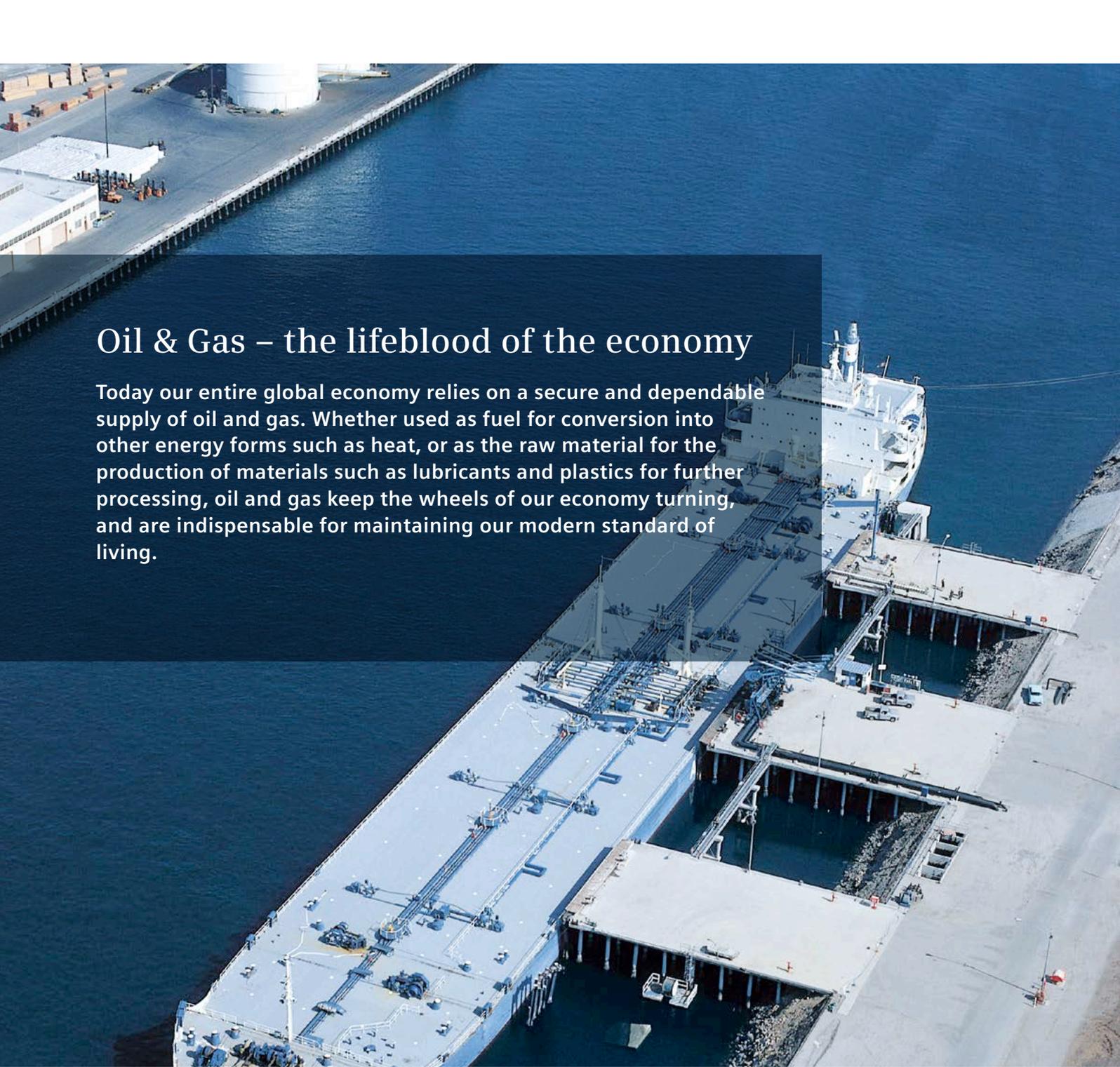


SIEMENS



Secure energy supply

Energy Automation for the Oil & Gas Industry

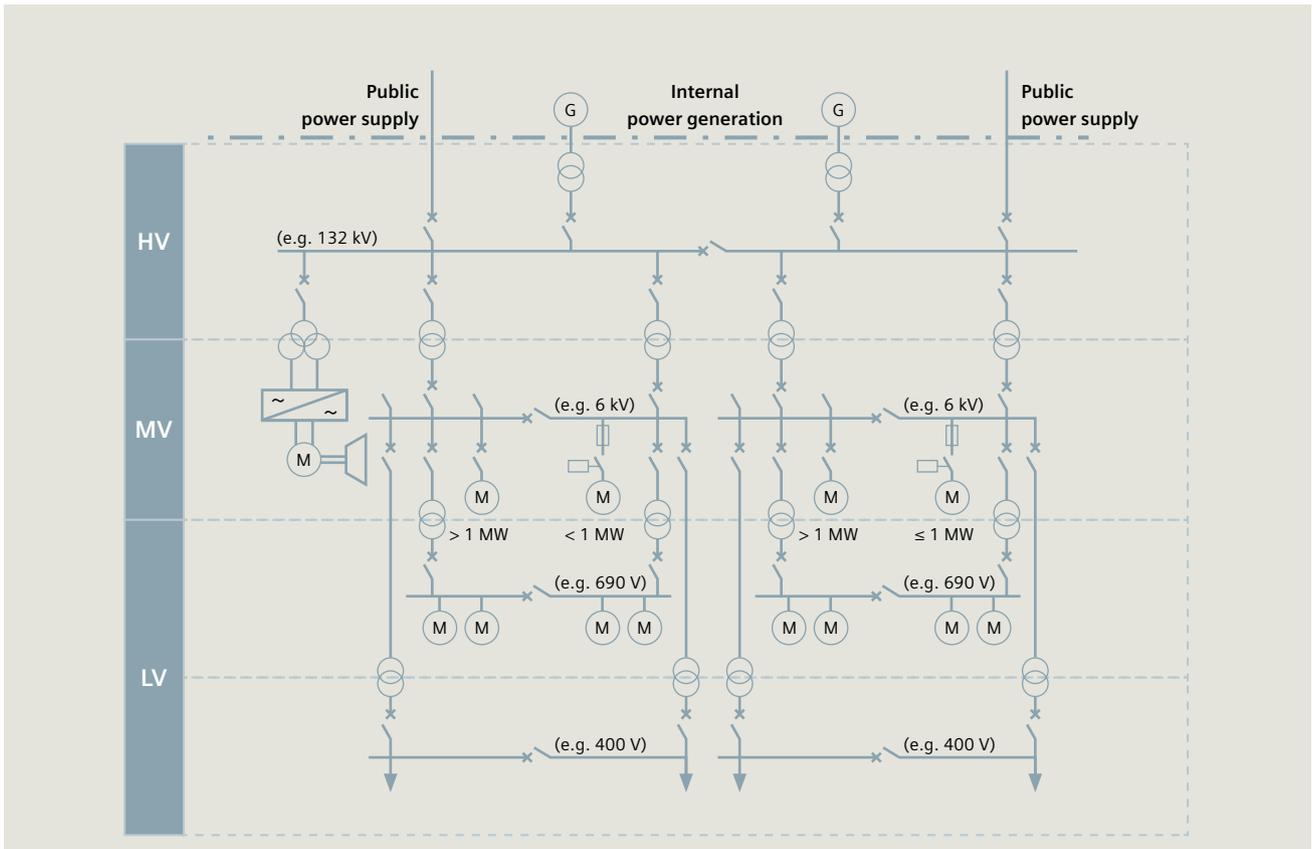


Oil & Gas – the lifeblood of the economy

Today our entire global economy relies on a secure and dependable supply of oil and gas. Whether used as fuel for conversion into other energy forms such as heat, or as the raw material for the production of materials such as lubricants and plastics for further processing, oil and gas keep the wheels of our economy turning, and are indispensable for maintaining our modern standard of living.

When it comes to supplying oil and gas, one thing is perfectly clear: an absolutely safe and dependable supply of electrical energy is needed – whether on drilling platforms or at the refinery, on stormy seas or at extremely low temperatures.

This safety and dependability can only be ensured with a protection and automation concept, tailored to meet specific needs, that covers the entire energy supply system.



From infeed to the medium-voltage system to the ultimate consumers, we guarantee a reliable power supply for the entire production process.

Secure energy supply for the Oil & Gas Industry

With our tailored energy automation solutions, we focus on the key issues of protection and power quality, station automation and energy management. We protect your plant and installations against possible damage, while at the same time guaranteeing the consistent quality of the electrical power supply – and thus of your production processes.

What's more, our automation system also enables you to react quickly and correctly to unforeseeable events in your network, allowing you to prevent possible interruptions of the supply.

To design your power supply system so that it's reliable and meets your needs, we analyze every aspect of your energy supply. We start with the infeed from the power supply utility or generation at your own power plant, and study everything from the medium-voltage level right down to low-voltage distribution. Our approach takes into account all requirements relevant for secure and economic operation and translates them into a solution individually tailored to your needs.





Energy automation – End-to-end consistency and high availability

In a Siemens energy automation system, end-to-end means that all levels, all infeeds and the medium- and low-voltage distribution networks are integrated into one system together with the emergency power supply. Parallel to this, all process automation signals such as position signals, switching commands, measured values, warnings and alarms are processed in one system.

We implement the entire information processing and system control with an automation system based on the MS Windows operating system installed on an industrial PC. Standard commercial office PCs are generally used as operator terminals. These are linked to the automation processor via a network, and provide the actual user interface to the energy automation system.

The visual display system used is a SIMATIC WinCC, a globally established standard for the visual display and operation of automation systems.

For connecting the protection devices in the high-voltage and medium-voltage distribution system, we rely on commonly used international communications standards such as IEC 60870-5-103, Profibus DP, Modbus or the standard IEC 61850 based on Ethernet technology. This not only contains a generally valid description of the communication but also, for the first time, includes precise specifications and rules for describing the entire system including protection and automation.

In addition, IEC 61850 also defines the rules for direct communication between the protection devices (GOOSE mechanism) as well as between equipment from different manufacturers.

This enables functions such as cross-bay system interlocking to be carried out more quickly and directly in the bay, independently of a central control system.

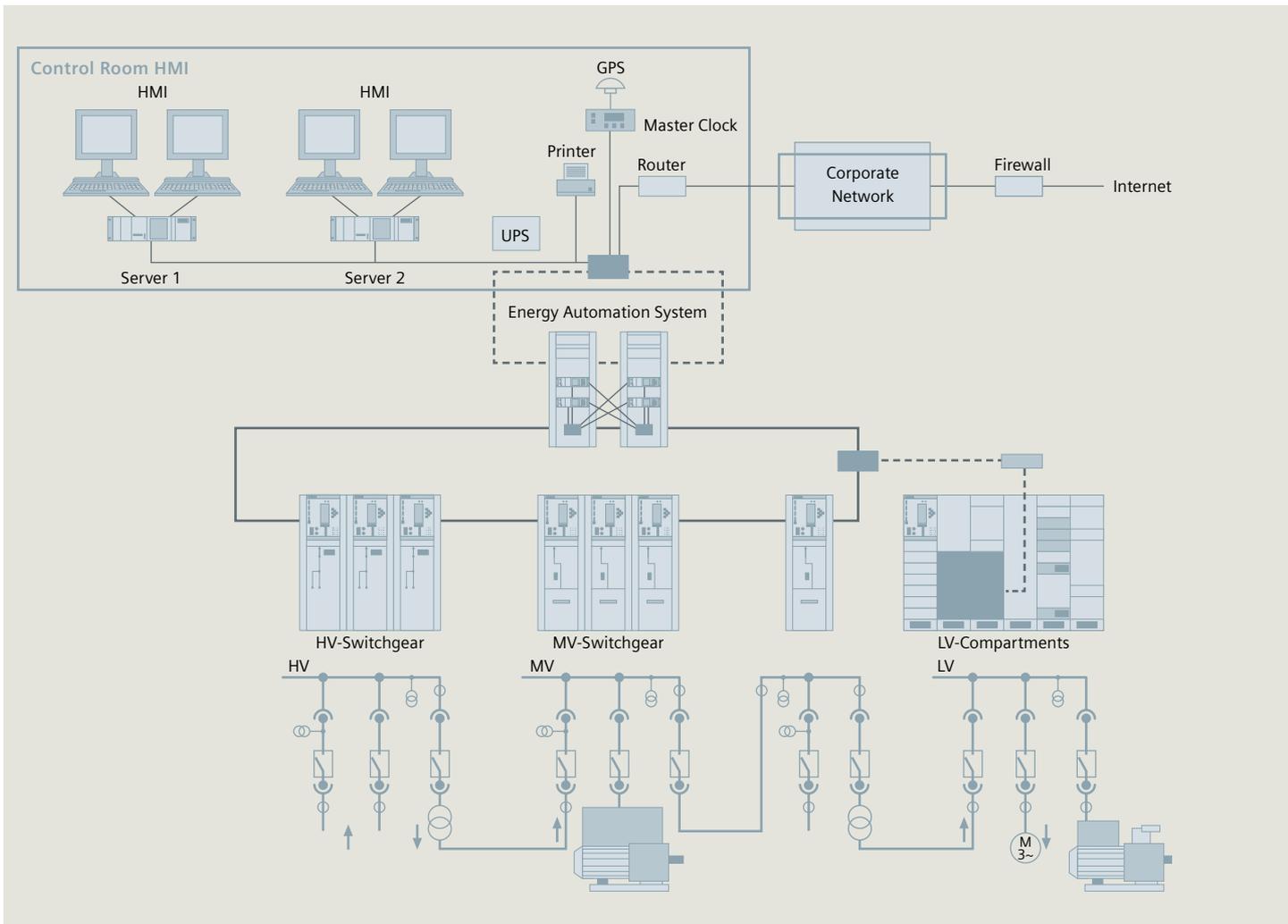
For linking signals from the low-voltage distribution system, we use proven components including the SIMATIC family, which are connected to the central monitoring system via Profibus or Modbus. Coupling to a master control system is possible via a connection using the IEC 60870-5-101 or IEC 60870-5-104 protocol.

A process automation system for incorporating signals and measured values from the process automation can be coupled in via OPC.

To minimize interference from electromagnetic radiation, we use fiber-optic cables for transmitting information to the human-machine interface. In order to match the availability of our systems exactly to your requirements, we can also design particularly important parts with redundancy. And naturally, we also offer you concepts and solutions for increased availability of additionally used components (PCs, switches, control system).



Our energy automation system guarantees high stability in all areas – upstream, midstream, downstream.



Our solutions integrate all voltage levels and all necessary information from the energy supply environment in one system.



Energy automation from Siemens – performance made to measure

Our energy automation systems are always designed and optimized to meet the specific requirements of our customers. The use of standard components allows us to scale the system in every respect.

This means we can offer you a comprehensive range of solutions, from straightforward visual display system for the power supply to a highly complex energy control system with special control functions and algorithms for the energy flows. And all functions share a common goal: They're designed to eliminate unwanted interruptions of the power supply, and thus prevent production losses at the plant and possible danger to people and machinery. A further main task of the system is cost-optimized control of the energy used throughout the entire industry complex.

Our energy automation systems offer the following functional modules

- **Protection and automation of the power supply**
- **Calculation and storage of the power supply system parameters**
- **Monitoring and control of the entire power supply system (SCADA)**
- **Alarm Management and Log-functionality**
- **Comprehensive analyses**
- **Load management including controlling of power generation**
- **Load shedding in case of overload and crisis situations**
- **Automatic restarting of loads (Load Restoration)**
- **Energy management**



Concrete benefits for you

- **Integrated solution**

The view of the overall system quickly shows you where the fault lies and how it can be most quickly rectified. Our energy automation system integrates all data and information that are relevant for the power supply. In this way, you can manage and supervise your high-, low- and medium-voltage installations in one system. You couldn't ask for a better overview.
- **Central human machine interface**

Switching and administration can be carried out conveniently from a central operator terminal. In an emergency, you can inform all relevant departments quickly, specifically and fully automatically per SMS or e-mail. In this way you can detect an imminent fault in good time and intervene quickly in the right place to prevent a potential loss of the power supply.
- **Highest supply reliability**

Load shedding functions reduce the risk of an interruption of the supply through selective disconnection of less important sections of the plant should any instabilities occur in the power supply (e.g. load unbalances or overloads).
- **Optimum utilization of electrical energy**

Special load management functions guarantee that you have exactly as much energy available as is needed at any particular time. Unnecessary energy consumption can be detected and avoided in the future by taking suitable action.
- **High availability and reliability**

The use of rugged, industry-tested components and proven standards guarantee you high availability and reliability in operation. This impacts directly on the overall availability of your production plants. We can optimally adapt the level of automation to your processes, and thus help you to react quickly and correctly in critical situations.
- **Lower operating and maintenance costs**

The system can perform standard functions, such as logging of energy data, automatically. Continuous monitoring makes it possible to plan required maintenance activities in advance and carry out preventive maintenance. This reduces servicing costs and minimizes time spent on maintenance work.
- **Optimum support for globally successful customers**

Based on the competences in the international Siemens organization, we have developed numerous solutions tailored for the individual needs of our customers in the oil & gas and petrochemical industries.

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