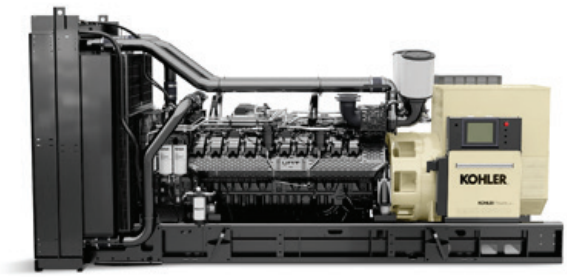
POWER SYSTEMS

for Data Centers and Financial Institutions



KOHLER®

IN POWER. SINCE 1920.

KOHLER® AND SDMO®: OUR STORY

A global force in power solutions since 1920, Kohler is committed to reliable, intelligent products, advanced engineering and responsive after-sale support.

And you can find us on nearly every continent on the planet. Over the years, we've amplified our global reach—acquiring SDMO Industries, a worldwide leader known for its premium range of generators sets. Together, we've built on the legacy of two leading brands to create one of the largest generator manufacturers in the world—and continued an unwavering focus on reliable power systems and innovation.

Our R&D, manufacturing, sales, service and distribution facilities span the globe from Kohler, Wisconsin, to Brest, France. And while we've maintained two world-renowned brand names, today Kohler and SDMO operate as an integrated global organization that's leading the way in design and manufacturing.

We deliver integrated industrial power systems for emergency, prime and continuous applications worldwide—from data centers and hospitals to water treatment facilities and government offices. With a deep understanding of your industry, we excel in designing customized power systems that simplify your most complex challenges.

THE WORLD IS POWERED BY DATA

Big data has changed the world. We generate 2.5 quintillion bytes of data daily—data that businesses, governments and people depend on. Further fueled by mobile devices and data-on-demand business, there are ever-growing demands on service levels in data centers around the world. Cloud computing and the Internet of Things are driving 12 percent growth per year in the data center market. The expectations for peak performance and uninterruptible power have never been higher.

The data center market itself is changing too. Data centers are moving closer to their customers, colocating and adopting multitenant architecture more than ever before. Many are becoming smaller and more scalable. Tax and energy incentives are common, aimed at attracting data center investment while improving the operational efficiency of these critical facilities.

MANAGING ENERGY USE AND COSTS

Data centers consume vast amounts of energy to keep online businesses running at maximum capacity around-the-clock. To avoid wasting much of the electricity pulled off the grid and to improve operational costs, data centers are being designed and built with higher levels of efficiency, measured in PUE (power usage effectiveness).

Today, data center owners want more sustainable ways to power their facilities and lessen their carbon footprints. Assessing your center's needs and designing a power system that's modular and scalable will help you optimize uptime and availability, cut energy use and provide significant savings.

ASSESSING FACILITY NEEDS

A data center's electrical power supply can be provided by several different circuits and supplemented by energy storage systems and generators. To provide a "No-Break" power supply (uninterruptible power with zero service interruptions), two independent power sources provide redundancy and risk reduction, rather than depend on a single source of inbound power.

POWER SUPPLY

Redundancy is an essential design feature built into a data center to provide a double layer of security. To prevent interruptions to the power supply, all components, including the emergency systems, are installed in duplicate with multiple generator sets.

SECURITY

There is an essential need for protecting both the data center's physical security and its cyber security. Redundant backup power is a critical component of a secure data center—and a requirement for recognition as a Tier IV data center.

PHYSICAL ENVIRONMENT

Maintaining precise, stable air conditioning and optimal control of environmental dust are two more factors creating larger loads and more dependence on backup generators.

FIRE PREVENTION

Fires must be prevented, extinguished or controlled. An ultrasophisticated detection system that ensures maximum containment must be maintained on an uninterruptible power supply.

SECURE, ROBUST DATA STORAGE REQUIRES A DEPENDABLE AND SCALABLE POWER SYSTEM

POWER CONSIDERATIONS

SCALABILITY

A larger-than-necessary power system that caters to possible unknowns will increase costs and diminish efficiency. The industry is seeing a shift to scalable data centers that start small and scale up to meet increased demands. This trend is even more evident in colocated and multitenant facilities that make up the majority of new data center construction. Colocating (sharing data center space but not servers) or multitenanting (sharing servers) helps businesses achieve cost savings and efficiency.

Secure, robust data storage requires a dependable and scalable power system—one that's capable of delivering uninterruptible power and meeting demanding service requirements.

UPTIME AND RELIABILITY

Designing power systems that meet the requirement for the highest levels of uptime, such as the Uptime Institute's Tier IV standard, requires expert attention to system architecture and equipment redundancy. Getting the right combination of uninterrupted power supply and generator sets is crucial to meet tier classifications.

Achieving "five nines" (99.999 percent) reliability—where downtime is less than 5.26 minutes per year—is the ultimate goal. A data center is classified based on its annual outage rate or availability:

- Tier I specifying annual outage up to 28.8 hours
- Tier II specifying 22 hours
- Tier III specifying 1.6 hours
- Tier IV specifying 0.4 hours of annual outage, or 99.995 percent availability

Understanding the uptime tier your business wishes to meet helps shape our recommendations for your power system requirements. The market is moving toward emergency prime generator power in order to meet tier standards. Paralleling two or more generators delivers greater reliability and flexibility than a single generator can provide.

WE MAKE IT EASY

From planning to postinstallation, our team will take care of you every step of the way—with a power solution customized to your needs.

MODULAR DATA CENTERS

The modular data center achieved by installing and enclosing two or more generators outdoors versus building oversized generators indoors is becoming more prevalent. Each generator set provides power to specific servers. “Swing” generators come online to provide backup power if one fails, offering an option to other paralleling equipment.

EDGE DATA CENTERS

The building of smaller data centers closer to users (those on the “edge” of large metropolitan markets) is becoming more common due to network latency, which limits the maximum rate that information can be transmitted. Edge data centers provide quick-and-agile response, faster access to data and an improved experience for businesses and people that are “always on.”

A data center in Chicago will have different codes and requirements than one in London. Our engineers can advise you on global considerations and codes.

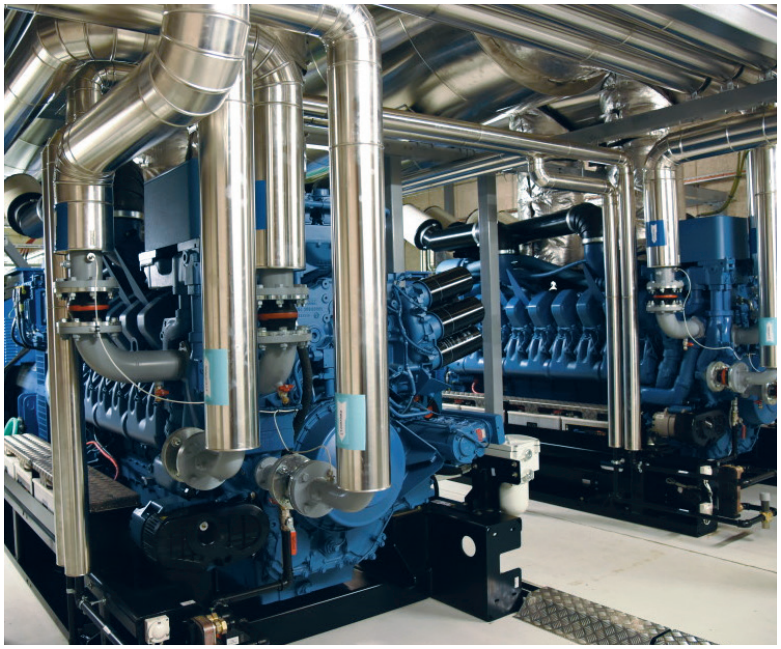
REDUNDANCY

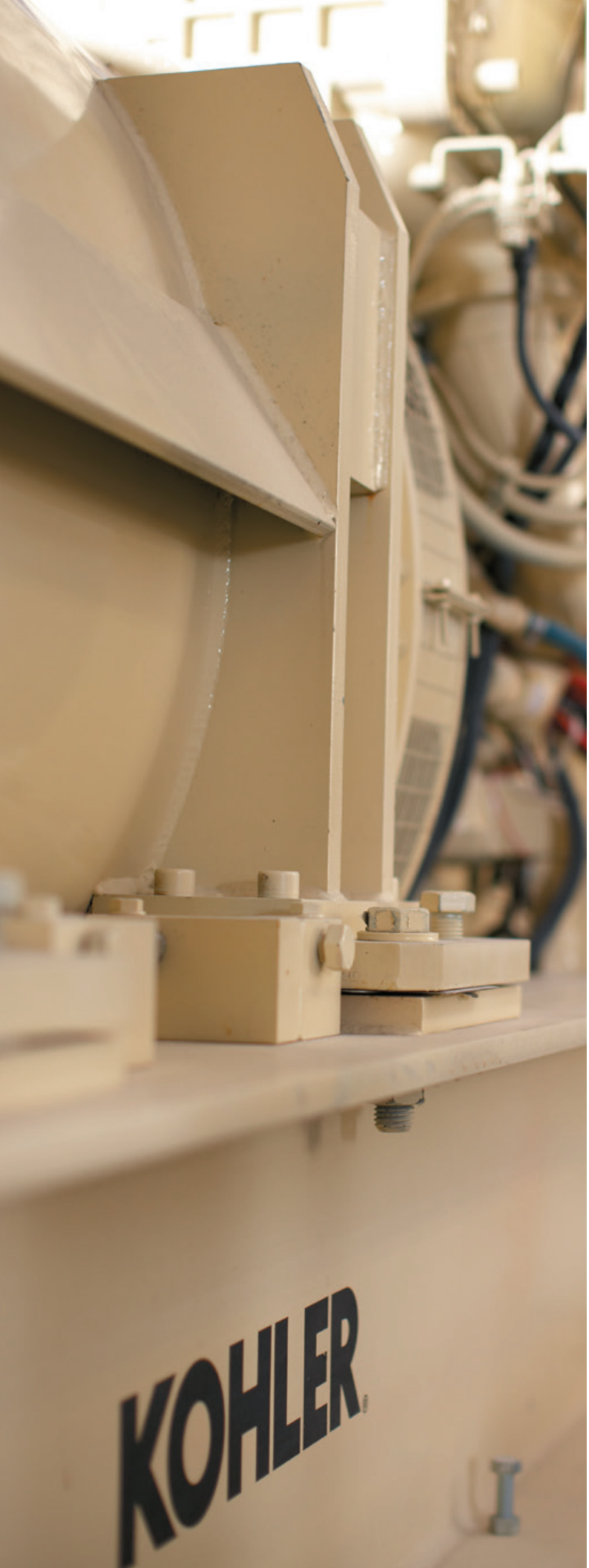
Redundancy is an essential design feature built into a data center to provide a layer of security, known as N+1 or 2N redundancy, with essential components duplicated in the event that one component fails. While a facility might install a single large generator to meet its power needs, paralleling two or more generators with paralleling switchgear offers practical benefits and advantages over a single-generator system.

PERFORMANCE

Our reliable power systems play a major role in helping data centers prevent unnecessary financial loss and security breaches in the event of a power outage. The generator provides backup power within seconds of a break in the normal power supply.

Generator sets should start providing backup power within seconds of a break in utility power supply, and transfer switches should provide seamless automatic switching between the electrical power from the utility and the backup power system.

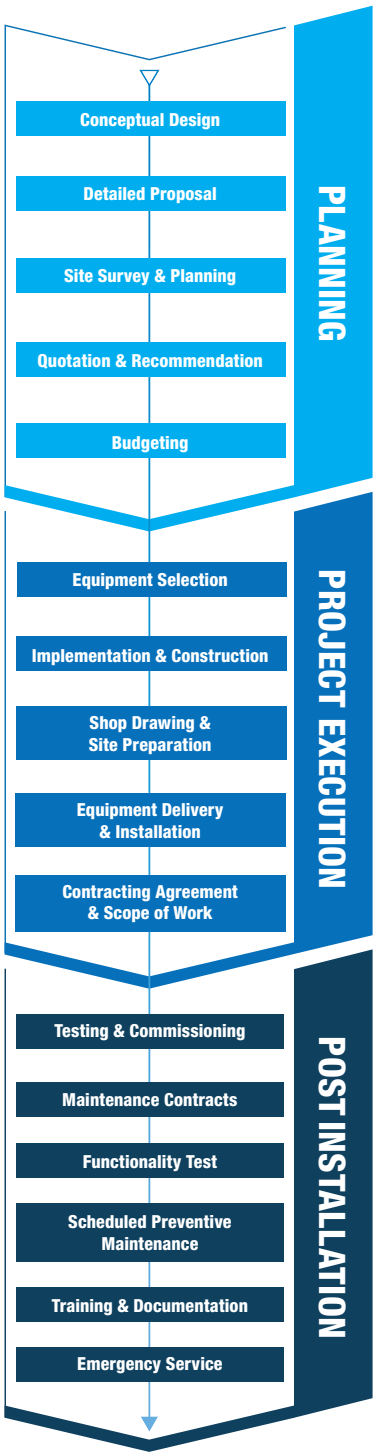



KOHLER

Nematron
BUS METER

THE KOHLER DIFFERENCE

TOTAL SYSTEM INTEGRATION



As a single-source provider, you can be confident that every power system is loaded with designed and manufactured components from Kohler. Total system integration assures you that no matter how large or complex the project, everything works together seamlessly—from generators and transfer switches to paralleling switchgear and controllers. That's The KOHLER Difference.

End-to-End Management

From planning the design and selecting the equipment to testing and commissioning, we're focused on delivering reliable, custom-designed power systems tailored to your specifications. Agile manufacturing, rigorous testing and careful commissioning assure you of a solution that fits your business—and your budget.

Customized Solutions

Your power system is customized, built and tested by a dedicated team of experienced applications engineers. They've designed power systems for hundreds of data centers and combine industry experience with Kohler's agile manufacturing process to deliver your purpose-built solution.

Local Service: Nationwide or Around the World

A single call assures you of expert support and problem resolution day or night. Kohler's worldwide dealer and distributor network has access to complete inventories of KOHLER® genuine parts and provides factory-trained service technicians who are fully vetted and thoroughly tested.

FACILITIES THAT PUT THEIR TRUST IN KOHLER® AND SDMO®

DATA CENTERS	COUNTRY	QTY	kW/kVA
Data Center	Australia	3	2500 kVA
4Degrés	Canada	3	2000 kW
OVH	Canada	3	1600 kW
Beijing Telecom	China	8	912–1760 kW
Shaanxi Telecom	China	4	1760 kW
Wanguo Data Center	China	6	1600 kW
Yangpu IDC	China	3	2000 kW
A. Reponen Oy	Finland	1	550 kVA
Etix Everywhere	France	12	300–350 kVA
IBM	France	15	650–1700 kVA
Multinational technology and consulting corporation	France	22	1000–2800 kVA
Orange	France	1	3220 kVA
SCNF	France	1	3100 kVA
Grass-Merkur	Germany	1	2200 kVA
IBM	Germany	5	2200 kVA
Multinational technology and consulting corporation	Germany	3	2200 kVA
HK Telecommunications	Hong Kong	9	2000–2250 kVA
Myint & Associates	Myanmar	3	500–1100 kVA
Datacenter that supports more than 540 companies	Netherlands	13	1400–2100 kVA
International IT infrastructure solutions provider	Netherlands	16	1540 kVA
Leading search engine company	Netherlands	5	2100 kVA
Ministry of Defense	Netherlands	5	1100 kVA
Computer Concepts	New Zealand	1	1100 kVA
Vodafone	New Zealand	3	100-650 kVA
Atende S.A.	Poland	1	700 kVA
IBM	Spain	5	200–1900 kVA
Multinational technology and consulting corporation	Spain	1	200 kVA
Multinational technology and consulting corporation	Spain	3	1400 kVA
Power and thermal management solutions company	Taiwan	4	1028 kW
National Research Center	Thailand	3	1810 kVA
Dataxion	Tunisia	1	1400 kVA
Etisalat Data Center	United Arab Emirates	3	1850 kVA
Mubadala Data Center	United Arab Emirates	1	1100 kVA
PTCL Data Center	United Arab Emirates	2	1540 kVA
Cap Gemini	United Kingdom	2	1400 kVA
Equinix	United Kingdom	7	2500 kVA
Gyron	United Kingdom	3	2200 kVA
IX Europe	United Kingdom	6	2200 kVA
AT&T	United States	26	1000–2000 kW
Bell South	United States	46	1000–2000 kW
BJC HealthCare	United States	3	800–2250 kW
Chevron	United States	2	1000 kW
Cincinnati Bell Technology Solutions	United States	13	1600–2000 kW
DIRECTV	United States	9	1000–2000 kW
Enseva	United States	2	1500 kW
FedEx	United States	5	1000–2000 kW
Home Shopping Network	United States	6	1750 kW
IBM	United States	3	1500–2000 kW
Iron Mountain Incorporated	United States	3	500–2250 kW
LexisNexis	United States	3	2000–2800 kW
Liquid Web Inc.	United States	2	1000 kW
Morgan Stanley	United States	6	1000–2000 kW
Oregon Health & Science University	United States	2	1250 kW
Quality Technology Services	United States	6	2800 kW
Spectrum Health	United States	2	2000 kW
The Home Depot	United States	5	1000–1600 kW
Verizon / Verizon Wireless	United States	18	1000–2800 kW
Washington State Department of Information Services	United States	5	2500 kW
Windstream Hosted Solutions	United States	8	2000–2500 kW

FINANCIAL INSTITUTIONS	COUNTRY	QTY	kW/kVA
Bank of Algeria	Algeria	2	1000 kVA
Scotiabank	Bahamas	1	100 kW
Teachers & Salaried Workers Co-Operative Credit Union	Bahamas	1	350 kW
Toronto-Dominion Bank Tower	Canada	1	500 kW
Fidelity Bank (Cayman) Limited	Cayman Islands	1	100 kW
Hua Xia Bank	China	2	1760 kW
People's Bank of China	China	2	1480 kW
Shanghai Rural Commercial Bank	China	6	2640 kW
BNP Paribas	France	2	1250 kVA
Crédit Agricole	France	1	1400 kVA
Large Bank	France	21	1250–2500 kVA
National Bank	France	13	1250–2800 kVA
Unibank	Haiti	2	150 kW
Award-Winning German Bank	Hong Kong	6	2000 kVA
Bank Leumi	Israel	3	1600–2250 kW
ABN-AMRO Bank	Netherlands	1	1400 kVA
Bank with offices in more than 15 countries	Netherlands	1	1400 kVA
Fortis Bank	Netherlands	2	400–630 kVA
ING Bank	Netherlands	2	2800 kVA
Bank in the capital city	Russia	4	500 kVA
Foreign investment bank	Russia	2	440 kVA
Al-Jazeera Bank	Saudi Arabia	1	180 kW
Al-Rajhi Bank	Saudi Arabia	1	400 kW
Arab National Bank	Saudi Arabia	1	910 kVA
Saudi Arabian Cooperative Insurance Co.	Saudi Arabia	4	1600 kW
Abu Dhabi Financial Center	United Arab Emirates	9	1540–2100 kVA
Financial center	United Arab Emirates	9	1540–2100 kVA
Barclays Capital	United Kingdom	19	1540–2800 kVA
Fidelity	United Kingdom	7	1000–2000 kVA
Merrill Lynch	United Kingdom	13	2200 kVA
Morgan Stanley	United Kingdom	4	2750 kVA
Société Générale	United Kingdom	1	1100 kVA
SunGard	United Kingdom	4	2500 kVA
Aetna	United States	1	1820 kW
AIG	United States	1	1600 kW
Arvest Bank	United States	24	60–1000 kW
Associated Bank	United States	3	125–1600 kW
BMW Financial Services	United States	1	1820 kW
Citigroup Inc.	United States	7	1000–1500 kW
Community Financial Services Bank	United States	2	400 kW
Countrywide	United States	1	1500 kW
Farmers Insurance Group	United States	4	1000–1250 kW
Federal Reserve Bank of Cleveland	United States	1	500 kW
Federal Reserve Bank of St. Louis	United States	2	350-2000 kW
Fiserv	United States	4	350–2000 kW
Hancock Bank	United States	1	100 kW
Humana	United States	2	1500–2000 kW
Investors Bank	United States	3	125–300 kW
Largest private bank in Vietnam	Vietnam	30	40–100 kVA
Liberty Mutual	United States	5	900–1250 kW
MetLife	United States	2	500 kW
Morgan Stanley	United States	2	2000 kW
National Penn Bank	United States	3	150 kW
Scottrade, Inc.	United States	2	1820 kW
Space Coast Credit Union	United States	6	150 kW
SunTrust Bank	United States	3	2000 kW
TD Bank, N.A.	United States	3	20–150 kW
The Hartford Financial Services Group, Inc.	United States	2	2000–2250 kW
Washington Federal Bank	United States	1	600 kW

TRUSTED EVERYWHERE

AMERICAS
North America
+1 800 544 2444

South America
+1 (305) 863 0012

EUROPE
+33 (0)2 98 41 41 41

MIDDLE EAST
+971 4 458 70 20

AFRICA
+33 (0)2 98 41 41 41

ASIA-PACIFIC
Southeast Asia
+65 6264 6422

China
+86 400 1808 900

India
+91 800 266 0600

KOHLER®
IN POWER. SINCE 1920.

Learn more at **KohlerPower.com**

PRINTED IN U.S.A 11/16 G12-461 © 2016 BY KOHLER CO.