DESIGN AND CONSTRUCTION OF POWER PLANTS

Direction: Energy Sector

IMPORTANCE OF BUILDING ELECTRICAL SUBSTATIONS

Constructing electrical substations is a critical aspect of developing an energy infrastructure that ensures power transmission, distribution, and voltage transformation. Substations convert the high voltage produced by power plants into lower voltages suitable for consumer networks. They provide reliable power supply, protect grids from overloads and failures, and evenly distribute electricity among different regions and facilities

Substation construction involves several phases. First is the design stage, which analyzes regional power demands, selects the substation type, calculates loads, and develops connection schematics. Next is the preparatory phase, involving site selection based on geological and environmental considerations, as well as conducting engineering surveys and preparing the location

CORE CONSTRUCTION AND MODERN TECHNOLOGIES

The main construction phase includes laying foundations for transformers, supports, and other equipment; installing switchgear, transformers, disconnectors, and cables; and setting up control, protection, and automation systems

Modern technologies significantly enhance the efficiency and reliability of electrical substations. These advances include automation and remote monitoring systems, energy-efficient transformers designed to reduce losses, and eco-friendly solutions like gas-insulated switchgear (GIS), which minimize environmental impact

Such innovations ensure a stable power supply, lower the risk of failures, and extend the service life of equipment

Special attention is paid to electrical installation: laying power cables, assembling switching equipment, and installing lighting, grounding, and lightning protection systems. After completion, the substation undergoes thorough testing—examining all systems and performing load tests—before final certification and commissioning

STRATEGIC ROLE AND INNOVATIVE APPROACHES

Building electrical substations is a strategic process that underpins the growth of both industrial and residential developments, ensuring grid stability even under heavy loads. With modern technology and a professional approach to design and construction, substations become a dependable link, crucial for maintaining a sustainable power supply and advancing future infrastructure

The latest techniques in substation construction greatly improve reliability, efficiency, and environmental performance, while also lowering maintenance costs. Below are some of the key innovative methods and solutions applied in the design and construction of electrical substations

GAS-INSULATED SWITCHGEAR (GIS)

Gas-Insulated Switchgear (GIS) uses sulfur hexafluoride (SF_6) or alternative low-carbon gases instead of air for insulation and arc extinguishing

DIGITIZATION AND AUTOMATION

Digital substations equipped with intelligent control systems are becoming the industry standard:

- **Protection and Control Devices (P&C):** Digital P&C systems offer precise diagnostics and immediate response to emergencies
- **Remote Monitoring and Control Systems:** Allow operators to track substation conditions in real time, detect faults, and optimize loads
- **SCADA (Supervisory Control and Data Acquisition):** Integrating SCADA automates power system management processes, enhances measurement accuracy, and shortens response time to abnormal situations

KEY ADVANTAGES INCLUDE:

- **Compact Design:** GIS can occupy up to 10 times less space compared to conventional solutions.
- **High Reliability:** Strong protection against environmental factors such as dust, moisture, and temperature fluctuations.
- **Long Service Life:** Equipment can operate for 30–50 years with minimal maintenance
- **Eco-Friendliness:** Modern GIS systems use alternative insulation gases with a lower carbon footprint, replacing SF_6

ENERGY-EFFICIENT TRANSFORMERS

Modern transformers are designed with energy efficiency in mind:

Amorphous Steel Cores: Reduce no-load losses by up to 60%

Oil- and Gas-Filled Transformers: Use environmentally friendly insulating fluids, such as bio-oil, to minimize environmental impact

On-Load Tap Changers (OLTC): Maintain optimal voltage levels in the grid, reducing losses

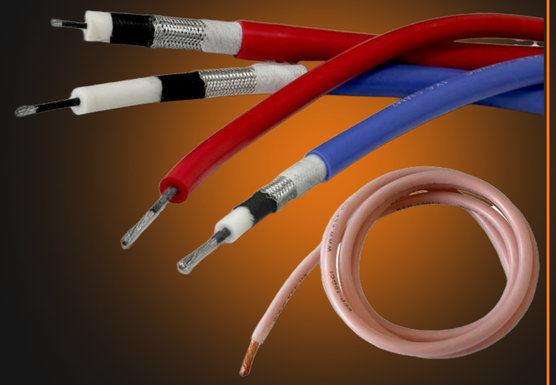
SMART COOLING AND VENTILATION SYSTEMS

Advanced cooling systems for substations effectively regulate temperature:

Air Cooling with Temperature Sensors: Smart sensors automatically control fan operation

Liquid Cooling: Eco-friendly coolants lower the risk of equipment overheating

HIGH-VOLTAGE CABLES WITH LONGITUDINAL SEALING



Modern substation cables provide:

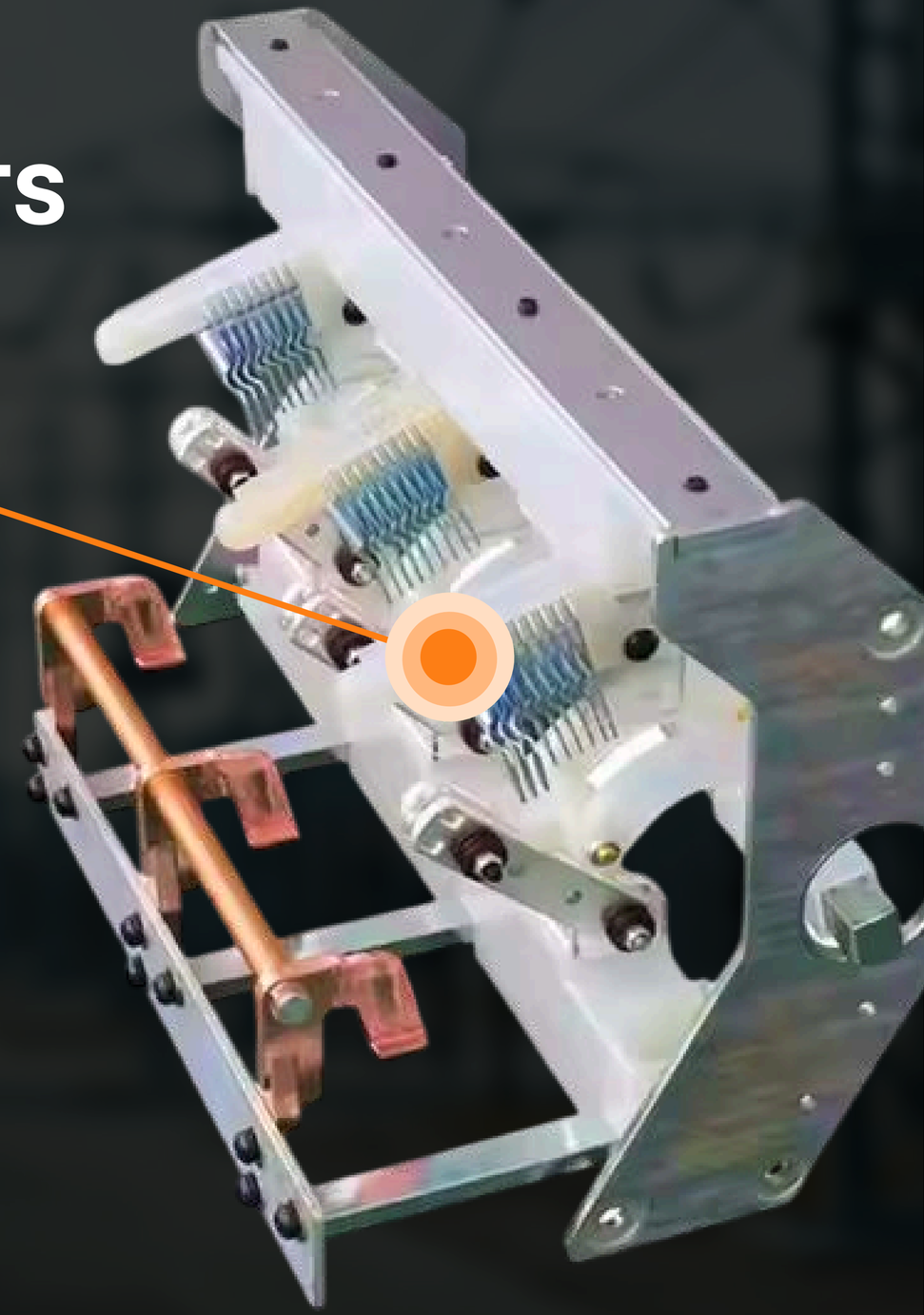
Enhanced Protection against moisture and mechanical damage

Reduced Heat Loss through innovative insulation materials

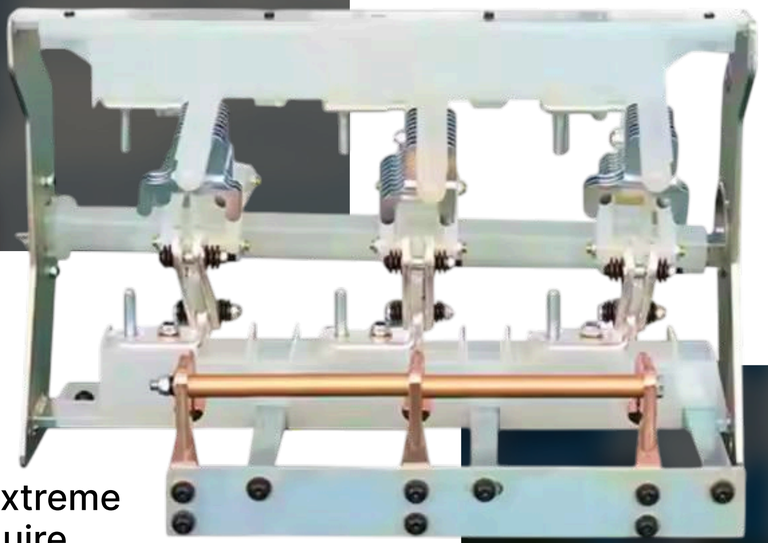
HOW GIS TECHNOLOGY SUPPORTS DEL MAR ENERGY'S BUSINESS

- Gas-insulated switchgear (GIS) is one of the most advanced and in-demand technologies in the energy sector. By boosting efficiency, reliability, and profitability in the construction and operation of electrical substations, GIS has become a vital tool for successful business growth in this field

- A key advantage of GIS is its compact design. These devices occupy up to 10 times less space compared to traditional air-insulated switchgear (AIS) due to the use of SF_6 or other insulating gases instead of air. This allows for installing substations in constrained spaces—such as densely populated cities or industrial areas where land is expensive. GIS can be placed indoors, underground, or in remote locations, significantly expanding business opportunities and reducing land acquisition costs



RELIABILITY AND VERSATILITY OF GIS



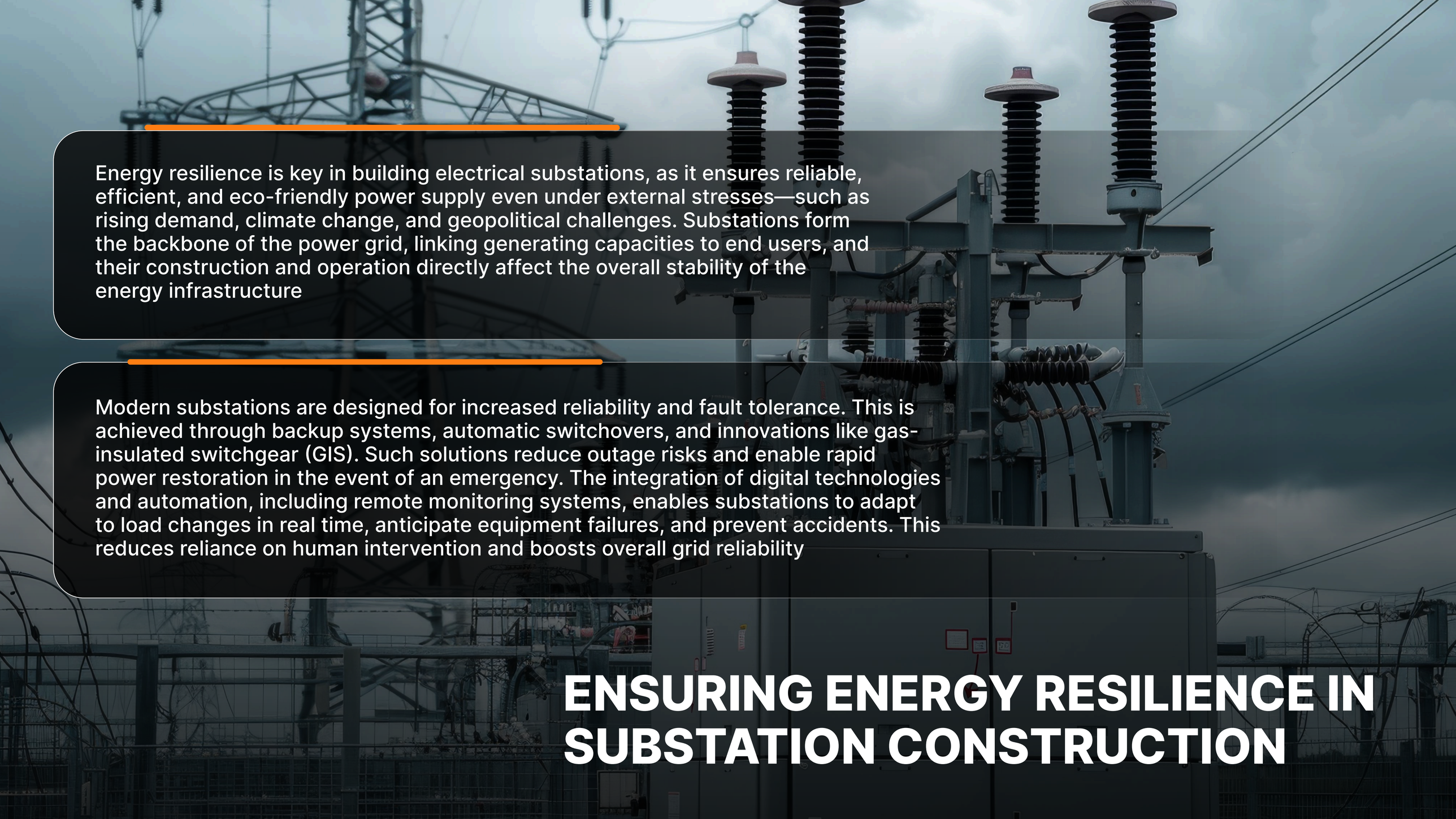
Another key benefit is GIS's resilience under challenging operating conditions. It can function effectively in harsh environments, such as areas with heavy air pollution, coastal regions with high humidity and salt levels, and extremely hot or cold climates. This resilience opens up new project opportunities in regions where traditional technologies may prove ineffective

GIS offers a high level of reliability and longevity thanks to a sealed enclosure that shields equipment from dust, moisture, corrosion, and extreme temperatures. These substations require minimal maintenance and can operate for up to 50 years, lowering operational expenses and minimizing the risk of outages. From a business standpoint, this reduces downtime, boosts power supply reliability, and lowers maintenance costs

INVESTMENT POTENTIAL IN ELECTRICAL SUBSTATIONS

- Investing in the construction of electrical substations is a promising avenue for generating stable income and long-term sustainability. The energy sector plays a critical role in infrastructure development, and substations are essential for transmitting and distributing electricity. Increasing power demands, industrial growth, and new residential developments drive the need for modern, reliable substations

- A major advantage of investing in this sector is the high stability of revenues. Substations operate for decades, delivering a steady income stream through long-term operational and maintenance contracts. Power demand rises annually, making this sector more resilient to market fluctuations and economic downturns. Moreover, substation projects are often part of public-private partnerships, reducing financial risks and offering additional tax benefits



Energy resilience is key in building electrical substations, as it ensures reliable, efficient, and eco-friendly power supply even under external stresses—such as rising demand, climate change, and geopolitical challenges. Substations form the backbone of the power grid, linking generating capacities to end users, and their construction and operation directly affect the overall stability of the energy infrastructure

Modern substations are designed for increased reliability and fault tolerance. This is achieved through backup systems, automatic switchovers, and innovations like gas-insulated switchgear (GIS). Such solutions reduce outage risks and enable rapid power restoration in the event of an emergency. The integration of digital technologies and automation, including remote monitoring systems, enables substations to adapt to load changes in real time, anticipate equipment failures, and prevent accidents. This reduces reliance on human intervention and boosts overall grid reliability

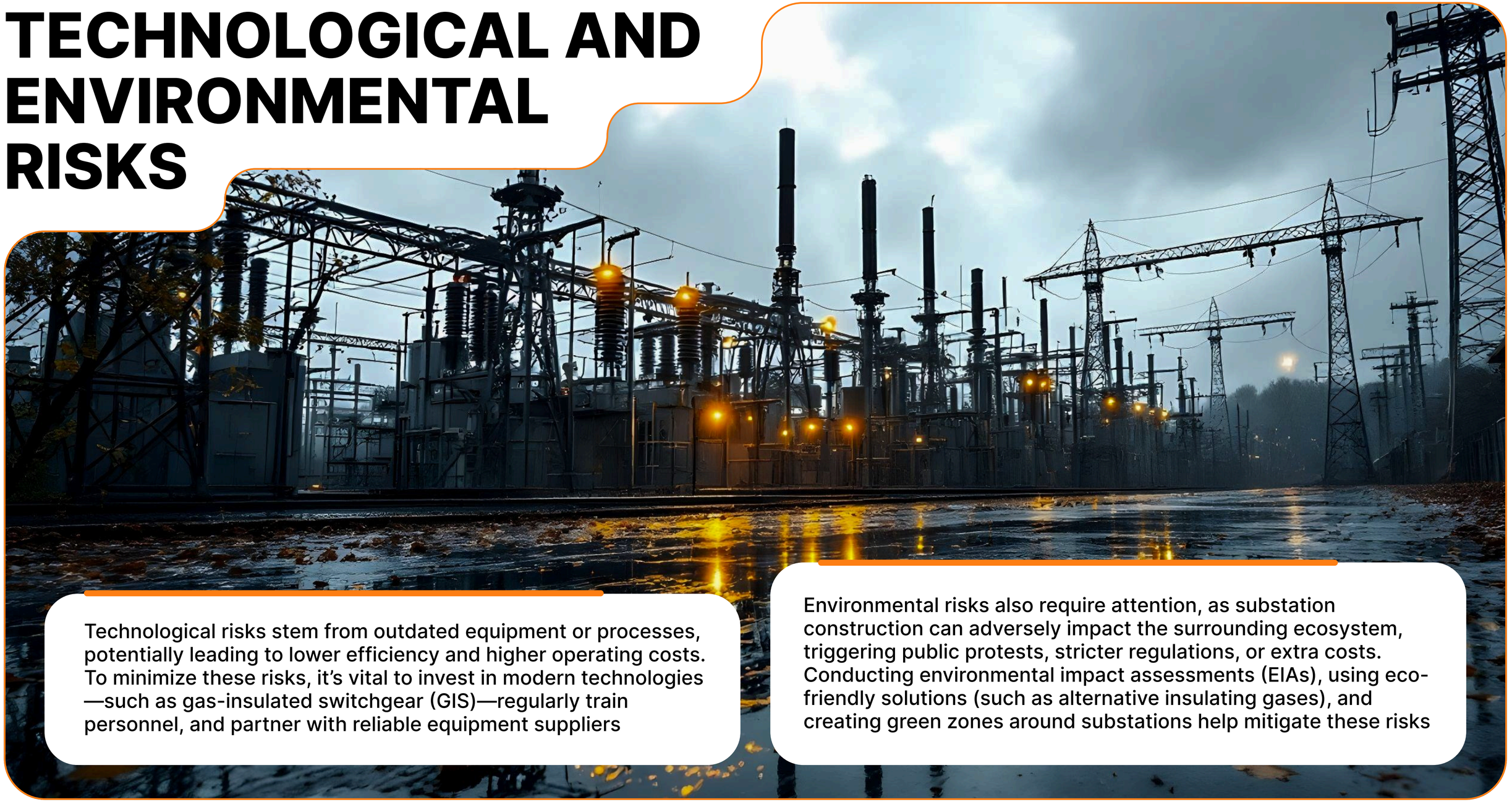
ENSURING ENERGY RESILIENCE IN SUBSTATION CONSTRUCTION

BUSINESS RISKS IN SUBSTATION CONSTRUCTION

Although building electrical substations can be lucrative, it also involves several risks that must be managed for sustainable growth. One major risk is financial, encompassing budget overruns, payment delays from clients, or unforeseen expenses. Effective strategies include thorough budget planning (with contingency funds), securing financing through public-private partnerships (which can alleviate budget strain and offer tax incentives), and diversifying revenue streams, for example, by providing substation services or supplying equipment

Regulatory and legal risks are also significant. Non-compliance with project documentation standards or sudden legislative changes can result in fines, delays, and legal disputes. These risks can be mitigated with expert legal guidance, proactive collaboration with government agencies to obtain timely project approvals, and the use of quality-control systems aligned with international standards like ISO

TECHNOLOGICAL AND ENVIRONMENTAL RISKS



Technological risks stem from outdated equipment or processes, potentially leading to lower efficiency and higher operating costs. To minimize these risks, it’s vital to invest in modern technologies —such as gas-insulated switchgear (GIS)—regularly train personnel, and partner with reliable equipment suppliers

Environmental risks also require attention, as substation construction can adversely impact the surrounding ecosystem, triggering public protests, stricter regulations, or extra costs. Conducting environmental impact assessments (EIAs), using eco-friendly solutions (such as alternative insulating gases), and creating green zones around substations help mitigate these risks

FORECAST FOR SUBSTATION CONSTRUCTION IN 2025

By 2025, the construction of electrical substations will evolve under the influence of technological innovations, growing energy demand, and the global shift toward sustainable energy. A primary trend will be integrating renewable energy sources (RES) –such as solar and wind power–into the grid

01 03

Substations will be crucial for connecting these facilities to the power system, leading to increased substation construction near RES and the introduction of energy storage technologies (e.g., battery energy storage systems, BESS) to manage peak loads. Existing infrastructure will also undergo significant modernization to accommodate bidirectional power flow, essential for decentralized energy sources

02 03

Another important trend will be digitization and the creation of “smart” substations equipped with AI and IoT technologies. These systems enable automated control, real-time monitoring, accident prevention, and higher efficiency. SCADA systems and sensors for equipment diagnostics will make grid management more precise and responsive, while big data analytics can predict loads and reduce operational costs

03 03

ENERGY EFFICIENCY, ENVIRONMENTAL STANDARDS, AND CLIMATE RESILIENCE

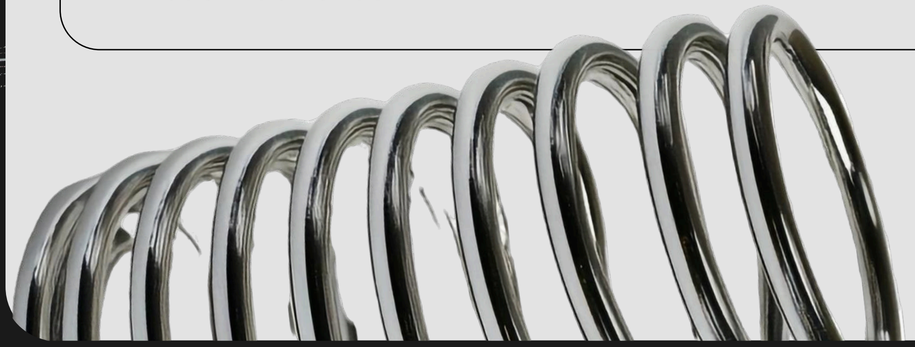
Heightened energy efficiency and eco-friendliness will be key priorities for new substations. Modern designs will include energy-efficient transformers, alternative insulating gases with low carbon footprints instead of traditional SF_6, and other technologies that minimize environmental impact. Tighter environmental regulations will require companies to apply sustainable principles at every stage of construction

Global climate change will also shape substation design in 2025. Substations will be engineered for extreme conditions—floods, hurricanes, and temperature swings—to ensure reliability and long-term operation. Resilience to such environmental stresses will become mandatory for new facilities

MODULARITY AND SCALABILITY REMAIN ESSENTIAL

- Companies will continue to develop projects that can be quickly adapted to changing requirements and easily upgraded to accommodate new energy sources. This is especially relevant given rising energy consumption and rapidly advancing technologies

- Hence, the trends in substation construction for **2025** focus on integrating renewable energy sources, digitization, improved energy efficiency, eco-friendly solutions, and resilience to climate challenges. These factors will shape the future of energy infrastructure, making it more flexible, reliable, and aligned with modern demands



INVESTMENT AND CLIMATE RESILIENCE

ATTRACTING INVESTMENTS

Energy infrastructure draws substantial private and public investments. Funding substation construction through public-private partnerships, subsidies, and international development programs drives economic growth at local, regional, and global levels

CLIMATE-RESILIENT DESIGN

Modern substations are engineered with climate change in mind, creating a grid more resilient to extreme weather events. This reduces economic losses from natural disasters, ensures a stable power supply, and aids in recovery for affected regions

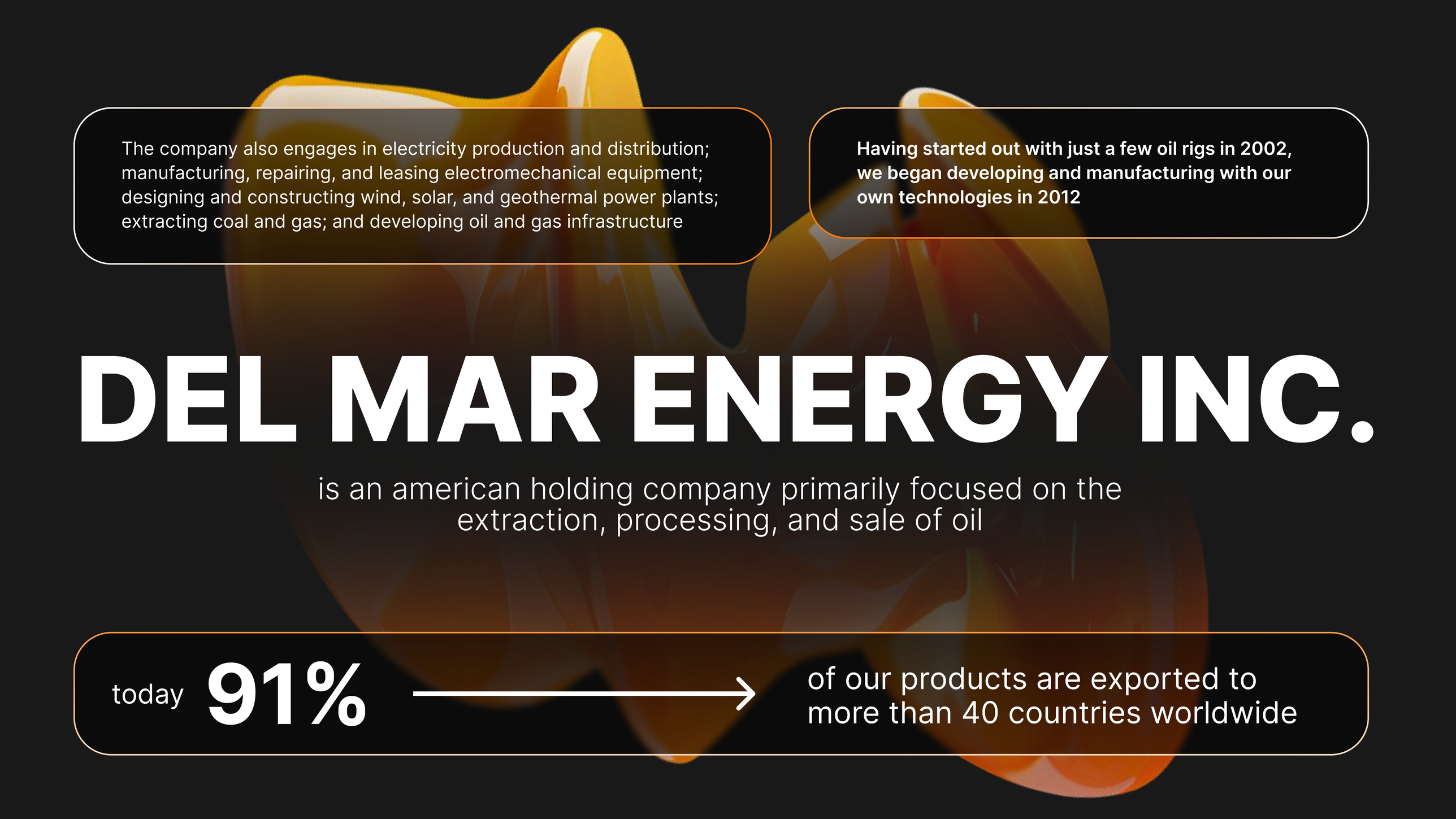
HIGH-RETURN INVESTMENT OPPORTUNITY

By opening a deposit of $120,000, in 255 days, your balance will reach

$432,684

Deposit Term: 255 days

ROI: 360.57%



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

DEL MAR ENERGY INC.

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

today **91%** → of our products are exported to more than 40 countries worldwide

LEADERSHIP

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

TEAM