

MECHANICAL DRIVE DIESEL MARINE PROPULSION ORDERS, January – December 2010*																				
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	2109	1502	0	1	31	2077	2104	5	0	592	19	24	594	284	26	0	1	466	7	96
1.01 to 2.00	2156	3119	10	13	476	1657	1882	273	1	721	132	108	590	282	11	0	0	291	6	15
2.01 to 3.50	376	995	13	22	231	110	278	93	5	60	21	17	125	70	17	0	0	66	0	0
3.51 to 5.00	199	814	32	18	110	39	71	124	4	45	7	8	102	1	0	0	0	23	0	13
5.01 to 7.50	277	1714	215	21	34	7	24	251	2	15	4	5	232	4	8	0	0	8	0	1
7.51 to 15.00	922	9219	873	29	6	14	35	887	0	5	15	21	862	7	0	0	0	12	0	0
15.01 to 30.00	248	4513	245	3	0	0	1	247	0	2	0	1	223	22	0	0	0	0	0	0
30.01 to 50.00	37	1476	37	0	0	0	0	37	0	0	0	0	37	0	0	0	0	0	0	0
50.01 and above	38	2302	38	0	0	0	0	38	0	0	0	0	38	0	0	0	0	0	0	0
Totals	6362	25 654	1463	107	888	3904	4395	1955	12	1440	198	184	2803	670	62	0	1	866	13	125

*Geographic location is at the shipbuilding site

2011 Marine Propulsion Order Survey

A review of mechanical drive, auxiliary and diesel-electric marine propulsion orders in 2010

➤ Diesel & Gas Turbine Worldwide's Marine Propulsion Order Survey is part two of three surveys designed to provide details on the markets of larger 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 Marine Propulsion Order Survey examines mechanical drive, auxiliary and diesel-electric marine propulsion systems. The Power Generation Order Survey, which appeared in the May issue, examined reciprocating engines, steam turbines and gas turbines for power generation service. The Mechanical Drive Order Survey (to appear in the July-August issue) is devoted to engine orders for mechanical drive applications including pumps, compressors, oil ex-

ploration machinery, rail 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.

All data found in the survey was provided by participating OEMs. An accompanying table identifies those companies that participated in the 2011 survey. Every effort is made to ensure 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.

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 2010.

Geographic location is the shipbuilding site.

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

Overview

2010 proved to be better for the shipbuilding industry than recent years. While numbers were nowhere near the levels recorded pre-recession, 2010 did see a 28% increase in total orders compared to 2009. Last year's survey (which examined 2009 data) accounted for 9302 total units (all driver types) while 2010 reported 11 862 orders.

All driver types experienced increased orders. Mechanical drive marine propulsion saw the largest year-to-year growth (39%).

MARINE AUXILIARY GENERATING SET ORDERS, January – December 2010*																			
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	Natural Gas											
0.50 to 1.00	3801	2626	0	2799	1002	553	3248	0	155	28	6	3333	153	39	0	2	52	6	27
1.01 to 2.00	849	1259	0	528	321	337	512	0	119	10	0	577	48	7	11	0	63	1	13
2.01 to 3.50	392	1048	0	281	111	126	263	3	103	6	4	229	23	0	0	0	8	2	17
3.51 to 5.00	35	150	4	31	0	14	17	4	8	0	0	21	0	0	4	0	0	2	0
5.01 and above	6	80	0	6	0	0	6	0	0	0	0	6	0	0	0	0	0	0	0
Totals	5083	5163	4	3645	1434	1030	4046	7	385	44	10	4166	224	46	15	2	123	11	57

*Geographic location is at the shipbuilding site

DIESEL-ELECTRIC MARINE PROPULSION ORDERS, January – December 2010*

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	12	10	0	0	12	12	0	0	12	0	0	0	0	0	0	0	0	0
1.01 to 2.00	167	243	0	46	121	158	9	38	0	74	38	5	12	0	0	0	0	0
2.01 to 3.50	75	208	0	41	34	69	6	18	4	4	29	0	0	0	0	17	3	0
3.51 to 5.00	56	222	6	46	4	31	25	12	0	0	24	12	0	0	0	8	0	0
5.01 to 7.50	15	84	0	15	0	12	3	3	0	0	12	0	0	0	0	0	0	0
7.51 and above	92	1010	61	31	0	22	70	59	2	0	23	0	0	0	0	8	0	0
Totals	417	1777	67	179	171	304	113	130	6	90	126	17	12	0	0	33	3	0

*Geographic location is at the shipbuilding site

Good news for natural gas engine manufacturers. Orders for natural gas marine propulsion engines actually took place in 2010. Last year's survey showed no natural gas engines in marine propulsion. This year's survey shows natural gas orders in both Mechanical Drive and Auxiliary Generating Set marine propulsion applications.

The Far East held on to the top geographic location for another year. No surprise as South Korea and China continue to make significant investments in their shipyards and have aggressively sought out new business relationships to keep their yards active.

The China Association of the National Shipbuilding Industry (CANSI) reports that China led the world in shipbuilding in 2010. China's shipbuilding capacity accounts for 41% of the world market. According to CANSI, in the first half of 2010 alone, new orders for Chinese shipyards accounted for 46% of the world market.

China's drive to stay ahead of changing international maritime emissions rules should help the region maintain its stronghold as many Chinese shipyards are developing low-carbon vessels.

Already this year, China is show-

ing considerable growth. In April, China Shipbuilding Industry Co., the country's northern shipbuilding giant, reported a first quarter net profit increase of more than 28% — citing a recovery in the global shipbuilding market and a rise in orders.

Mechanical Drive

Total reported mechanical drive orders were 6362 units in 2010, a 39% increase compared to last year's survey. Smaller-sized units dominated the orders again this year. The power range 1.01 and 2.00 MW had the most orders, with 34% of the total — a 52% increase over last year. The 2010 survey

Country Information For Regions/Regional Codes D>W Annual Market Surveys

Western Europe (Without Eastern Europe)	Azerbaijan	Iraq	Laos	Central, West, East & South Africa	Mauritania	Costa Rica
Andorra	Belarus	Israel	Malaysia	Angola	Mauritius	Cuba
Austria	Bosnia and Herzegovina	Jordan	Marshall Islands	Benin	Mozambique	Dominica
Belgium	Bulgaria	Kuwait	Micronesia	Botswana	Namibia	Domin. Republic
Denmark	Croatia	Lebanon	Palau	Burkina Faso	Niger	El Salvador
Finland	Czech Republic	Oman	Papua New Guinea	Burundi	Nigeria	Guatemala
France	Estonia	Qatar	Philippines	Cameroon	Rwanda	Haiti
Germany	Georgia	Saudi Arabia	Samoa	Cape Verde	Senegal	Honduras
Greece	Hungary	Syria	Singapore	Gen. African Rep.	Seychelles	Jamaica
Iceland	Kazakhstan	Turkey	Solomon Islands	Chad	Sierra Leone	Mexico
Liechtenstein	Kyrgyzstan	United Arab Emirates	Tahiti	Comoros	Somalia	Nicaragua
Luxembourg	Latvia	Yemen	Tonga	Congo	South Africa	Panama
Italy	Lithuania	Far East	Thailand	Cote d'Ivoire	Sudan	Puerto Rico
Ireland	Moldova	China	Tuvalu	Djibouti	Swaziland	Virgin Islands
Netherlands	Poland	Hong Kong	Vanuatu	Equatorial Guinea	Tanzania	West Indies
Malta	Republic of Macedonia	Japan	Vietnam	Eritrea	Togo	South America
Norway	Romania	Mongolia	Central Asia	Ethiopia	Uganda	Argentina
Portugal	Russia	North Korea	Afghanistan	Gabon	Zaire	Bolivia
San Marino	Serbia	South Korea	Bangladesh	Gambia	Zimbabwe	Brazil
Slovenia	Slovak Republic	Taiwan	India	Ghana	North America	Chile
Spain	Tajikistan	Southeast Asia & Australia	Maldives Islands	Guinea	Canada	Colombia
Sweden	Turkmenistan	Australia	Nepal	Guinea Bissau	U.S.A.	Ecuador
Switzerland	Ukraine	Brunei	Pakistan	Ivory Coast	Kenya	Guyana
United Kingdom	Uzbekistan	Burma	Sri Lanka	Lesotho	Liberia	Paraguay
Eastern Europe, Russia & CIS	Middle East	Cambodia	North Africa	Madagascar	Malawi	Peru
Albania	Bahrain	Fiji Islands	Algeria	Mali	Bahamas	Surinam
Armenia	Cyprus	Indonesia	Libya	Morocco	Bermuda	Uruguay
	Egypt	Kiribati	Tunisia		Belize	Venezuela
	Iran					

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	747	47	42	3927	437	65	0	3	518	13	123
1.01 to 2.00	878	142	182	1205	335	30	11	0	354	7	28
2.01 to 3.50	181	31	25	383	93	17	0	0	91	5	17
3.51 to 5.00	65	7	8	147	13	0	4	0	31	2	13
5.01 to 7.50	18	4	5	250	4	8	0	0	8	0	1
7.51 to 15.00	64	17	21	885	7	0	0	0	20	0	0
15.01 to 30.00	2	0	1	223	22	0	0	0	0	0	0
30.01 to 50.00	0	0	0	37	0	0	0	0	0	0	0
50.01 and above	0	0	0	38	0	0	0	0	0	0	0
Totals	1955	248	284	7095	911	120	15	3	1022	27	182

(reporting 2009 data) recorded most engine orders in the 0.50 to 1.00 MW output range. While that output range still represents 33% of the mechanical drive marine propulsion orders, it is down 9% from last year's report.

Engine operating speeds above 1000 r/min comprised 61% of the total mechanical drive units ordered in 2010. Diesel fuel once again dominated the fuel type, representing 69% of the engine orders. Natural gas engines in mechanical drive marine applications returned in 2010, with 12 units being reported by OEMs. None were reported in last year's survey.

The geographic breakdown of me-

chanical drive marine orders reflects China's huge presence in the ship-building industry. The Far East saw a 55% increase in orders compared to last year's survey. Top markets were Far East (44%), Western Europe (23%) and North America (14%).

Auxiliary Generating Set Orders

Marine auxiliary gen-sets totaled 5083 units, an increase of 18% over last year's survey. Engines in the output range of 0.50 to 1.00 MW once again recorded the most orders (75%).

Engines operating at speeds between 720 and 1000 r/min received 72% of the reported orders. Heavy

fuel accounted for 80% of all engines ordered.

The Far East proved to be the top geographic location for marine auxiliary gen-set orders, accounting for 82% of the total — a 34% increase over last year's survey.

Diesel-Electric Orders

Diesel-electric marine propulsion orders totaled 417 units, an increase of 7% over last year.

The 2011 survey (2010 data) reveals a change in power output demand. This year, 1.01 to 2.00 MW engines recorded the most orders (40%). Last year, the power output of choice for diesel-electric marine pro-

Mechanical Drive Marine Propulsion Manufacturers Participating In The Survey:

- Caterpillar Inc.
- Caterpillar Marine Power Systems
- Cummins Marine
- Electro-Motive Diesel
- GE Marine
- Hyundai Heavy Industries
- Kawasaki
- MAN Diesel & Turbo (including SEMT Pielstick license-built engines)
- Mitsubishi
- Niigata Power Systems
- Rolls-Royce
- Tognum AG/MTU Friedrichshafen
- Wärtsilä
- Yanmar

Marine Auxiliary Generating Unit Engine Manufacturers Participating In The Survey:

- Caterpillar Inc.
- Caterpillar Marine Power Systems
- Cummins Marine
- Fairbanks Morse
- Hyundai Heavy Industries
- MAN Diesel & Turbo (including SEMT Pielstick license-built engines)
- Rolls-Royce
- Tognum AG/MTU Friedrichshafen
- Wärtsilä
- Yanmar

Diesel-Electric Marine Propulsion Manufacturers Participating In The Survey:

- Caterpillar Inc.
- Caterpillar Marine Power Systems
- Cummins Marine
- Fairbanks Morse
- MAN Diesel & Turbo (including SEMT Pielstick license-built engines)
- Tognum AG/MTU Friedrichshafen
- Wärtsilä

pulsion applications was 2.01 to 3.5, which was down 58% by comparison to this year's survey.

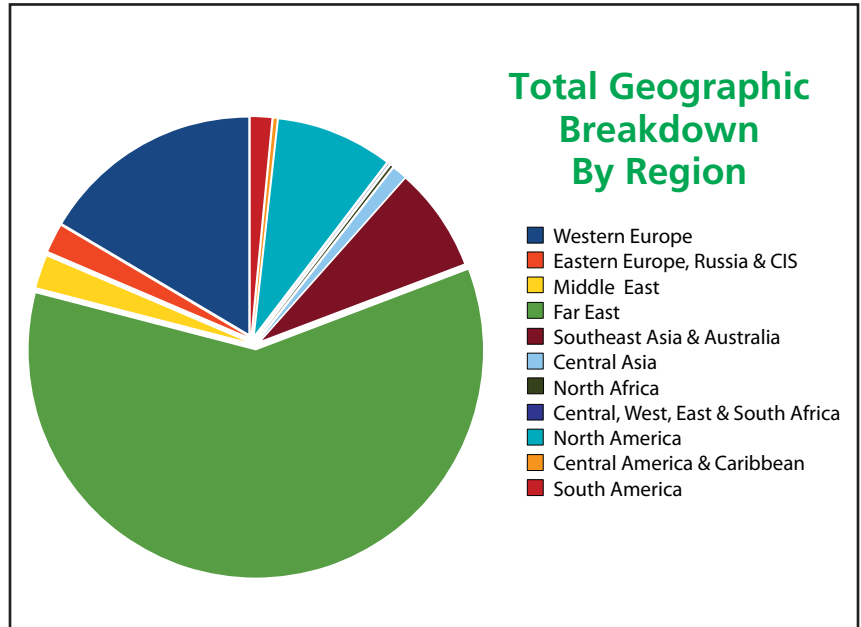
Engines operating at speeds between 720 and 1000 r/min received 43% of the reported orders, followed closely by engines operating above 1000 r/min, which accounted for 41% of the engine orders.

Diesel engines once again received the most orders (73%).

Western Europe edged out the Far East by four engines to claim the top spot. Last year, Western Europe was the top destination by only one engine. The top three geographic locations were Western Europe with 130 orders, Far East with 126 orders and Middle East with 90 orders.

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, marine propulsion and me-

chanical drive. 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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