

43RD POWER GENERATION ORDER SURVEY

An overview of the market in 2019. By **Jack Burke**

For more than 40 years, Diesel & Gas Turbine Worldwide's Power Generation Order Survey provided information on the markets of larger reciprocating engines, steam turbines and gas turbines used in power generation. Data from the Power Generation Survey – as well as our Marine Propulsion Order Survey and Mechanical Drive Order Survey – have been used by myriad industry professionals (from prime-mover OEMs to component suppliers to aftermarket service providers) as a way to gauge the strength of the marketplace.

Unfortunately, we were unable to publish the order surveys in 2019 because a few, key manufacturers declined to participate. One cited insufficient staffing to provide the information requested. When another manufacturer learned that company would not participate, it withdrew as well.

Over the years, it's been common for companies to participate one year and refrain the next, or to take part for several years in a row but then decline for one reason or another. But the drop in participation last year left too many holes in the surveys, lessening their value to our readers and, if published as-is, were potentially unfair to the companies that did provide their information.

We've always looked at the surveys as a snapshot of the market and not an exhaustive overview of all engine and turbine sales. There are several companies



that provide more granular details on engine and turbine sales, but those reports come at a price. Diesel & Gas Turbine Worldwide's order surveys have always been provided free to our readers. We think the information within the reports provides value, which is why we've made another attempt to publish the surveys.

PROCEDURES

This year's Power Generation Order Survey, which reflects 2019 calendar year data, includes reciprocating engines starting at 500 kW; gas turbines and steam turbines rated 1.0 MW and above. Information was provided by the companies at their discretion or derived from publicly available sales information.

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 used 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 chart shows the geographic breakdown we provide OEMs, highlighting the specific countries within the reported geographic regions.

Every effort is made to ensure that this

MARKET SURVEY: 43RD POWER GENERATION ORDER SURVEY

RECIPROCATING ENGINE (DIESEL, DUAL-FUEL & GASEOUS-FUEL) POWER GENERATION ORDERS, January to December 2019

Output Range (MW)	Number of Units	Total Engine Output for Each Output Range (MWe)	Generating Service			Engine operating speed ranges				Fuel					Western Europe	Eastern Europe, Russia & CIS	Middle East	Far East	Southeast Asia & Australia	Central Asia	North Africa	Central, West, East & South Africa	North America	Central America & Caribbean	South America
			Standby	Continuous Duty	Peaking	Below 300 r/pm	300 to 600 r/pm	720 to 1000 r/pm	Above 1000 r/pm	Diesel Fuel	Heavy Fuel	Dual Gas	Liquid Biofuel	Natural Gas											
0.50 to 1.00	6831	4282	3498	107	3226	0	0	5	6826	6112	2	0	0	717	1377	261	1165	391	464	682	39	417	1333	167	523
1.01 to 2.00	7171	8697	3093	257	3821	0	0	6	7164	5902	1	0	0	1268	1236	356	1400	762	667	583	51	753	725	371	273
2.01 to 3.50	4394	11363	3527	126	741	0	0	6	4388	3876	2	0	0	516	725	98	127	932	227	133	26	41	1758	36	282
3.51 to 5.00	298	2186	98	0	200	0	0	1	297	94	7	0	0	192	96	101	0	13	1	10	0	30	30	3	14
5.01 to 7.50	56	1491	37	0	1	0	0	5	33	52	0	0	0	4	0	0	0	15	0	0	0	1	19	0	4
7.51 to 10.00	33	393	28	0	15	0	0	40	3	18	3	0	0	12	12	0	0	0	0	11	0	2	0	1	1
10.01 to 15.00	2	23	0	0	2	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	6	0	0	0
15.01 to 20.00	6	91	0	0	6	0	0	0	6	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
20.01 to 30.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
30.01 and above	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTALS	27891	28526	10281	490	8012	0	0	63	18719	16054	23	0	0	2709	3446	816	2692	2113	1359	1419	116	1250	3865	578	1097

STEAM TURBINE POWER GENERATION ORDERS, January to December 2019

Output Range (MW)	Number of Units	Total Engine Output for Each Output Range (MWe)	Generating Service			Steam Turbine Types					Western Europe	Eastern Europe, Russia & CIS	Middle East	Far East	Southeast Asia & Australia	Central Asia	North Africa	Central, West, East & South Africa	North America	Central America & Caribbean	South America
			Standby	Continuous Duty	Peaking	Condensing	Non-condensing	Reheat	Extraction	Induction											
0.0 to 1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.01 to 5.00	3	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5.01 to 10.00	7	56	0	0	1	1	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0
10.01 to 30.00	3	73	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0
30.01 to 60.00	8	324.2	0	3	4	5	1	0	5	3	2	1	3	1	1	0	0	0	0	0	0
60.01 to 120.00	5	294	0	1	3	2	1	1	1	0	1	1	0	1	0	0	0	1	0	0	0
120.01 to 200.00	6	1023	0	0	6	6	0	0	0	0	0	0	1	0	0	0	0	6	0	0	0
200.01 to 300.00	9	1872	0	0	9	7	0	4	0	0	3	2	2	0	0	0	0	2	0	0	0
300.01 to 500.00	6	2260	0	0	6	6	0	0	0	0	0	0	0	2	0	1	0	2	1	0	0
500.01 to 700.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
700.01 to 1000.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1000.01 and above	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTALS	47	5908.2	0	4	29	27	2	5	6	3	13	4	6	4	1	1	0	1	10	1	0

GAS TURBINE POWER GENERATION ORDERS, January to December 2019

Output Range (MW)	Number of Units	Total Engine Output for Each Output Range (MWe)	Generating Service			Fuel				Western Europe	Eastern Europe, Russia & CIS	Middle East	Far East	Southeast Asia & Australia	Central Asia	North Africa	Central, West, East & South Africa	North America	Central America & Caribbean	South America
			Standby	Continuous Duty	Peaking	Diesel Fuel	Heavy Fuel	Dual Fuel	Natural Gas											
1.00 to 2.00	93	130.5	89	0	4	43	39	7	4	4	0	0	89	0	0	0	0	0	0	0
2.01 to 3.50	26	71	26	0	0	9	10	7	0	0	0	0	26	0	0	0	0	0	0	0
3.51 to 5.00	68	279.7	57	0	11	28	30	1	9	4	0	2	60	2	0	0	0	0	0	0
5.01 to 7.50	72	405.5	20	0	50	20	2	0	50	4	0	4	20	5	2	10	3	24	0	0
7.51 to 10.00	25	198.7	1	0	24	10	0	0	15	7	1	0	3	1	0	0	13	0	0	0
10.01 to 15.00	24	305.6	0	0	24	7	0	0	17	2	0	0	6	3	1	0	8	3	1	0
15.01 to 20.00	23	312.8	2	0	17	9	0	0	14	2	0	1	0	4	0	0	5	9	0	2
20.01 to 30.00	14	239.6	3	0	6	0	0	5	9	2	0	0	0	0	0	5	0	3	0	4
30.01 to 60.00	59	1651	0	6	28	0	0	27	32	8	6	5	3	5	7	0	10	1	14	0
60.01 to 120.00	23	765	0	1	9	0	0	0	23	5	12	1	4	0	0	0	1	0	0	0
120.01 to 180.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
180.01 and above	35	11266	0	4	31	0	0	0	35	4	2	6	13	3	2	0	0	2	0	3
TOTALS	462	15624.4	198	11	204	126	81	47	208	42	21	19	224	23	12	15	16	65	2	23

survey is as complete and comprehensive as possible.

The survey would not have the level of detail it contains without the generous contributions of the participating companies, for which we are grateful.

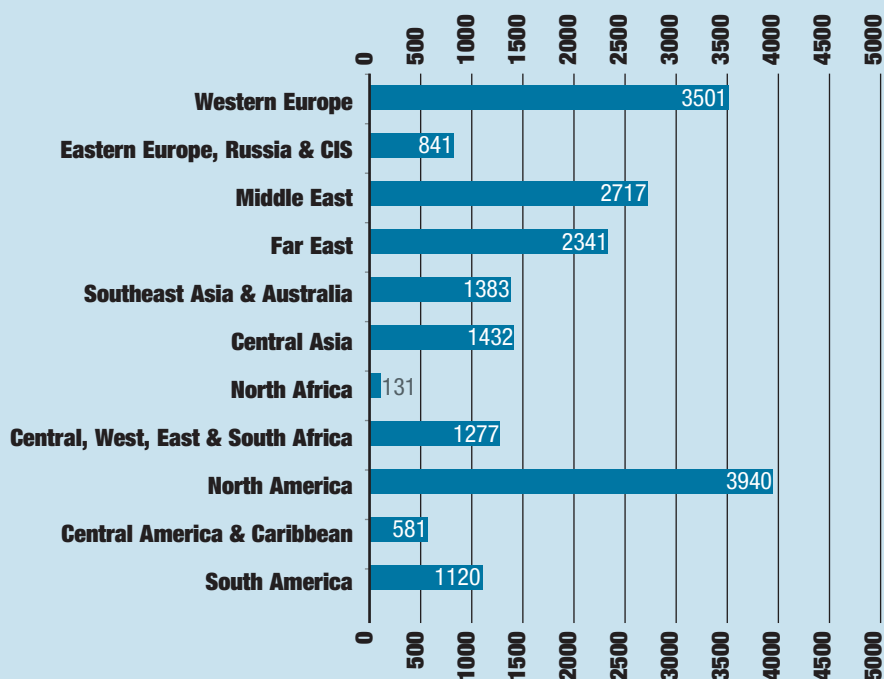
It is important to note, some units reported in the Power Generation Order Survey did not have complete information. In some cases OEMs chose not to provide generating service, fuel type or geography for some of their reported orders.

Also, this is the first survey which relied on publicly available sales data, which did not provide specific information such as output range, fuel type or generating service.

It should also be noted that when contacted after not responding, some companies simply said they had no sales in a particular segment, so felt no need to respond to the survey.

Other companies completed one segment of the Power Generation Order Survey, but cited difficulty in gathering information

2019 COMBINED ENGINE ORDERS



ANNUAL SURVEYS

On behalf of Diesel & Gas Turbine Worldwide, thank you to all contributors for your continued participation in this survey process. It is our hope that our annual 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.diesलगasturbine.com. Questions, comments and suggestions should be directed to jack.burke@khl.com.

as the reason for not completing another segment. Engine manufacturers in certain markets have declined to participate over the years as well.

Because of those limitations, the Power Generation Order Survey should be seen as a snapshot of the market in 2019.

Overall, we hope the results reflect what is happening in the power generation market and we hope it will continue in the years to come.

COUNTRY INFORMATION FOR REGIONS/REGIONAL CODES

WESTERN EUROPE

(without Eastern Europe): Andorra; Austria; Belgium; Denmark; Finland; France; Germany; Greece; Iceland; Liechtenstein; Luxembourg; Italy; Ireland; Netherlands; Malta; Norway; Portugal; San Marino; Slovenia; Spain; Sweden; Switzerland; United Kingdom;

EASTERN EUROPE,

RUSSIA & CIS: Albania; Armenia; Azerbaijan; Belarus; Bosnia and Herzegovina; Bulgaria; Croatia; Czech Republic; Estonia; Georgia; Hungary; Kazakhstan; Kyrgyzstan; Latvia; Lithuania; Moldova; Poland; Republic of Macedonia; Romania; Russia; Serbia; Slovak Republic; Tajikistan; Turkmenistan; Ukraine; Uzbekistan;

MIDDLE EAST: Bahrain; Cyprus; Egypt; Iran; Iraq; Israel; Jordan; Kuwait; Lebanon; Oman; Qatar; Saudi Arabia; Syria; Turkey; United Arab Emirates; Yemen
FAR EAST: China; Hong Kong; Japan; Mongolia; North Korea; South Korea; Taiwan;
SOUTHEAST ASIA & AUSTRALIA: Australia; Brunei; Burma; Cambodia;

Fiji Islands; Indonesia; Kiribati; Laos; Malaysia; Marshall Islands; Micronesia; Palau; Papua New Guinea; Philippines; Samoa; Singapore; Solomon Islands; Tahiti; Tonga; Thailand; Tuvalu; Vanuatu; Vietnam
CENTRAL ASIA: Afghanistan; Bangladesh; India; Maldives Islands; Nepal; Pakistan; Sri Lanka
NORTH AFRICA: Algeria;

Libya; Morocco; Tunisia;
CENTRAL, WEST, EAST & SOUTH AFRICA: Botswana; Comoros; Congo; Cote d'Ivoire; Djibouti; Eritrea; Ethiopia; Gambia; Ghana; Madagascar; Malawi; Mozambique; Seychelles; Somalia; Sudan; Tanzania; Angola; Benin; Burkina Faso; Burundi; Cameroon; Cape Verde; Cen. African Rep.; Chad; Equatorial

Guinea; Gabon; Guinea; Guinea Bissau; Ivory Coast; Kenya; Lesotho; Liberia; Mali; Mauritania; Mauritius; Namibia; Niger; Nigeria; Rwanda; Senegal; Sierra Leone; South Africa; Swaziland; Togo; Uganda; Zaire; Zambia; Zimbabwe;
NORTH AMERICA: Canada; U.S.A.
CENTRAL AMERICA & CARIBBEAN: Bahamas;

Bermuda; Belize; Costa Rica; Cuba; Dominica; Domin. Republic; El Salvador; Guatemala; Haiti; Honduras; Jamaica; Mexico; Nicaragua; Panama; Puerto Rico; Virgin Islands; West Indies
SOUTH AMERICA: Argentina; Bolivia; Brazil; Chile; Colombia; Ecuador; Guyana; Paraguay; Peru; Surinam; Uruguay; Venezuela

COMPANIES INCLUDED IN THE SURVEY

RECIPROCATING ENGINES

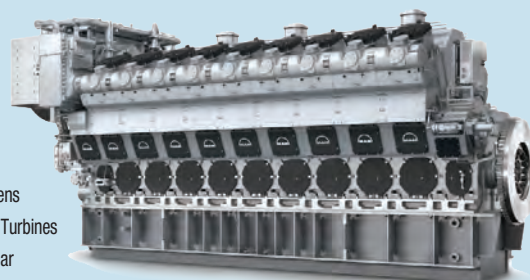
- Caterpillar
- (includes Perkins, FG Wilson and MWM)
- Cummins
- (from public records)
- IHI
- INNIO
- Liebherr
- Rolls-Royce
- Siemens
- Yanmar

STEAM TURBINES

- Ansaldo Energia
- Baker Hughes
- Doosan Skoda
- Fincantieri
- GE Power
- MAN Energy Solutions

GAS TURBINES

- Ansaldo Energia
- Baker Hughes
- GE Power
- IHI Power
- Kawasaki
- MAN Energy Solutions
- Siemens
- Solar Turbines
- Yanmar



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