



## Constituents Overview Sheet

The **Nasdaq OMX Clean Edge Smart Grid Infrastructure™ Index (QGRD™)** is designed to act as a transparent and liquid benchmark for the smart grid and electric infrastructure sector. The Index includes companies that are primarily engaged and involved in electric grid; electric meters, devices, and networks; energy storage and management; connected mobility; and enabling software used by the smart grid and electric infrastructure sector (including both pure play companies focused on the smart grid sector and diversified multinationals with smart grid sector exposure).

*An alternate version of the index, the **Nasdaq OMX Clean Edge Smart Grid Infrastructure Exclusions™ Index (QGRDE™)**, incorporates an ESG screening methodology identified and applied by Morningstar Sustainability. The 9 constituents excluded via this screening process, and therefore not included in QGRDE, are identified below with an asterisk next to their company name.*

COMPANY	STOCK TICKER	SECTOR	AT A GLANCE
ABB Ltd.	ABBN (Swiss)	Grid Infrastructure <b>(GI)</b> + Electric Meters, Devices & Networks <b>(EMD&amp;N)</b>	Transmission and distribution (T&D), automation, connected mobility, and digitization
Advanced Energy Industries, Inc.	AEIS	Energy Storage & Conversion <b>(ES&amp;C)</b>	Power conversion, measurement, and control solutions
Advantech Co., Ltd.	2395 (Taiwan)	Enabling Software <b>(ES)</b> + EMD&N	Industrial Internet-of-Things (IoT) and embedded boards for network edges in communication and electrical systems
* AES Corp.	AES	ES&C + GI	Energy management, energy storage, and conversion. Activities include Fluence (energy storage joint venture with Siemens) and stake in Uplight (cloud energy management for utility sector)

Alfen N.V.	ALFEN (Amsterdam)	EMD&N + GI	Netherlands-based provider of energy storage, electric vehicle (EV) charging stations, and grid-edge technologies
Allis Electric Co., Ltd.	1514 (Taiwan)	GI	Manufacturer of transformers, battery chargers, rectifiers, and other electrical products
Alupar Investimento S.A.	ALUP11 (São Paulo)	GI	T&D development company with growing investments in renewables
American Superconductor Corp.	AMSC	GI	Electronic control systems and superconductive wires for grid management/optimization, wind turbines, and control systems
Analog Devices, Inc.	ADI	ES&C	Integrated circuits for wireless infrastructure equipment, networking equipment, connected mobility, and energy management systems for industry
Aptiv Plc	APTV	EMD&N	Provider of components for automotive electrical architecture, systems integration in connectivity and security, and autonomous driving technologies
Arcosa, Inc.	ACA	GI	Energy equipment including wind turbine towers and structures for T&D
Astor Enerji A.S.	ASTOR.E (Istanbul)	GI	Manufacturer of transformers
Atkore, Inc.	ATKR	GI	Manufacturer of electrical conduits, cables, connection and protection equipment
AXIA Energia S.A.	AXIA	GI	Operator of T&D assets and a large fleet of renewable generating plants in Brazil
Azbil Corp.	6845 (Tokyo)	EMD&N + ES	Smart buildings, sensors, and energy management systems
AZZ Inc.	AZZ	GI	T&D equipment
Belden, Inc.	BDC	GI	Networking, connectivity, and cabling equipment
BELIMO Holding AG	BEAN (Swiss)	EMD&N	Manufacturer of smart building devices focused on efficient HVAC operations via sensors, meters, and controls
* BKW AG	BKW (Swiss)	GI + EMD&N	T&D and energy management consulting and services
BYD Co. Ltd.	1211 (Hong Kong)	ES&C	Electric buses, EVs, connected mobility systems, and advanced batteries for energy storage
Cenergy Holdings S.A.	CENER (Athens)	GI	Greece-based manufacturer of power cables for transmission and specialty applications
Chung-Hsin Electric & Machinery Mfg. Corp.	1513 (Taiwan)	GI	Manufacturer of T&D equipment, controls, and meters
Cisco Systems, Inc.	CSCO	ES	Global leader in networking systems and infrastructure with energy management offerings for utilities
Companhia Paranaense de Energia S.A. (COPEL)	CPLE3 (São Paulo)	GI	Transmits, distributes, and generates electric power
Contemporary Amperex Technology Co., Ltd. (CATL)	3750 (Hong Kong)	ES&C	Leading manufacturer of lithium-ion batteries and materials for EVs and grid-scale energy storage systems
Daihen Corporation	6622 (Tokyo)	GI	Manufacturer of electrical equipment for smart energy management
Digi International, Inc.	DGII	EMD&N + ES	IoT hardware, software, and services
* E.ON SE	EOAN (Xetra)	GI + EMD&N	Large Germany-based energy provider with a focus on intelligent networks and grid integration of renewable energy (RE)
Eaton Corp. Plc	ETN	ES	Intelligent power management (including energy management and building controls), vehicle electrification and connected mobility systems

* EDP S.A.	EDP (Lisbon)	GI	Portugal-based energy provider with businesses in transmission and distribution on the Iberian Peninsula and in Brazil and in renewable electricity
Elia Group S.A.	ELI (Brussels)	GI	Grid operator in Belgium and in Germany; transmission management and grid load-balancing
Emerson Electric Co.	EMR	ES	Building, power, and grid efficiency management systems and solutions
* Enel S.p.A.	ENEL (Milan)	GI + EMD&N	Italian state-owned utility with large base of T&D assets; Enel Green Power subsidiary owns and operates RE assets around the world; and Enel X, a provider of demand response solutions worldwide
Energisa S.A.	ENGI11 (São Paulo)	GI	T&D company serving 8 million people in Brazil
EnerSys	ENS	ES&C	Manufacturer and marketer of batteries for industrial applications, reserve power, and transportation
* ENGIE S.A.	ENGI (Paris)	GI + ES&C	France-based utility shifting to zero-carbon energy deployment, grid integration of RE, and connected mobility and vehicle electrification
Enphase Energy, Inc.	ENPH	ES&C	Solar inverters and controls to condition solar power for use and transmission on the grid
Equatorial S.A.	EQTL3 (São Paulo)	GI	Distributes electric power
ESCO Technologies, Inc.	ESE	EMD&N	Smart meters and other diagnostic measurement and monitoring systems
Fluence Energy, Inc.	FLNC	ES&C	Provider of utility-scale and grid-edge energy storage systems (joint-venture of Siemens and AES) with a focus on integrating renewable electricity into power pools
* Fortis, Inc.	FTS (Toronto)	GI	Canada-based electric utility holding company with investments in T&D networks
Fortune Electric Co., Ltd.	1519 (Taiwan)	GI	Manufacturer of switchboards, high and low voltage switchgears, and transformer equipment
Fuji Electric Co., Ltd.	6504 (Tokyo)	GI	Power electronics, inverters, and grid control systems
Fujikura, Ltd.	5803 (Tokyo)	GI	Power cables and components for T&D
Furukawa Electric Co., Ltd.	5801 (Tokyo)	GI	Power cables and systems for T&D infrastructure
GE Vernova, Inc.	GEV	EMD&N	Smart meters, transformers, and other power conversion products
Generac Holdings, Inc.	GNRC	ES&C	Backup power generators for residential and commercial markets with a growing focus on lithium battery systems
GS Yuasa Corp.	6674 (Tokyo)	ES&C	Stationary battery storage and automotive batteries
Hammond Power Solutions, Inc.	HPS.A (Toronto)	GI	Designer and builder of transformers
HD Hyundai Electric	267260 (Korea)	GI	Manufacturer of transmission and distribution equipment
Hitachi Ltd.	6501 (Tokyo)	EMD&N + GI	Diversified global manufacturer active in smart meters, building controls, smart devices, energy management, and grid operations
* Honeywell International, Inc.	HON	EMD&N + GI	Energy control technologies including sensing and energy efficiency products for transportation, industry, and buildings
Hubbell, Inc.	HUBB	GI	Components for T&D

Hydro One Ltd.	H (Toronto)	GI	T&D services in the Province of Ontario
Hyosung Heavy Industries Corp.	298040 (Korea)	GI	Manufacturer of transformers, gears, electric motors, and inverters
Iberdrola S.A.	IBE (Madrid)	GI	Global leader in renewables development, T&D infrastructure, and grid edge development
Iljin Electric Co., Ltd.	103590 (Korea)	GI	Manufacturer of electrical wire, transformers, and switchgear products
Infineon Technologies AG	IFX (Xetra)	EMD&N	Germany-based semiconductor producer for connected mobility, EVs, renewable energy, and electrical generation and transmission
International Business Machines Corp.	IBM	ES	Energy management hardware, software, and networks; automated metering infrastructure (AMI)
Isa Energia Brasil S.A.	ISAE4 (São Paulo)	GI	T&D networks in Brazil with concentration in the State of São Paulo
Itron, Inc.	ITRI	EMD&N + ES	Leading smart meter manufacturer; AMI solutions for electricity, gas, and water
Johnson Controls International Plc	JCI	EMD&N + ES	Intelligent energy management, smart buildings, storage, and connected mobility
Landis+Gyr Group AG	LAND (Swiss)	EMD&N + ES	Switzerland-based maker of smart and traditional meters
Legrand S.A.	LR (Paris)	EMD&N	France-based maker of equipment for intelligent energy management, controls, and connected mobility
Littelfuse, Inc.	LFUS	GI	Power control and battery management systems, fuses, sensors
LS Eco Energy Ltd.	229640 (Korea)	GI	South Korea-based cable manufacturer with significant activity in the ASEAN markets
LS Electric Co., Ltd.	010120 (Korea)	GI	T&D products and automation solutions
MasTec, Inc.	MTZ	GI	Construction of transmission, power generation, and industrial infrastructure
Meidensha Corp.	6508 (Tokyo)	GI + EMD&N	Infrastructure products for power generation, T&D, and EV connectivity and drivetrains
Mitsubishi Electric Corp.	6503 (Tokyo)	GI + EMD&N	Manufacturer of switchgear, transformers, AMI equipment and SiC-based power controls
MYR Group, Inc.	MYRG	GI	Builder of T&D, substations, and RE projects
National Grid Plc	NG. (London)	GI	T&D in U.K. and U.S.
Nexans S.A.	NEX (Paris)	GI	Cable manufacturer for high-voltage projects such as smart grids, transmission, buildings, and industrial operations
NGK Insulators, Ltd.	5333 (Tokyo)	GI	Ceramics technologies for insulation in transmission, mobile applications, and electronics; also active in utility-scale energy storage
NKT A/S	NKT (Copenhagen)	GI	Power cable manufacturer and installer across low-, medium-, and high-voltage applications
nVent Electric Plc	NVT	GI + ES&C	Electrical connection and protection solutions; focus on electric infrastructure
NVIDIA Corp.	NVDA	EMD&N	Graphics processing leader with applications in smart cities, grid edge, and connected mobility
NXP Semiconductors N.V.	NXPI	EMD&N	Smart connectivity/signal processing with applications for smart cities management and advanced mobility including autonomous vehicles

Oracle Corp.	ORCL	ES	Utility and power management software
Osaki Electric Co., Ltd.	6644 (Tokyo)	EMD&N	Maker of advanced and watt-hour meters, distribution panels, and communication devices
Panasonic Holdings Corp.	6752 (Tokyo)	ES&C	Automotive and stationary battery storage
* PFISTERER Holding SE	PFSE (Xetra)	GI	High-voltage cable connectors and accessories for transmission grids
Preformed Line Products Co.	PLPC	GI	Electrical systems and equipment manufacturing with a focus on utility overhead and underground networks
Primoris Services Corp.	PRIM	GI	Engineering and construction services for energy infrastructure
Prysmian S.p.A.	PRY (Milan)	GI	Maker of high voltage and undersea cables
QUALCOMM, Inc.	QCOM	EMD&N	Grid edge technologies for utilities, smart cities and connected mobility
Quanta Services, Inc.	PWR	GI	Designer/builder of generating stations, substations, and transmission lines
R&S Group Holding AG	RSGN (Swiss)	GI	Transformer manufacturer in Central and Eastern Europe and the Persian Gulf
Redeia Corporación S.A.	RED (Madrid)	GI	Operator of the Spanish electrical grid
Redes Energéticas Nacionais, S.A.	RENE (Lisbon)	GI	Operator of the Portuguese electrical grid
Renesas Electronics Corp.	6723 (Tokyo)	EMD&N	Electronic components for smart meters, inverters, and connected mobility
Samsung SDI Co., Ltd.	006400 (Korea)	ES&C	Lithium-ion batteries for connected devices, EVs, and stationary storage
Sanil Electric Co., Ltd.	062040 (Korea)	GI	Manufacturer of transformers active in the USA, India, South Korea and Japan
SAP SE	SAP (Xetra)	ES	Software for electric utility meter and device management, grid asset and work management, and advanced analytics
Schneider Electric SE	SU (Paris)	EMD&N + ES	Wide range of energy management systems, industrial controls, and interconnection components
Shihlin Electric & Engineering Corp.	1503 (Taiwan)	GI	Manufacturer of equipment for electrical distribution, electrification, and automation
Siemens AG	SIE (Xetra)	GI + EMD&N	Diversified German company active in T&D, smart infrastructure, and connected mobility
SMA Solar Technology AG	S92 (Xetra)	ES&C	Inverters and other components for residential and utility-scale solar photovoltaic (PV) systems
SolarEdge Technologies, Inc.	SEDG	ES&C	Solar PV inverters; moving into EV infrastructure
SPIE S.A.	SPIE (Paris)	GI	Engineering services company with activities in transmission infrastructure and smart cities
SSE Plc	SSE (London)	GI	T&D in Scotland and Northern England. Offers substation, distribution and monitoring and control systems and EV charging equipment and controls for RE systems
Stella-Jones, Inc.	SJ (Toronto)	GI	Canada-based producer of wooden utility poles
STMicroelectronics N.V.	STM	EMD&N	Electronic components for smart meters, smart grid, and connected mobility
Sumitomo Electric Industries, Ltd.	5802 (Tokyo)	GI	Legacy copper wire company with activities in T&D, automotive and electronics industries

Ta Ya Electric Wire & Cable Co., Ltd.	1609 (Taiwan)	GI	Manufacturer and distributor of high voltage electric power cables and wires
Taihan Cable & Solution Co., Ltd.	001440 (Korea)	GI	Manufacturer of electric wires and cables including HVDC lines, along with grid construction and engineering services
Takaoka Toko Co., Ltd.	6617 (Tokyo)	EMD&N	Manufacturer of transformers, advanced metering systems, and EV charging systems
Tatung Co.	2371 (Taiwan)	GI	Manufacturer of transformers and electrical equipment for power grids
TERNA S.p.A.	TRN (Milan)	GI	Owner/operator of Italian national grid
Tesla, Inc.	TSLA	ES&C	EVs, residential and commercial battery storage, solar panels & inverters
Texas Instruments Inc.	TXN	EMD&N	Electronic components to support power conversion, grid communication, smart meters, EV charging infrastructure, and energy storage
Transmissora Aliança de Energia Elétrica S.A. (TAESA)	TAE11 (São Paulo)	GI	Engages in the construction, operation, and maintenance of electricity transmission lines in Brazil
Trimble, Inc.	TRMB	ES	Utility software services including GPS-based grid management and outage control; vehicle fleet and autonomous vehicle management
Valmont Industries, Inc.	VMI	GI	Steel and cement pole structures for T&D
Verbund AG	VER (Vienna)	GI	Operator of the Austrian grid with activities in renewable electricity and grid edge development in Central and Eastern Europe
Voltronic Power Technology Corp.	6409 (Taiwan)	ES&C	Manufacturer of transformers, substations, electrical panels, and electric motors
Wasion Holdings Ltd.	3393 (Hong Kong)	EMD&N	Manufacturer and developer of advanced metering systems, smart power distribution systems, and software
* WEG S.A.	WEGE3 (São Paulo)	GI	Designer and manufacturer of uninterruptible power supplies, inverters, and EV charging systems
WESCO International, Inc.	WCC	EMD&N + GI	Cable and conduit products, electrical distribution, controls, and automation
Willdan Group, Inc.	WLDN	ES	Energy efficiency and energy management technologies and consulting services

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