

### MES's 10th Biomass Livestock Feed Production Plant

In April 2008 MES started construction of its 10th plant, to produce materials for livestock mixed feed from Shochu distillation residue for Sanwa Shurui Co., Ltd., a general alcoholic beverage maker in Oita, Japan. This plant ferments part of the residue comes out of the production process of Shochu spirit to methane gas, and with this biogas makes steam and, utilizing the heat of the steam, enriches and dries the remained residue to produce materials for livestock feed. The plant will contribute to lowering the production cost even in the circumstance of price hike of oil and preservation of global environment by decreasing emission of CO<sub>2</sub>. Further, the produced livestock feed from the residue will contribute to enhancing self-sufficiency ratio of domestic livestock feed.

The plant is planned to process 140 tons of the residue a day at maximum and composed with solid-liquid separation facility where the residue be separated to dewatered cake of water content 70wt% and separated liquid, drying facility to make dewatered cake to dried material, condensation facility to make highly concentrated liquid for preservability and easy handling, methane fermentation facility to supply energy to be used in the

works and wastewater treatment facility, and so on.



Shochu Distillation Residue Recycling Plant formerly delivered

### Japan's Largest Class Biomass Power Generation Plant

Ichihara Green Power Co., Ltd., an MES's subsidiary company, constructed biomass power plant and started its full-dressed operation in spring 2008. The plant was constructed in MES's Chiba Works and has the capacity to generate 49,900kW electricity with power transmission capacity of 43,800kW, which is the largest class in Japan as the biomass power plant. This plant uses wood chips as main fuel made of demolished houses comes out from the Kanto area (Tokyo and the prefectures surrounding Tokyo), together with refuse paper and plastic fuel (RPF). The wood chips and RPF are collected by New Energy Supply Company and supplied by Recycle Sources Company, which, after storage if required, makes timely delivery to the power plant. Annual fuel supply amount in total comes to 250,000 tons.

Fluidized bed boiler of MES made and steam turbine are adopted for the power generation plant, and the electricity generated is sold to Tokyo Electric Power Company after consumption in the power plant facility.

By this biomass power plant, 350,000 tons of CO<sub>2</sub> (equivalent

to 100,000 kl of crude oil) is deemed to be decreased in a year and contributes much to the environmental preservation.



### Bio-ethanol Production Plant

In February 2008 MES commenced construction of a Production Plant for Bio-ethanol. The plant, which is presently under commissioning, has the capacity to produce 1000 kl of ethanol per year from high-yielding rice. The plant is part of national project proclaimed by the Ministry of Agriculture, Forestry and Fisheries of Japan (MAFF) called "Demonstration Project on Regional Utilization Model of Bio-fuel" and JA Zen-Noh (National Federation of Agricultural Cooperative Associations, Japan) is running the demonstration project on bio-ethanol production from the high-yielding rice under the subsidy of MAFF for a period of 5 years. JA Zen-Noh is promoting the use of bio-ethanol within JA organization in Niigata Prefecture, and the plant is constructed in Niigata City and produces bio-ethanol from the high-yielding rice harvested in the Prefecture. A facility to mix bio-ethanol with gasoline is to be completed at an oil tank terminal owned by JA and the mixed

gasoline is scheduled to be supplied to the gas stations of JA network.

The distinguishing point of this plant is that waste water treatment is not required, because by using centrifugal separator and by balancing heat and water in the mash column, the stillage (fermentation residue) is highly concentrated to 25% (in the conventional process it is about 10%) and the whole stillage can be utilized as the materials for cattle feed or fertilizer/manure, accordingly costs for the waste water treatment can be saved resolving the problem in the conventional process.

This demonstration project is expected to promote rice farming and progress the effective use of land, which is difficult to convert to other crops field. It will preserve farmland, water and the environment in the district in good condition for the future, and at the same time it will help solve the problems of agriculture in the district.

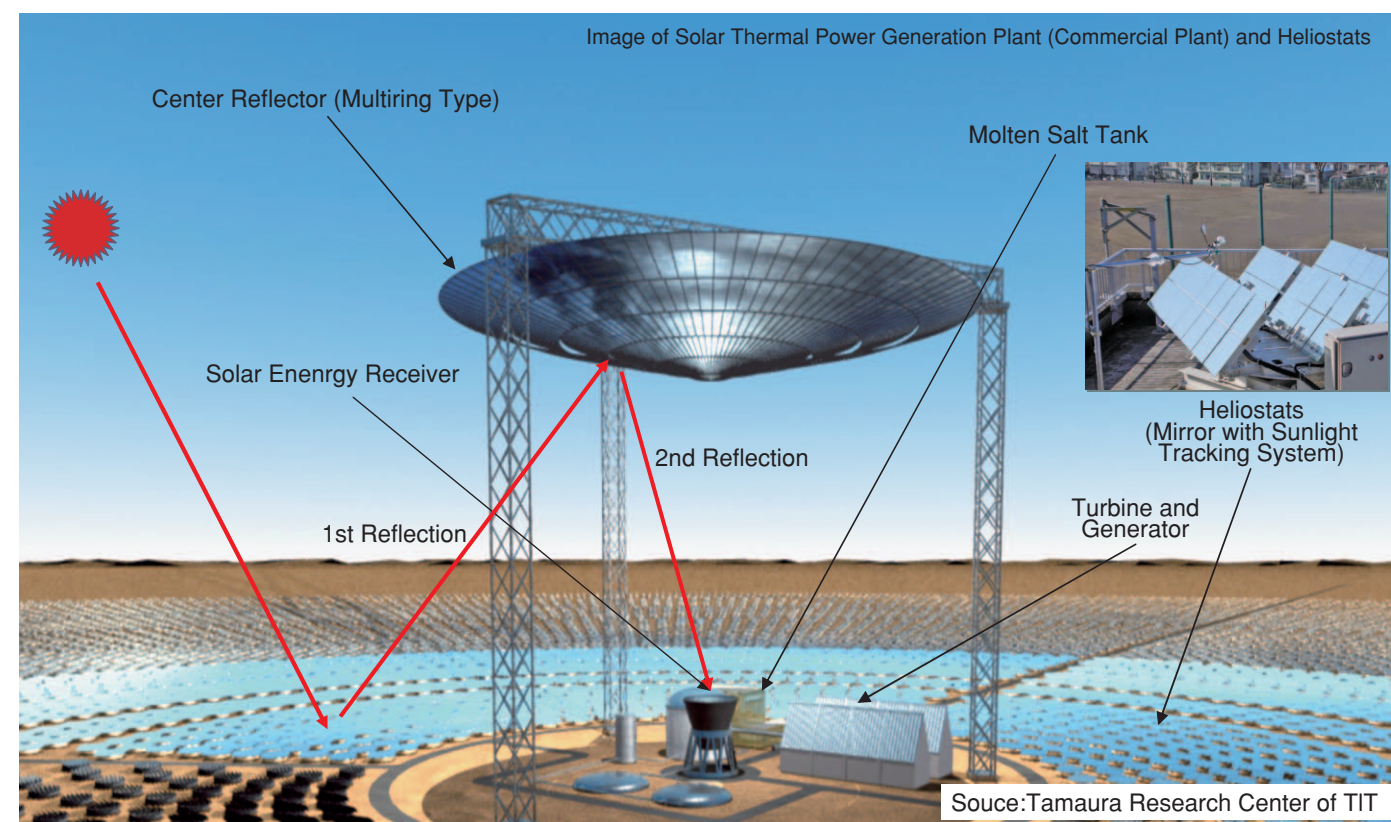
#### Notice

MES Tsukiji Head Office will move to the address shown right column by the middle of March 2008 due to re-development of the present building. It is expected that the new building in the present location will be completed in April 2012.

**Temporary Address:**  
3-16, Nihonbashi 1-chome, Chuo-ku, Tokyo 103-0027, Japan  
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### MES's Topics in 2008

#### Solar Thermal Power Generation Plant



Mitsui Engineering & Shipbuilding Co., Ltd. (MES) received order for construction of a 100 kW experimental solar thermal collection plant in October 2008 from Cosmo Oil Co., Ltd. (Cosmo) / Abu Dhabi Future Energy Company (MASDAR), which is an organization under the Abu Dhabi Government. The project is to be carried out jointly by Cosmo in alliance with MASDAR as one party, and Tokyo Institute of Technology (TIT) as another party, based on the contract for development of technology for Beam Down Concentrated Solar Power (BDCSP) system of TIT. The experimental plant is to be constructed in the special free trade zone called MASDAR City, which is adjacent to the Abu Dhabi International Air Port. Through the operation of the plant, data collection and sorting out of problems for commercialization to prepare for the construction of commercial plant will be carried out.

BDCSP system has been researched by Prof. Tamaura of Carbon Cycle Energy Research Center of TIT. Its concept is to

gather solar beam with several thousands of heliostat laid over the vast ground site to the center reflector installed on the tower provided in the central part of the site and re-reflect the gathered solar beam to receiver (solar furnace) to make high temperature liquid to generate electricity from it. Since the electric generation is made by heat condensed in the liquid, the system can generate electricity even in the night time.

Presently, the solar thermal power generation business using concentrated solar power (CSP) system is in the spotlight among the sunbelt zone including Middle East oil producing countries, and by this project it is aimed to commercialize more economical power plant than other CSP plants which have been already put into commercial operations.

The order for construction of the above plant is placed with MES, appreciating its business record to provide the heliostats in order to solve the problem of less sunshine caused by the congestion and high story buildings in the urban area.

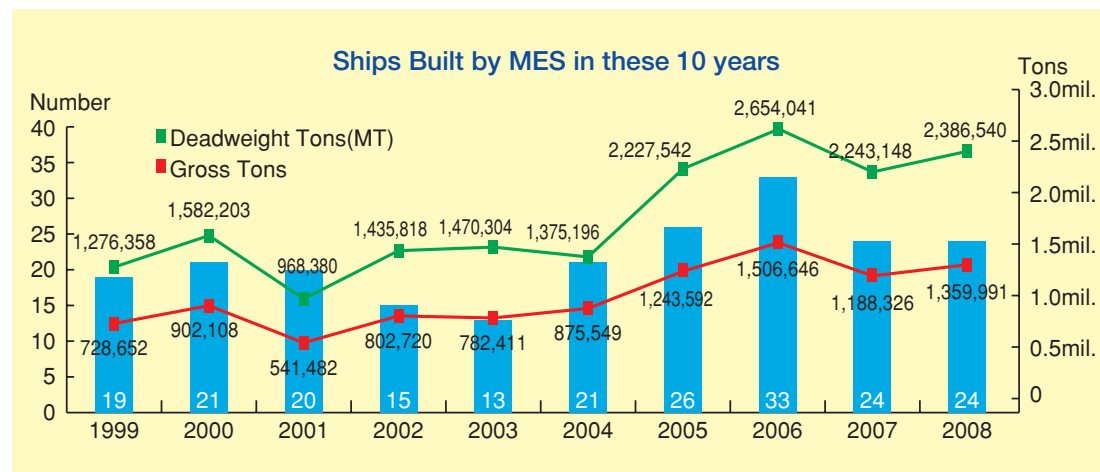
### Delivery Record of New-building Vessels in 2008

MES delivered 24 vessels of total deadweight (dwt) of 2,386,540 metric tons and in total gross tonnage of 1,359,991, in 2008 as shown in the table below. The delivery of the vessels in 2008 year marked high record over 2 million tons of total dwt basis following the last 3 years. Delivered vessels

consist of 13 bulk carriers of 1,023,580 dwt, 2 very large crude oil carriers (VCLLs) of 620,835 dwt, 6 Aframax tankers of 662,712 dwt, 1 LNG carrier of 74,497 dwt and 2 other type vessels of 4,916 dwt.

Vessels Delivered in 2008 and 2007

Shipyard	2008				2007			
	Destination	Number	Gross	Deadweight	Destination	Number	Gross	Deadweight
Tamano	Overseas	11	331,352	589,849	Overseas	15	480,807	863,857
	Deomestic	2	32,547	55,975	Domestic			
	<b>Total</b>	<b>13</b>	<b>363,899</b>	<b>645,824</b>	<b>Total</b>	<b>15</b>	<b>480,807</b>	<b>863,857</b>
Chiba	Overseas	9	876,870	1,520,126	Overseas	8	647,908	1,268,996
	Domestic	2	119,222	220,590	Domestic	1	59,611	110,295
	<b>Total</b>	<b>11</b>	<b>996,092</b>	<b>1,740,716</b>	<b>Total</b>	<b>9</b>	<b>707,519</b>	<b>1,379,291</b>
Grand Total	Overseas	20	1,208,222	2,109,975	Overseas	23	1,128,715	2,132,853
	Domestic	4	151,769	276,565	Domestic	1	59,611	110,295
	<b>Grand Total</b>	<b>24</b>	<b>1,359,991</b>	<b>2,386,540</b>	<b>Grand Total</b>	<b>24</b>	<b>1,188,326</b>	<b>2,243,148</b>



### Development of Environmentally Friendly Vessels

For the global environmental preservation, MES commenced a cross company project to develop new vessel which enables CO2 emission cut off of 30% compared to the conventional vessels. In the project, MES tackles development of new hull

shape and new propeller shape, improvement of performance at actual sea, development of most efficient control of main engine, planning of optimum navigation, etc.

### BRASIL MARU Awarded "Ship of the Year 2007"

The Japan Society of Naval Architect and Ocean Engineers awarded in July 2008 the world largest class ore carrier "BRASIL MARU" the "Ship of the Year 2007". "BRASIL MARU" was constructed in MES's Chiba Shipyard for Tamou Line S.A. and completed in December 2007. The vessel is the world largest class ore carrier having deadweight of 320,000 metric tons and engages in carrying iron ore from Brazil to Japan.

"BRASIL MARU" whose 1st and 2nd generations were constructed as the immigration vessels.

The "Ship of the Year" prizes are given to the new building vessels in Japan which excel in technique, artistic value and social significance and for "BRASIL MARU" following 3 points are mentioned as the reason for the prize:

- \*"BRASIL MARU" enables to accomplish the great task of reducing transportation cost of iron ore, which imposes great affect to the production of steel.
- \*Improvement of fatigue strength of the large vessel was achieved by adopting ultrasonic impact treatment (UIT) to welding parts.
- \*The year 2007 was the 100th anniversary of immigration of Japanese people to Brazil, and "BRASIL MARU" has the social significance, since the vessel is the 3rd generation of



### Orders Reception for Container Cranes Exceeded 100 Units

In line with the increasing demand for the container cranes, MES achieved record high order reception for the container cranes including quay side crane "PORTAINER®" and yard transfer crane "TRANSTAINER®" in the fiscal year 2007 ended March 2008. In recent years rapid economic growth in East Asian countries beginning with China, development of horizontal international specialization, quest for optimum procurement and production, etc. bring about drastic increase of global container cargo shipment, and it advances expansion of port facilities and cargo handling equipment in many parts of the world. In order to cope with such increasing demand for container cranes, MES increased production capacity of container cranes from 100 units to 120 units annually by expanding its crane assembly line and dredging sea bed at berth to load out containers at its Oita Works.

and they can save fuel by 50% compared with our conventional cranes and, at the same time, they can decrease emissions of noise and CO2 to the world lowest class. By such features the Hybrid TRASTAINERS are attracting attention.

Order reception for the container cranes continued in high level in the fiscal year 2008 and, among others, MES received orders for 2 units of Fuel Saving TRANSTAINERS for domestic port operator in April, which were delivered recently, and 11 units of Hybrid TRANSTAINER (MESHYBRID®) for Malaysian container terminal in last September. Those Hybrid TRASTAINERS able to storage energy generated at the hoisting down operation of containers by controlling engine revolution in most proper manner coping with the load to the engine,

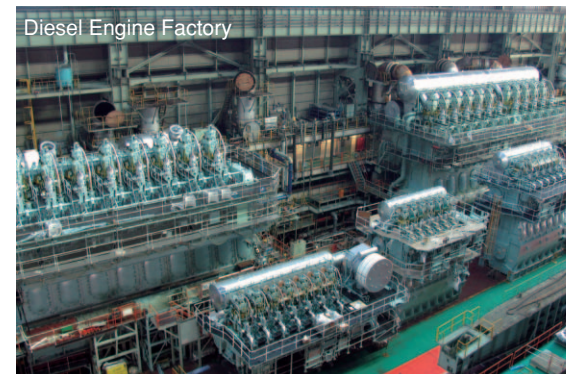


### World Record Achievement with Diesel Engine Production

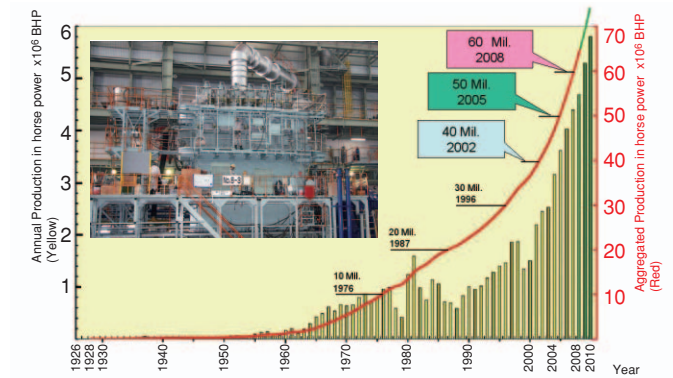
In March 2008 MES achieved the world record in the accumulated production of diesel engine with single brand of Mitsui-Man B&W, 60 millions of brake horse power (BHP). The achievement was made in 80 years after the first diesel engine was produced in 1928. 10 millions BHP record was won in 1976, 20 millions in 1987, 30 millions in 1996, 40 millions in 2002 and 50 millions in 2005.

diesel engine production has been increasing year by year and the production in 2006 fiscal year was approx. 4 millions BHP, that of 2007 was 4.5 millions with 200 engines and in 2008 fiscal year the production amount is expected to be 4.6 millions BHP with 213 engines.

In accordance with the increasing demand for new building vessels thanks to great maritime cargo movement, MES's



History of Mitsui-MAN B&W Diesel Engine and the engine achieved 60 mil BHP



### Inaugurated Ship Operation Analysis Service on Portal Site

MES started Ship Operation Analysis Service for the vessels in operation where ship's hull performances at sea are calculated. This service is added on the Ship Operation Support System, which had been already put into service. In the shipping industry ship's operation taking the environmental load reduction in consideration is expected besides the conventionally needed economical and efficient operation under the rapid changing circumstances such as abrupt change of oil price, necessity to reduce emission amount of greenhouse gas, etc. For the ship's operators to materialize such operation of their vessels, MES developed a service to provide them "Diagnosis to maintain ship's performance" by grasping precisely actual vessels' performance at sea in line with actual operation conditions.

customers as sea-margin, speed decrease, FOC analysis information in the way where information on aged deterioration, disturbance effect is separated in time sequence. Further, the service supports the customers to investigate contract speed, bunker contract and operation plan in accordance with the individual ship's performance at sea in consideration of the effect of sea states in seasons and navigation route. In addition, it can provide the customers with the service to plan and investigate the most suitable repairing plan by the diagnosis to maintain ships operation, simulating aged deterioration including future deterioration in engine revolution, FOC, horse power and speed.

This service utilizes operation analysis system of ship developed by a MES's subsidiary, and the operation analysis is made by making ship's model receiving ship's specifications information, data in ship's navigation such as Noon Report, ABLOG, etc. from the customers. The results of analysis are sent to the

This service will present automated calculation service packaging 3 services as "Hull performance Analysis Service" together with "Navigation Monitoring Service (Fleet Monitor)" and "Optimum Route Calculation System" which is now under development. MES aims to offer further minute service in coordination with the e-GICS, a remote diagnosis service for the main engine for the ships installed with Mitsui-MAN B&W diesel engines.