38th

POWER GENERATION ORDER SURVEY

www.dieselgasturbine.com
Diesel & Gas Turbine Worldwide's Power Generation Order Survey is part of three surveys designed to provide details on the markets of large horsepower reciprocating engines, steam turbines and gas turbines used in power generation, marine propulsion and mechanical drive applications.

We divide the data into three reports in order to provide a more in-depth look at each market segment. The Power Generation Order Survey examines reciprocating engines, steam turbines and gas turbines for power generation service. The Mechanical Drive Order Survey (to appear in the June issue) is devoted to engine orders for mechanical drive applications including pumps, compressors, oil exploration machinery, rail and other industrial applications. The Marine Propulsion Order Survey (to appear in the July/August issue) examines mechanical drive, auxiliary and diesel-electric marine propulsion systems.

**Procedures**

The Power Generation Order Survey includes reciprocating engines starting at 500 kW, gas turbines rated 1.0 MW and above, and steam turbines.

New orders are broken into types of generating service — standby, peaking and continuous. Manufacturers provide their own distinction between peaking and standby service; however, standby service typically refers to power generation in backup or emergency service. Peaking service is associated with power generation in conjunction with local utilities. The time that peak service operates is dependent on the condition of the local electrical grid. Continuous service typically refers to continuous power generation, stopping only for maintenance or unexpected outages.

An accompanying table identifies those companies that participated in the 2014 survey. Every effort is made to ensure that this survey is as complete and comprehensive as possible.
and would not have the level of detail it contains without the generous contributions of the participating companies.

**Overview**

The year 2013 revealed growth for all reported driver types in our annual Power Generation Order Survey. It is important to note that fluctuations in OEM participation beyond our control influence year-over-year comparisons. That being said, however, the 2014 Power Generation Order Survey (2013 reporting data) reveals continued strength in the prime mover, power generation marketplace.

Reciprocating engine orders total 31,816 units, beating last year’s count by 0.4%.

Gas turbine orders rose by 58% compared to last year’s report. The 2014 Survey reveals 710 gas turbine orders, while 447 orders were reported in the 2013 Survey.

Steam turbine orders set a new high-water mark for the Power Generation Order Survey this year, logging 163 units, a 27% increase compared to the 2013 Survey.

Total units ordered in 2013 (combined gas turbine, steam turbine and reciprocating engine order data) were 32,689, a 0.3% increase compared to 2012.

North America claimed the top geographic location for all reported driver types in 2013 with 6,470 units ordered. The United States’ shale fields once again played a prominent factor. The Far East beat out the Middle East and Western Europe for the number two spot.

The top five markets revealed in the 2014 Power Generation Order Survey are: North America (20%), Far East (16%), Middle East (14%), Western Europe (13%) and Central Asia (11%).

The 2014 Power Generation Order Survey reveals a 29% growth spike for the Far East compared to last year. Japan’s use of fossil-fueled power generation remains high following the Tohoku earthquake and related tsunami that led to the destruction of Tokyo Electric Power Co.’s Fukushima Daiichi nuclear power plant and subsequent outages at other plants. The decline in nuclear power has been compensated in large part by LNG, which analysts quantify accounts for 48% of Japan’s energy mix.

Now consider China, which is ranked as the largest energy consumer and producer in the world. China’s rapidly increasing energy demand, especially for liquid fuels, will help keep the Far East as a top geographic destination in the Power Generation Order Survey for the foreseeable future.

**Diesel, Dual-Fuel And Gas Engine Orders**

The number of diesel, dual-fuel and natural gas engines ordered in 2013 totaled 31,816, an increase of 0.4% compared to last year’s survey. The majority of orders (56%) were once again in the power range of 500 kW to 1 MW, followed by the 1.01 to 2.00 MW range (33%).

The 2014 Survey reveals 51% of the orders received were destined for standby service, followed by continuous duty at 45%. Peaking service represented roughly 3% of the orders.

Engine operating speeds above 1000 r/min comprised 98% of the total units ordered in 2013.

Diesel fuel continued its domination as the preferred fuel for reciprocating engines in power generation applications, claiming 90% of the...
Diesel & Gas Turbine Worldwide

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system efficiency, facilitate investment in the power grids and alleviate power shortages. The Chinese government has prioritized the expansion of natural gas-fired and renewable power plants as well as the electricity transmission systems to connect more remote power sources to population centers.

Gas Turbines

Gas turbine orders reported in the 2014 Survey totaled 710 units, up 58% compared to last year. Gas turbines rated 30.01 to 60.00 MW saw the most activity, accounting for 23% of the orders.

Natural gas was the dominant fuel type (52%), followed by dual fuel (22%), diesel fuel (13%) and heavy fuel (12%).

The U.S. shale boom continued to keep North America atop the geographic destination list for recip, but unless the country gets serious in developing an export infrastructure, it won’t hold the top spot for long.

The Far East’s jump to second-highest geographic destination is evidence that China, which holds the title of world’s most populous country, is making progress in developing its energy infrastructure.

China’s electric generation is primarily controlled by state-owned holding companies. China is seeking to improve reported engines fuel type. Natural gas represented 9%.

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The Far East was the top geographic location for gas turbine orders (36%). Southeast Asia & Australia claimed
the number two spot (10%), followed by the Middle East (9%).

China’s growing need for reliable energy, coupled with nuclear power’s continued uncertainty, should keep the Far East atop the geographic destination for gas turbines for years to come.

Steam Turbines

Steam turbine orders totaled 163 units in the 2014 Survey, an increase of 27% compared to last year.

Units rated 1.01 to 5.00 MW saw the most demand, accounting for 33% of all steam turbine orders.

All units were classified as continuous duty.

Southern Asia & Australia was the top geographic location (31%), followed by Western Europe (15%) and North America (12%).

Annual Surveys

On behalf of Diesel & Gas Turbine Worldwide, thank you to all contributors for your continued participation in this annual survey process. It is our hope that the three surveys combined will provide an accurate snapshot of the entire large engine landscape, with fine-tuned detail provided for three market segments through each individual report—power generation, mechanical drive and marine propulsion. Electronic versions of past surveys are available at our website: www.dieselgasturbine.com. Questions, comments and suggestions should be directed to bhaight@dieselpub.com.

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### Power Generation Order Survey Participants

#### Diesel, Dual-Fuel And Gas Engine Manufacturers
- Caterpillar Energy & Transportation
- Caterpillar Inc.
- Cummins Power Generation
- Dresser-Rand, Guascor
- Fairbanks Morse
- GE Power & Water
- Hyundai Heavy Industries Co. Ltd.
- MAN Diesel & Turbo (including license built engines)
- Mitsubishi Heavy Industries Ltd.
- MWM
- Niigata Power Systems Co. Ltd.
- Pervomaisk/DieselMash (PDM)
- Rolls-Royce
- Rolls-Royce Power Systems AG
- Wärtsilä Corp.,
- Power Plants
- Yanmar Co. Ltd.

#### Gas Turbine Manufacturers
- Ansaldo Energia S.p.A.
- GE Oil & Gas
- GE Power & Water
- Kawasaki Heavy Industries Ltd.
- MAN Diesel & Turbo SE
- Mitsubishi Hitachi Power Systems Ltd.
- Niigata Power Systems Co. Ltd.
- OPRA Turbines
- Power Machines

#### Steam Turbine Manufacturers
- Ansaldo Energia S.p.A.
- Dresser-Rand Co.
- Elliott Group
- Fincantieri S.p.A. - Marine Systems and Components
- Business Unit
- GE Oil & Gas

### Country Information For Regions/Regional Codes, D&GTW Annual Market Surveys

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