

The background of the advertisement is a photograph of an industrial power plant at dusk. The sky is a mix of blue and orange, suggesting sunset or sunrise. The plant features several tall, cylindrical cooling towers and various structures, some of which are illuminated with warm lights. Overlaid on the photograph are several glowing, semi-transparent digital elements: a grid of lines, circular nodes, and rectangular frames, which represent a smart grid or digital infrastructure. The Siemens logo is positioned in the top left corner, and the main title and subtitle are in the lower-left quadrant. A dark grey bar at the bottom contains the slogan 'Totally Integrated Power', and the website URL 'siemens.com/tip' is in the bottom right corner.

SIEMENS

Power for challenging environments

Integrated power supply solutions for industries, buildings, and facilities

Totally Integrated Power

[siemens.com/tip](https://www.siemens.com/tip)

An aerial night photograph of a city, likely Singapore, featuring a large, illuminated stadium with a distinctive dome structure. The city lights are reflected on a body of water to the right. The image is overlaid with a semi-transparent orange rectangle containing text.

Integrated power supply solutions enable new levels of reliability, safety, and efficiency for industries, buildings, and facilities.

Even more so if they're seamlessly linked to industrial and building automation systems, and lifecycle services.

Whatever the challenge, Totally Integrated Power leverages the full potential of any power supply system and its operational environment.





Welcome to the world of Totally Integrated Power!

**Perfectly integrated power supply solutions,
tailored to individual requirements**

Complex demands call for specific know-how

Our largely electrified, automated, and digitalized world places greater demands on power supply systems than ever before. Electricity has proven to be a clean, efficient, and highly versatile power carrier that meets the high-profile requirements of industrial applications as well as those of industries, buildings, and facilities. Without electric power, digitalization and automation, which have become part of our daily life and business, would be hard to imagine. Totally Integrated Power (TIP) is the key to reliable, safe, and efficient power supply in increasingly complex transmission and distribution environments.

The entire lifecycle of power supply in mind

Requirements are just as different and challenging as the variety of areas of application. Following the concept generally known as the fourth industrial revolution, manufacturing industries have a clear focus on shorter time to market and individualized mass production. Process industries are mainly driven by safety considerations. Industry, building, and facility owners demand a high degree of flexibility and adaptability along with operational transparency. On top of that, aspects of cyber security become ever more important for all businesses in an age of intensively networked assets and cloud computing.

Totally Integrated Power is the unique concept that enables precise, accurate, and individual solutions that meet all these demands – for any industry, from consulting and planning all the way to the implementation and servicing of a consistent power supply. In a nutshell: Totally Integrated Power comprises everything it takes to supply power for challenging environments.

Integrated in all business processes. On all levels.

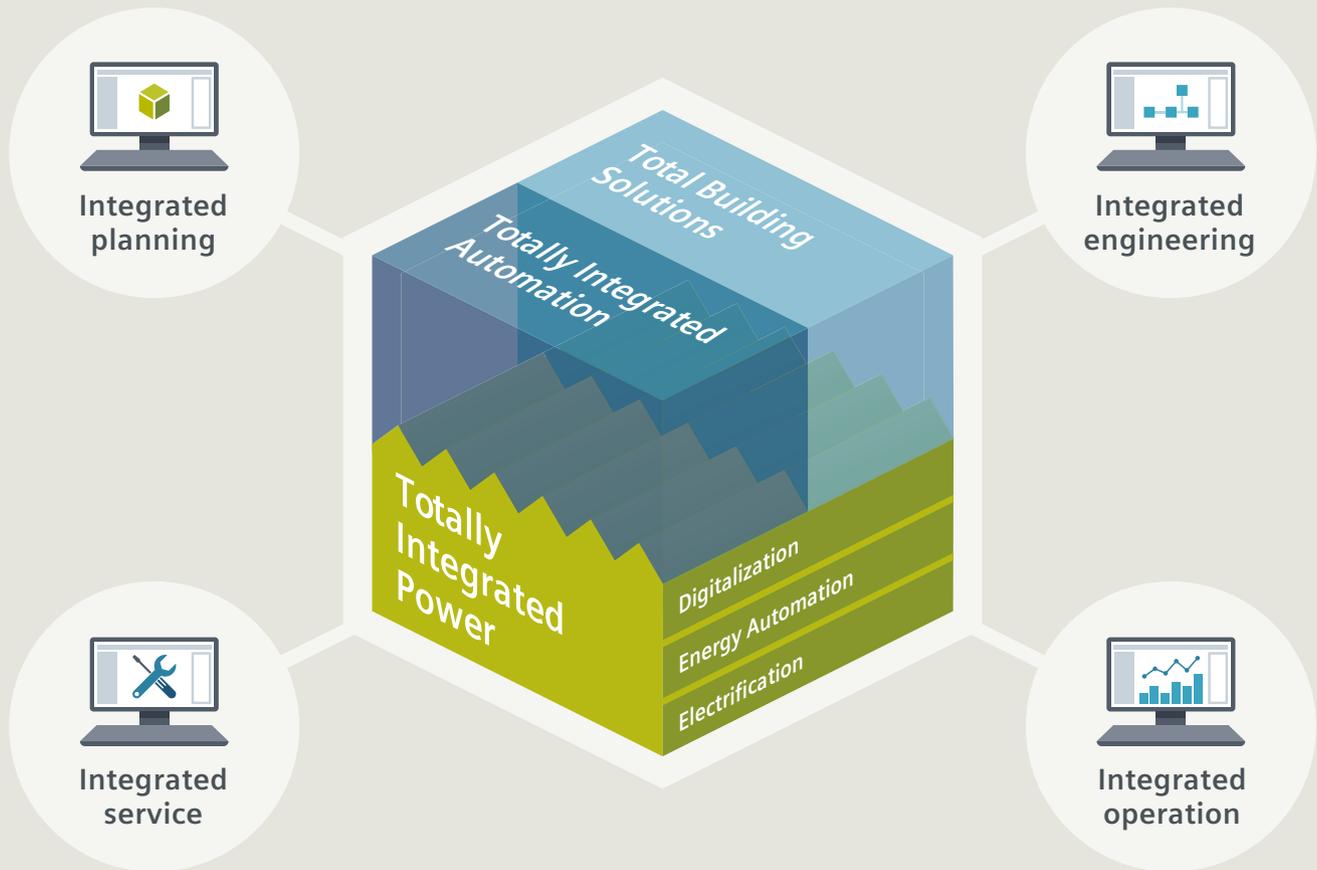
Modular hardware, software, service, and all-in-one solutions that support all business operations

Much more than a comprehensive power supply portfolio

Digitalization is one of the main pillars of the future-proof power supply solutions and advanced technologies, processes, and system services that are required to ensure reliability, safety, and efficiency for industries, buildings, and facilities.

All voltage levels, all issues of energy management

Totally Integrated Power comprises software and hardware products and systems for all voltage levels and all energy management solutions in industries, buildings, and facilities. Whether for a greenfield project or for an existing, heterogeneous overall system, it considers all aspects and the entire lifecycle – from planning and analysis to implementation and operation, and all the way to maintenance and services. Even for the toughest requirements of supply-critical assets, Totally Integrated Power facilitates the customers' business in terms of planning and procurement. It is the modular one-stop-shop solution for whatever is required in terms of power.



Complex integration made easy in all industries

With Totally Integrated Power being closely linked to industrial and building automation systems, such as Totally Integrated Automation (TIA) and Total Building Solutions (TBS), customers can fully exploit the complete optimization potential of this solution: comprehensive digital planning, monitoring, and control of all processes. Because the solution is perfectly fitted to the customers' business processes, this means considerable added value: Especially in manufacturing industries, this is an important milestone on the way to what is becoming increasingly commonly known as "Industrie 4.0."

On the following pages we present Totally Integrated Power for selected industries.

Automotive industry

Power supply at its very best, on the way to the Digital Enterprise



Influence the future for smooth car production

In manufacturing industries, such as the automotive business, the question whether to decide for or against digitalization was already answered yesterday. The highly competitive automotive industry has already taken the first steps towards the "Digital Enterprise". For long-term future success, it is of essential importance for those companies to be well prepared for tomorrow's requirements and to have safe power supply at all times. Totally Integrated Power solutions are the key.

Reliable and safe operation

The reliable and appropriate dimensioning of a manufacturing plant including all its components and dependencies is a clear advantage. Correctly dimensioned plants distinguish themselves with enhanced availability and efficiency. Damage and downtimes are avoided. That's how combining Totally Integrated Power and automation solutions helps protect industrial equipment and, at the same time, ensures smooth production.

Totally Integrated Power to protect man and machine

Power supply needs to keep up with changing requirements. Therefore it is crucial to keep automotive plants flexible and scalable to provide flawless car production. In a production line, when welding machines and robots are operating in parallel, for instance, power shortages or failures quickly become costly. A redundant power supply and integrated power emergency systems protect against outages and enhance the highest level of safety. Naturally, Totally Integrated Power can be integrated within existing infrastructures, and the modular concept facilitates utmost flexibility for future adoptions.



Reference



Gestamp, a Madrid-based supplier for automotive components with more than 100 production sites in 20 countries, delivers proof for the excellent integration abilities of TIP. One of their plants uses energy efficiency monitoring based on a technical service model that enables the company to collect power consumption data from all consumers directly on-site. The obtained data – around 21 billion data points per plant per year – is analyzed at the Siemens control center in Seville, where Gestamp receives a precise analysis of each user's power consumption plus immediate suggestions for optimization. Having been convinced by the value-creating potential, Gestamp is planning to implement this solution in other plants.

Chemical industry

Keeping everything up and running – whatever happens



Because outage is out of the question

Providing a reliable, safe, and efficient power supply for the chemical industry is clearly of significant importance. In the chemical sector, even the slightest power outage is followed by costly disruptions in the production process and may possibly cause considerable damage to the high-value equipment within the plant. In the worst case, a power shortage may even severely endanger man and environment.

Enterprises in the chemical industry have to meet high technology requirements on the one hand, as well as stringent laws and regulations for environmental protection on the other hand. It is also essential to provide maximum safety in a highly controlled business environment. In addition, increasing energy costs call for greater efficiency. That's why reliable, safe, and efficient power supply contributes to consistent market success facing strong global competition.

Industry customizing for fail-safe performance

Characterized by a high number of automated processes, the equipment installed in the chemical industry is very valuable. To make sure the production runs efficiently, with no interruptions, functional safety is of top priority: an optimal power flow including the optimized control and monitoring of the electrical network, while also guaranteeing safety of the staff as well as operational safety at all times.

Totally Integrated Power solutions are tailored to the requirements of chemical plants and ensure continuous mission-critical power supply in a business field that transforms slowly from a highly standardized production to more specific solutions. The optimum integration of the complete power supply from a single source and the close interaction with process automation allows a maximum of supply reliability, enabling more energy efficiency, transparency, and flexible adaptability.

Reference



EuroChem's Usolskiy Potash complex is one of the largest potash projects in Russia's Perm region. Its 220 kV feed line is 32 km long and the plant's maximum estimated load during plant operation is 108 MW. In order to provide a reliable power supply for a plant of this size, Siemens came up with a highly efficient and comprehensive solution for all voltage levels required. The Kama-Potash substation is now running with our state-of-the-art gas- and air-insulated high- and medium-voltage equipment, including transformers, switchgear (NXAIR S), and relay protection and automation (SIPROTEC 5). EuroChem, one of the world's leading producers of mineral fertilizer, greatly appreciated this convenient one-stop offer for its entire substation, including not only the delivery of the equipment but also supervision and commissioning of the project on time and within budget.

Oil and gas industry

Efficient endurance runners for even the toughest conditions



Maximum safety from the well to the customer

In oil and gas production, power stability is essential for successful operation. System outages due to power failures or even minor disturbances in the power supply can have severe consequences. Processes and procedures demand maximum availability in power supply. Typically, oil and gas production sites are among the toughest and most dangerous environments. Safety and security issues call for special attention.

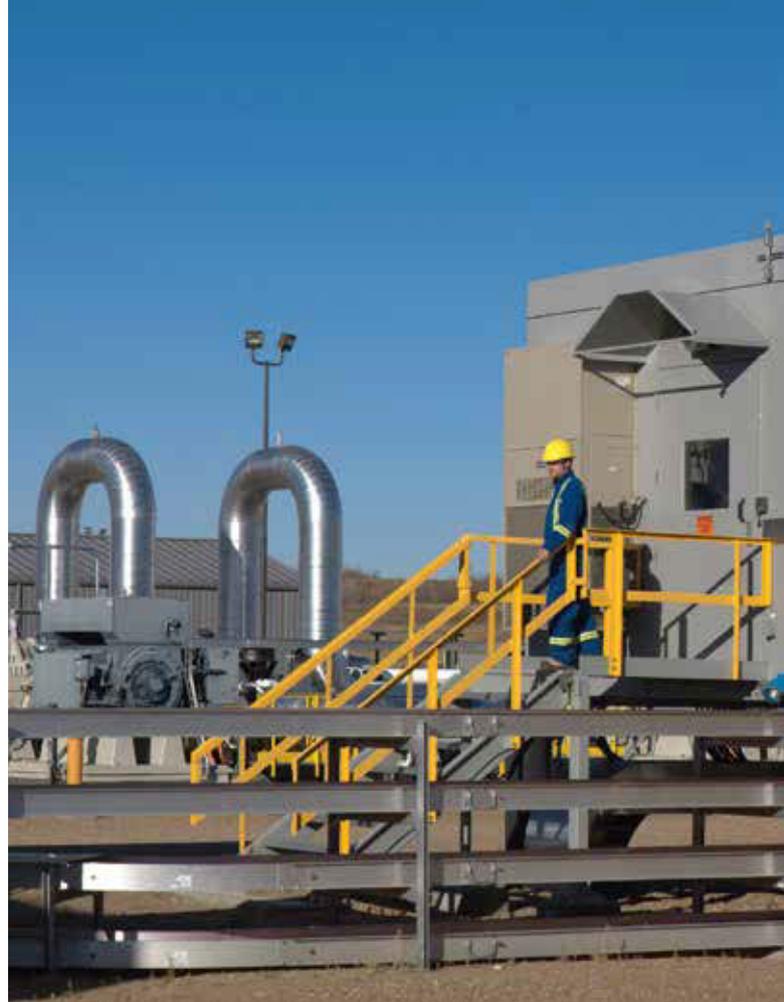
Cost-effective and time-efficient in rough environments

For this safety-critical field of industry, electrification, drives, and automation are united and constituted in a safe, reliable overall solution that achieves ultimate availability. Oil and gas production offer very limited space and also need to meet strict safety regulations. To ensure reliable power supply under these conditions and enable fast implementation, Totally Integrated Power E-Houses have proven to be a suitable application. Tailored to individual customer specifications, fully certified, fail-safe, and pre-built in containers, E-Houses are modular, plug-and-play-like substations. Completely preassembled and pretested, E-Houses can be installed and put into operation in a short

time, relocated, and continually reused. They offer a new degree of flexibility and sustainability, since installing them offers a cost saving potential up to 20% and their lead time can be reduced up to 50%.

For oil and gas production sites, power is a cost-intensive matter. Many issues, like space requirements or maintenance, capital expenditure, and personnel costs, make them look for better ways to power their offshore installations from mainland power grids – like Siemens' Totally Integrated Power. This offshore installation power from shore is a highly efficient power cable transmission system that replaces onboard generated power with electricity generated onshore.

In times of digitalization complex energy automation systems in this business are facing increasing requirements. All individual components have to be working together smoothly, while processes need to stay transparent and available. Totally Integrated Power offers highly cost-efficient power management solutions with its complete energy automation portfolio: power system protection, substation control and automation, and remote control and measurement, as well as recording.



Reference



Oleoducto Central S.A. owns and operates a crude oil pipeline and oil terminals. The company's primary asset is the Ocesa Pipeline in Colombia, which transports crude oil comprising light crude oil, intermediate blends, and heavy crudes. Its crude oil pipeline covers 836 kilometers on land and 12 kilometers underwater. Siemens successfully installed customized, fully equipped, and pre-tested modular E-Houses for the fast and reliable power supply on Oleoducto oil rigs. They accommodate the comprehensive portfolio of medium-voltage switchgear, low-voltage switchboards, and busbar trunking systems.

Harbors

An all-inclusive reliability, efficiency, and sustainability boost



Meeting regulations, exceeding standards

Harbors are modern and increasingly complex facilities. Their processes are unimaginable without electricity – from traffic guidance systems to transporting cargo. Restrictive regulations and European laws regarding environmental issues of power supply are a huge challenge modern harbors are facing. Topics focusing on energy efficiency, power quality, and grid stability are equally important. Harbors are looking for a green solution that proves to be cost-effective and reliable.

Ecologically proactive, economically worthwhile

Totally Integrated Power offers the complete scope of reliable, safe, and efficient power supply to future-oriented harbors. The extensive range of software solutions covering both power supply and automation creates significant advantages in the integrated digital monitoring and control of operation procedures. The hardware portfolio ranges from low-voltage switches to entire microgrids and even the SIHARBOR system, which allows ships berthed in port to be connected to the medium voltage network onshore.

Power supply is integrated in the complete lifecycle of harbor assets in a unique way. When combined with industrial and building automation and other elements of the Siemens portfolio, modern harbors can take the challenges easily. Seamless interfaces and Siemens' in-depth know-how in all matters of power supply, from planning and consulting to analysis and operation and maintenance, pave a safe way to the future and provide considerable added value.



Reference



To provide a reliable power distribution solution for the new Nacala-a-Velha seaport in Mozambique was quite a challenge. Despite its tight schedule and the difficult transport infrastructure in the African country, this project was delivered well within time and budget. The Nacala-a-Velha seaport received a complete containerized solution with transformers, medium- and low-voltage switchgear, and appropriate motor control centers for supplying power and controlling the conveyor belt motor drives in five prefabricated E-Houses. Siemens met the high power availability requirements precisely considering the on-site environmental conditions. The E-House's internal over-pressure prevents ingress of coal dust and coatings such as from salty sea air. The on-time delivery of this highly efficient power solution meant a timely startup of harbor operations.

Data centers

Uptime, efficiency, and protection to the max



Critical data cool and safe

For the vast majority of businesses, data centers are critical facilities that face many different challenges. Complex server rooms need secure power supply for cooling units and air conditioning running 24/7. Protecting critical data, ensuring uptime, and availability of service are of equal importance. The Totally Integrated Power portfolio covers the complete load flow including all elements of electricity supply and certified solutions for the safety of operator and equipment, as well as cyber security at the highest level. In addition, an easy connection to automation in buildings enables integration into the building IT system of a data center.

Harmonized services for highest availability

Thanks to the modularity of Totally Integrated Power solutions, power supply to data centers can be scaled to size and customized to individual requirements. This enables data center operators to excel in maximum reliability, energy efficiency, flexibility, and security. Totally Integrated Power is the comprehensive, one-stop offering for power supply, providing solutions across all voltage levels and throughout the entire lifecycle. Since Total Building Solutions complements Totally Integrated Power in an ideal way, customers can obtain the complete electrification and automation from a single source. Overall, the efficient interaction of the two Siemens solution packages means fewer interfaces as well as considerable cost savings during installation and operation. Businesses benefit from Siemens' long-term experience in data center planning and consulting from all over the world.

Reference



The Italian energy company Eni, a major integrated energy company operating worldwide, constructed a new data center in Ferrera Erbognone, Italy. The challenges to face were high cooling requirements in combination with ensuring low energy consumption and an uninterrupted power supply. In addition to enabling the data center's eco-friendly performance and efficiency, all systems were handed over on time as a turnkey solution. The new data center operates with a significantly low power consumption and just a very small environmental footprint. Siemens supported building one of the world's leading data centers in terms of energy efficiency. It saves about 335,400 tons of CO₂ emissions every year, a figure that corresponds to 1% of the savings Italy is attempting to achieve by the year 2020 in line with the Kyoto Protocol.

Buildings

Driving building performance throughout the entire lifecycle



Smart power runs smart buildings

The range of requirements for power supply varies, as does the diversity of modern buildings today. Whether it is office blocks, hotels, hospitals, or factories – the demands on quality, reliability, ergonomics, and design are higher and more diverse today than they have ever been. However, all modern buildings have some things in common: To run them as smart buildings, power supply needs to be fail-safe and secure, energy- and cost-efficient, and, of course, comfortable and intuitive to operate. Totally Integrated Power offers exactly that: reliable, safe, and efficient power supply for any kind of building, no matter the use.

In the area of building control technology, digitalization adds more intelligence to what were originally rigid infrastructure systems. Also, digitalization offers new opportunities to network originally independent systems and enable these systems to communicate with each other.

Industrial and building automation in exemplary teamplay

Sometimes the use of a building or facility changes – for example, one of the floors in a high-rise building is converted from an office to a shopping mall. Electrical equipment and the related power supply need to stay just as flexible and adaptable to their new function. Thanks to proven technology and excellent interaction between all components, Totally Integrated Power serves such purposes perfectly: the Totally Integrated Power portfolio comprises solutions for highly complex infrastructures with many different electrical loads.

Totally Integrated Power is closely linked to building automation systems, such as TBS, so business will benefit from the full optimization potential of an integrated solution: comprehensive digital planning, monitoring, and control of all processes.

With increasing data flows and digitalization technology, cyber threats pose a new challenge for a fail-safe power supply. Therefore, a holistic cyber security concept including people, processes, and products needs to be implemented. The certified security solutions provided by Siemens offer security of supply, prevention of cyber attacks from outside and inside, operational efficiency, and future-readiness.



Reference



The Munich headquarters of ADAC with its impressive architecture was built for 2,400 employees. Since it hosts the main data center, the printing shop, and the organization of the spare part shipping center under a single roof, the building has very high requirements in terms of power supply. With Totally Integrated Power, medium- and low-voltage technology are combined in a consistent, fully coordinated system. The use of busbars instead of common copper lines enables flexible power supply that requires minimum space and at the same time reduces material expenses substantially.

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