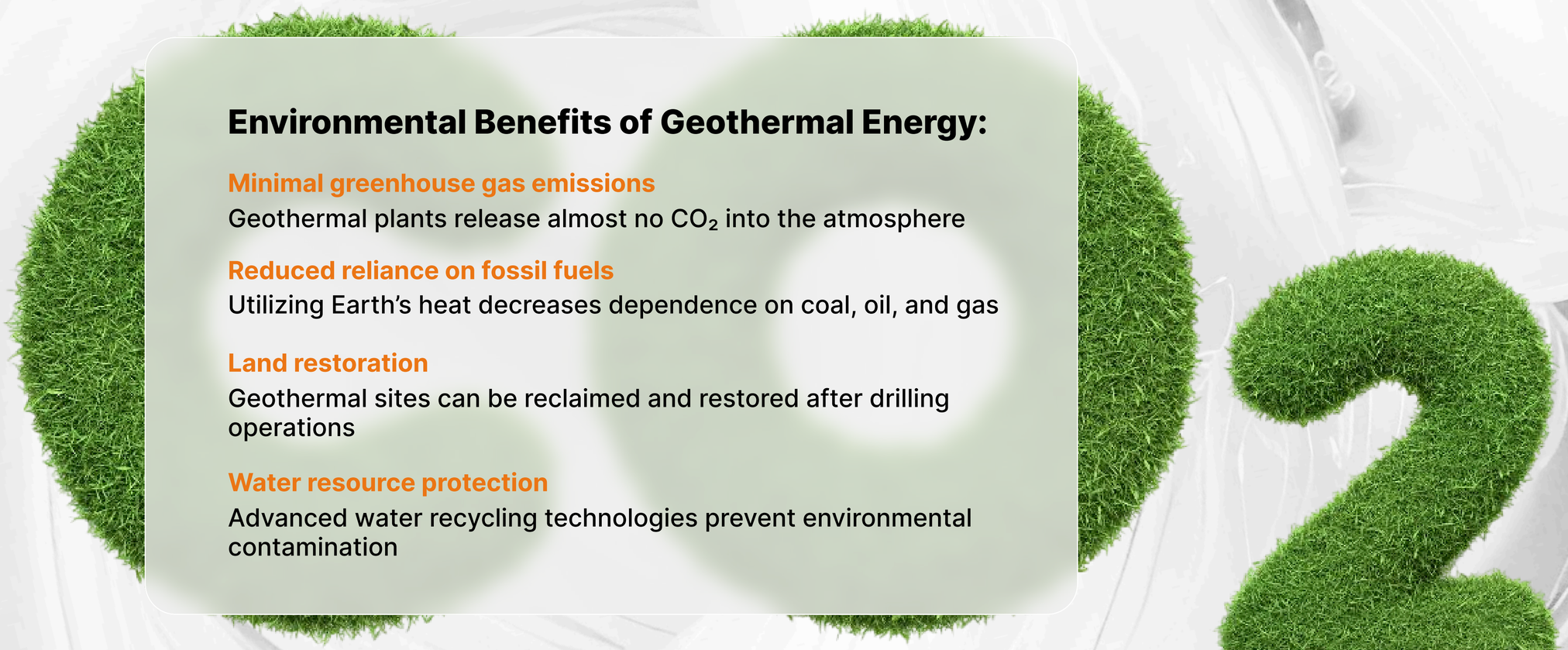
ensures transparency in energy transactions and supports decentralized energy networks

Digital twins

enable testing and optimization of stations before launch

GEOTHERMAL ENERGY AND CLIMATE RESILIENCE

Geothermal energy plays a crucial role in combating climate change and reducing CO_2 emissions



Environmental Benefits of Geothermal Energy:

Minimal greenhouse gas emissions

Geothermal plants release almost no CO_2 into the atmosphere

Reduced reliance on fossil fuels

Utilizing Earth's heat decreases dependence on coal, oil, and gas

Land restoration

Geothermal sites can be reclaimed and restored after drilling operations

Water resource protection

Advanced water recycling technologies prevent environmental contamination

Geothermal energy is a key step toward reducing the global carbon footprint and achieving sustainable development

Energy storage solutions enhance the reliability of geothermal systems and make them more competitive in the energy market.

GEOTHERMAL ENERGY AND ENERGY STORAGE

Advancements in energy storage technologies are making geothermal energy even more efficient and flexible

Modern Energy Storage Systems:

Geothermal thermal batteries

Store excess heat for use during peak demand periods

Lithium-ion batteries

Work alongside geothermal power plants to provide a stable electricity supply

Chemical storage

Uses geothermal heat to convert energy into hydrogen and other fuel sources

Underground reservoirs

Store hot water in deep geological layers for long-term use and heat recovery

GEOTHERMAL ENERGY AND ARTIFICIAL INTELLIGENCE

Artificial intelligence (AI) is transforming the way geothermal power plants are managed and optimized

AI Applications in Geothermal Energy:

Drilling optimization

AI algorithms analyze geological data to identify the best drilling locations

Automated station control

Machine learning systems predict equipment failures and minimize downtime

Energy production forecasting

AI analyzes plant operations to predict and optimize energy output

Reducing operational costs

Smart management systems help decrease energy losses and improve overall efficiency

AI is making geothermal energy smarter, more efficient, and more accessible for the global market

INVESTMENT OPPORTUNITY

DEPOSIT TERM:
210 days

ROI:
367.5%

By opening a deposit with the minimum allowable amount of $200,000, your balance will reach $735,000 in 210 days

DEL MAR ENERGY INC.

is an american holding company primarily focused on the extraction, processing, and sale of oil

The company also engages in electricity production and distribution; manufacturing, repairing, and leasing electromechanical equipment; designing and constructing wind, solar, and geothermal power plants; extracting coal and gas; and developing oil and gas infrastructure

Having started out with just a few oil rigs in 2002, we began developing and manufacturing with our own technologies in 2012

today

91%

of our products are exported to more than 40 countries worldwide

LEADERSHIP TEAM

MICHAEL LATHAM

Founder/CEO

Michael Latham is the founder and CEO of Del Mar Energy. He established the holding company in 2002 in Texas, successfully building and growing industrial sectors

NICK KAUFMAN

COO (Chief Operating Officer)

Nick has served as COO since 2018. A Texas native and graduate of the University of Massachusetts, Nick initially worked in law. He first encountered Del Mar Energy in 2013 and officially became a partner in 2018. Nick introduced many of the modernized technologies now used in production

STEFAN RUSSO

CIO (Chief Information Officer)

Stefan started his internship at Del Mar Energy in 2016. In less than five years, he advanced from intern to company director

THOMAS LIEBERMAN

CMO (Chief Marketing Officer)

Born in 1984 in Nevada, Thomas studied at a local university before moving to New York in 2006 to work in marketing and public relations. He began collaborating with Del Mar Energy in 2011. Prior to joining the company, Thomas worked on promoting brands such as P&G, Gillette, and General Motors