Diesel & Gas Turbine
WORLDWIDE
DEDICATED TO ENGINE ROOM PRODUCTS, TECHNOLOGIES & NEWS

2010 Marine Propulsion Order Survey

Power Generation • Marine Propulsion • Oil & Gas • Rail Traction

MECHANICAL DRIVE DIESEL MARINE PROPULSION ORDERS, January – December 2009*

Output Range (MW)	Number of Units	Total Engine Output for Each Engine Range (MW)	Engine Operating Speed Ranges (r/min)				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
			Below 300	300 to 600	720 to 1000	Above 1000	Diesel Fuel	Heavy Fuel	Natural Gas											
0.50 to 1.00	2319	1613	1	8	17	2293	2309	10	0	596	22	39	786	734	47	0	2	361	4	55
1.01 to 2.00	1419	2029	5	7	199	1208	1337	82	0	527	33	51	365	176	17	0	0	215	5	30
2.01 to 3.50	191	320	20	3	101	0	20	50	0	3	0	1	46	14	0	0	4	53	0	4
3.51 to 5.00	70	276	17	15	13	25	34	36	0	11	1	0	54	1	0	0	0	2	0	1
5.01 to 7.50	143	855	113	12	18	0	12	131	0	1	2	0	140	0	0	0	0	0	0	0
7.51 to 15.00	313	3198	282	19	12	0	10	303	0	10	5	0	287	5	0	4	0	0	0	2
15.01 to 30.00	96	1824	96	0	0	0	0	96	0	0	0	0	90	6	0	0	0	0	0	0
30.01 to 50.00	22	696	22	0	0	0	0	22	0	0	0	0	22	0	0	0	0	0	0	0
50.01 and above	14	778	14	0	0	0	0	14	0	0	0	0	14	0	0	0	0	0	0	0
Totals	4587	11 589	570	64	360	3526	3722	744	0	1148	63	91	1804	936	64	4	6	631	9	92

*Geographic location is at the shipbuilding site

2010 Marine Propulsion Order Survey

A review of mechanical drive, auxiliary and diesel-electric marine propulsion orders in 2009

The 2010 *Diesel & Gas Turbine Worldwide* Marine Propulsion Order Survey introduces a major change to the structure, analysis and reporting of our annual survey. Beginning in 2010, we will now provide regular calendar year reporting, January through December, versus the previous June to May reports. The change is in response to strong input from many of the companies that provide the data that makes up each of our surveys.

Diesel & Gas Turbine Worldwide will change to calendar-year reporting structure for all our annual surveys, including the Mechanical Drive Order Survey that will appear in the July-August issue. In doing so, the hope is the data will align with typical reporting sources for a more accurate reflection of year-over-year sales. As much reporting like this is done on an annual basis throughout the world, our three surveys now reflect that as well.

Diesel & Gas Turbine Worldwide's Marine Propulsion Order Survey is the second of three surveys designed to provide details on the markets of larger reciprocating engines, gas turbines and more recently steam 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, which appeared in the May issue, examines reciprocating engines, steam turbines and gas turbines for power generation service. The Marine Propulsion Order Survey examines mechanical drive, auxiliary and diesel-electric marine propulsion systems. The Mechanical Drive Order Survey is devoted to engine orders for mechanical drive applications including pumps, compressors, oil exploration machinery and other industrial applications.

Procedures

The Marine Propulsion Order Survey includes drivers beginning at 500 kW (0.5 MW). New orders are broken into Diesel-Electric, Mechanical Drive and Auxiliary Generating Set Orders. Fuel types include diesel fuel, heavy fuel and natural gas, but no natural gas-fueled engines were reported in the 2010 survey.

Data in the survey was provided by participating OEMs.

An accompanying table identifies those companies that participated in the 2010 survey. Every effort is made to make this survey as complete and comprehensive as possible and would not have the level of detail it contains without the generous support of the participating companies.

It is important to note that the data in this survey does not represent units shipped, but only the total orders received during calendar year 2009.

For reference, the geographic breakdown that was presented to the participating companies along with the survey forms is included in this report.

Overview

The change in reporting period makes year-to-year comparison impossible, but certain observations can be made. It will come as no surprise that markets were down across the board in 2009. Once again, myriad factors came into play that were well beyond the control of the marine industry, such as economic, political and environmental changes. But there seems to be hope and optimism gaining steam on the horizon. Shipyards are getting back to work. Some have reported an up-tick in repower jobs thanks to changes in environmental regulations. Shipyards along the Gulf Coast of the United States have begun hiring to fulfill orders. The question that now looms is what effect the Deepwater Horizon catastrophe will have on Gulf Coast shipyards in the coming months.

Once again, the Far East saw the most activity during the reporting period. The two largest shipbuilding nations — South Korea and China —

MARINE AUXILIARY GENERATING SET ORDERS, January – December 2009*

Output Range (MW)	Number of Units	Total Engine Output for Each Output Range (MW)	Engine Operating Speed Ranges (r/min)			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
			300 to 600	720 to 1000	Above 1000	Diesel Fuel	Heavy Fuel											
0.50 to 1.00	2876	2034	0	1534	1340	1171	1705	358	13	14	2122	213	18	0	10	94	7	27
1.01 to 2.00	998	1377	0	613	385	389	609	125	23	2	685	52	4	3	1	90	2	11
2.01 to 3.50	326	818	0	189	137	140	186	107	0	2	186	15	0	0	0	14	0	2
3.51 to 5.00	122	559	0	119	3	3	119	0	0	0	111	0	11	0	0	0	0	0
5.01 and above	4	20	0	3	1	4	0	1	0	0	3	0	0	0	0	0	0	0
Totals	4326	4808	0	2458	1866	1707	2619	591	36	18	3107	280	33	3	11	198	9	40

*Geographic location is at the shipbuilding site

remained active despite a global slowdown, but certainly not at 2008 levels.

Russia's shipbuilding demands will come into effect in the coming years as Q4 announcements unveiled the country's plans for new shipyards. Russia is aggressively expanding its shipbuilding capabilities by signing partnerships with shipbuilders in other countries. Russia's OAO United Shipbuilding Corp., for example, has agreed to build a shipyard based in Bolshoy Kamen in partnership with South Korean builder Daewoo Shipbuilding and Marine Engineering Ltd.

Mechanical Drive Orders

Total reported mechanical drive propulsion orders were 4587 units in 2009. Smaller-sized units (0.5 to 1.0 MW) represented about 51% of the total orders, followed by 1.01 to 2.00 MW output engines with roughly 31%.

Engines operating at speeds above 1000 r/min comprised 77% of the total units ordered in 2009. Diesel-fueled engines represented 81% of all engines ordered. There were no natural gas-fueled engines reported to this survey in 2009.

The geographic breakdown of mechanical drive marine orders reflects the strong shipbuilding presence of China and South Korea. Top markets were the Far East, which received 39% of the units, followed by Western Europe with 25% and Southeast Asia & Australia, which received 20% of the total reported engines.

Country Information for Regions/Regional Codes *D&GTW* Annual Market Surveys

#1 – 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

#2 – 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
Slovac Republic
Tajikistan
Turkmenistan
Ukraine
Uzbekistan

#3 – Middle East
Bahrain
Cyprus
Egypt
Iran
Iraq
Israel
Jordan
Kuwait
Lebanon
Oman
Qatar
Saudi Arabia
Syria
Turkey
United Arab Emirates
Yemen

#4 – Far East
China
Hong Kong
Japan
Mongolia
North Korea
South Korea
Taiwan

#5 – 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

#6 – Central Asia
Afghanistan
Bangladesh
India
Maldives Islands
Nepal
Pakistan
Sri Lanka

#7 – North Africa
Algeria
Libya
Morocco
Tunisia

#8 – Central, West, East & South Africa
Angola
Benin
Botswana
Burkina Faso
Burundi
Cameroon
Cape Verde
Cen. African Rep.
Chad
Comoros
Congo
Cote d'Ivoire
Djibouti
Equatorial Guinea
Eritrea
Ethiopia
Gabon
Gambia
Ghana
Guinea
Guinea Bissau
Ivory Coast
Kenya
Lesotho
Liberia
Madagascar
Malawi
Mali
Mauritania
Mauritius
Mozambique
Namibia
Niger
Nigeria
Rwanda
Senegal
Seychelles
Sierra Leone
Somalia
South Africa
Sudan
Swaziland
Tanzania
Togo
Uganda
Zaire
Zambia
Zimbabwe

#9 – North America
Canada
U.S.A.

#10 – 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

#11 – South America
Argentina
Bolivia
Brazil
Chile
Colombia
Ecuador
Guyana
Paraguay
Peru
Surinam
Uruguay
Venezuela

DIESEL-ELECTRIC MARINE PROPULSION ORDERS, January – December 2009*																		
Output Range (MW)	Number of Units	Total Engine Output for Each Output Range (MWe)	Engine Operating Speed Ranges (r/min)			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
			300 to 600	720 to 1000	Above 1000	Diesel Fuel	Heavy Fuel											
0.50 to 1.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1.01 to 2.00	57	207	0	22	35	35	22	2	0	0	35	3	0	0	0	7	4	6
2.01 to 3.50	179	431	0	16	163	164	15	76	2	0	36	22	0	0	0	43	0	10
3.51 to 5.00	92	350	4	76	12	82	10	3	2	0	6	64	0	5	0	8	0	4
5.01 to 7.50	48	249	0	39	9	20	28	16	0	0	28	0	0	0	0	4	0	0
7.51 and above	13	130.2	6	7	0	7	6	11	0	0	2	0	0	0	0	0	0	0
Totals	389	1367.2	10	160	219	308	81	108	4	0	107	89	0	5	0	62	4	20

*Geographic location is at the shipbuilding site

Auxiliary Generating Set Orders

Marine auxiliary gen-sets totaled 4326 units in the 2009 survey. Engines in the output range of 0.5 to 1.00 MW make up 47% of the total, followed closely by engines in the output range of 1.01 to 2.00 MW, which accounted for 32% of the total units ordered.

Engines operating at speeds between 720 and 1000 r/min received 56% of the reported orders. Heavy fuel accounted for 61% of all engines ordered.

The Far East proved to be the top geographic location for marine auxiliary gen-set orders, accounting for 72% of the orders. Rounding out the top three geographic locations, Western Europe came in a distant second to the Far East with 17% of the orders, followed by Southeast Asia & Australia, which accounted for 6%.

Diesel-Electric Orders

Diesel-Electric orders accounted for 389 units, with 46% falling into the 2.01 to 3.50 MW output range.

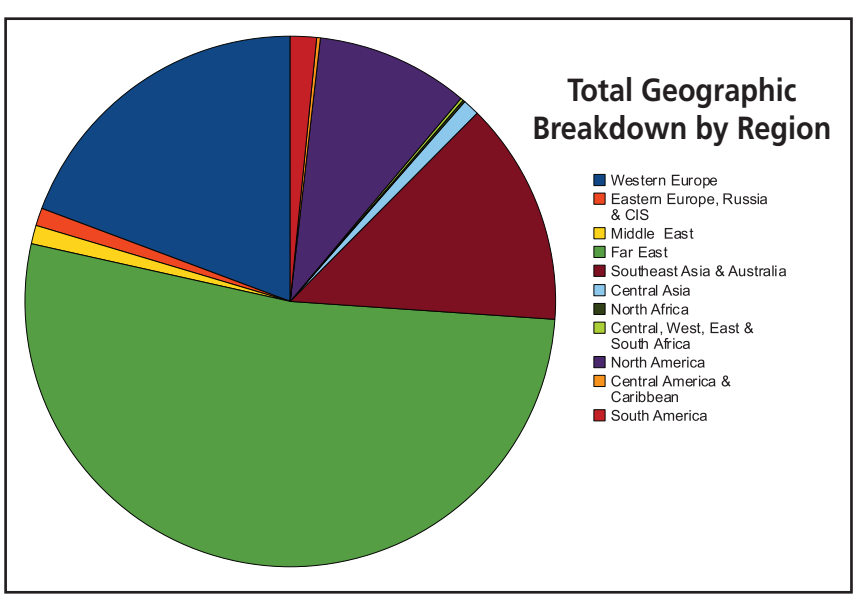
Engines operating at speeds above 1000 r/min received 56% of the reported orders. Diesel fuel accounted for 79% of all engines ordered.

Western Europe edged out the Far East by one order to claim the top geographic location. Top three locations were Western Europe with 108 orders, Far East with 107 orders and Southeast Asia & Australia with 89 orders.

Annual Surveys

On behalf of *Diesel & Gas Turbine Worldwide*, thank you to all contributors for your continued participation in the 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, marine propulsion and mechanical drive.

Electronic versions of past surveys are available on our website at www.dieselgasturbine.com. Questions, comments, suggestions, etc., should be directed to bhaight@dieselpub.com.



Combined Geographic Breakdown For Mechanical Drive, Diesel-Electric and Auxiliary Generating Set Orders											
Output Range (MW)	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
0.05 to 1.00	954	35	53	2908	947	65	0	12	455	11	82
1.01 to 2.00	654	56	53	1085	231	21	3	1	312	11	47
2.01 to 3.50	186	2	3	268	51	0	0	4	110	0	16
3.51 to 5.00	14	3	0	171	65	11	5	0	10	0	5
5.01 to 7.50	18	2	0	171	0	0	0	0	4	0	0
7.51 to 15.00	21	5	0	289	5	0	4	0	0	0	2
15.01 to 30.00	0	0	0	90	6	0	0	0	0	0	0
30.01 to 50.00	0	0	0	22	0	0	0	0	0	0	0
50.01 and above	0	0	0	14	0	0	0	0	0	0	0
Totals	1847	103	109	5018	1305	97	12	17	891	22	152

Mechanical Drive Marine Propulsion Manufacturers Participating in the Survey:

- Caterpillar Inc. (including Caterpillar Marine Power Systems)
- Cummins Marine
- Electro-Motive Diesel
- GE Marine
- Hyundai Heavy Industries
- MAN Diesel & Turbo (including SEMT Pielstick license-built engines)
- Niigata Power Systems
- Rolls-Royce
- Vericor Power Systems LLC
- Wärtsilä
- Yanmar

Marine Auxiliary Generating Unit Engine Manufacturers Participating in the Survey:

- Caterpillar Inc. (including Caterpillar Marine Power Systems)
- Cummins Marine
- GE Marine
- Hyundai Heavy Industries
- MAN Diesel & Turbo (including SEMT Pielstick license-built engines)
- Rolls-Royce
- Wärtsilä
- Yanmar

Diesel-Electric Marine Propulsion Manufacturers Participating in the Survey:

- Caterpillar Inc. (including Caterpillar Marine Power Systems)
- Cummins Marine
- Electro-Motive Diesel
- GE Marine
- MAN Diesel & Turbo (including SEMT Pielstick license-built engines)
- Rolls-Royce
- Wärtsilä