Goodwood

ForeSight

Bella Ciao (Hull No. 0315867) was the first in the series of Suezmax Tankers built at New Times Ship Building Co. Ltd. Jin Jiang - Jiangsu, China for the ship Owner NGM Energy SA - Greece and was delivered on 30th July 2020

NEWSLETTER CONTENTS

JULY 2020 EDITION

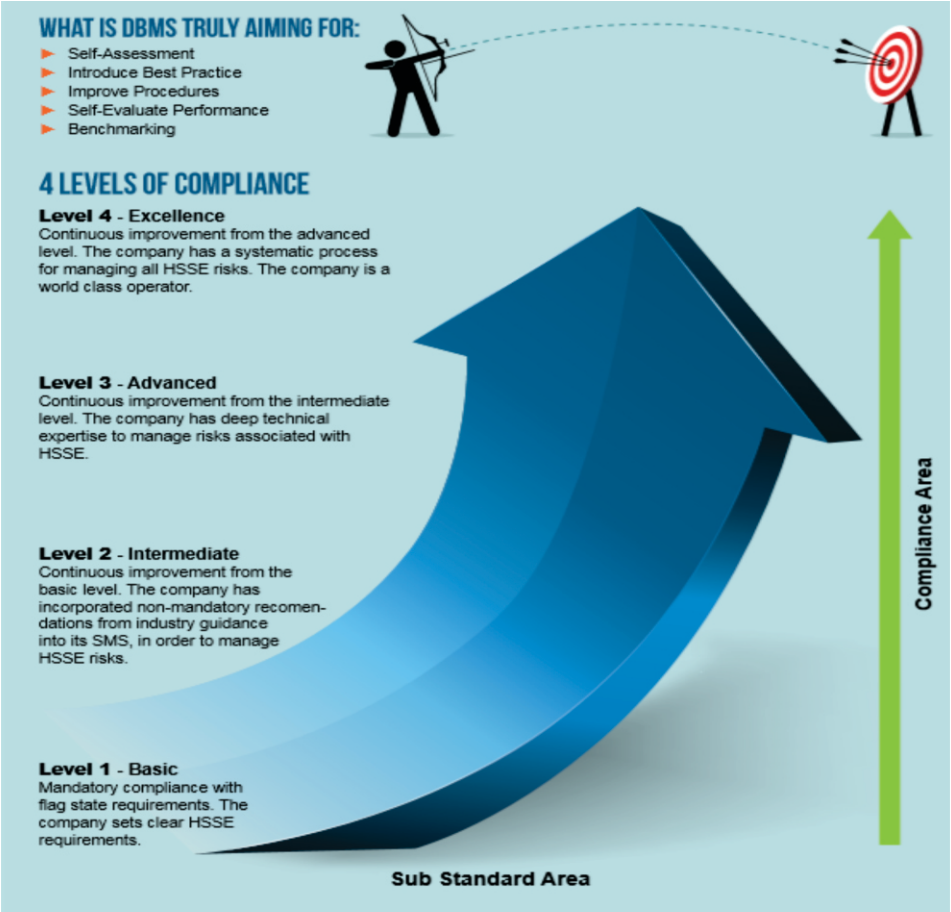
DRY BULK MANAGEMENT STANDARD (DBMS)

A new era emerged for the maritime industry when RightShip announced in April 2020 the launch of its new Dry Bulk Management Standard (DBMS) which aims to support the improvement of safety and risk management standards within the dry bulk ship management.

DBMS is very similar to TMSA-3 which is a self-assessment tool that can determine current status of the operator and level of compliance. It is voluntary for ship owners/managers to declare the compliance level and status of managed company. There are 4 compliance levels in both standards.

TMSA-3	DBMS
Stage 1	Basic
Stage 2	Intermediate
Stage 3	Advanced
Stage 4	Excellence

TMSA-3 uses several KPI's and Best Practices while DBMS uses Expectations that set target suggesting Objective evidence for each. TMSA-3 has 13 elements, while DBMS has 30 subject areas. DBMS seems to be more analytic, each item is divided into several subject areas in order to be more comprehensive to the operator.



Basic Level: Is mainly documentation control requirement and evidence of existing SMS procedures.

Intermediate Level: Refers to revision procedures, roles and responsibilities for those involved in document control, back up procedures and the involvement of Master in SMS review and control.

Advanced level: An effectiveness approach of SMS by shore and on-board personnel for pro-active feedback. Also classification and distribution of documents

Excellence Level: Refers to the external mechanism of verifying the effectiveness of the SMS carried out by third party providers/consultants. Therefore in order to achieve excellence in the Subject Area, external verification for the effectiveness of the system is vital.

Detailed explanation is listed below:-

Subject Area Nr. 1	Basic Level	Senior Management demonstrates commitment to SMS implementation. HSSE Policies required
Subject Area Nr. 1	Intermediate Level	Stop work authority defined in the SMS
Subject Area Nr. 4	Intermediate Level	Evidence in SMS for goals and objectives
Subject Area Nr. 5	Basic Level	Annual Internal Audit plan for verification of SMS
Subject Area Nr. 7	Advanced Level	SMS documentation with organisation charts, roles and responsibilities
Subject Area Nr. 16	Basic Level	List of critical equipment in SMS
Subject Area Nr. 21	Basic Level	Navigation procedures for various stages
Subject Area Nr. 21	Intermediate Level	Comprehensive navigational procedures
Subject Area Nr. 21	Advanced Level	Procedures on managing ENC's, charts and publications
Subject Area Nr. 22	Basic Level	Procedures for Risk Assessment
Subject Area Nr. 25	Basic Level	Integrate environmental requirements into SMS
Subject Area Nr. 30	Basic Level	Incident categories defined in SMS
Additionally		Permit to work systems, Management of Change, Safety Bulletins, Newsletters, Vessel & Shore staff interactions, Mission statement cards, Webcasts, Company magazine
DBMS Priority Areas	Performance	Subject Areas 1 & 6
DBMS Priority Areas	People	Subject Areas 7, 9, 10 & 12
DBMS Priority Areas	Plant	Subject Areas 14, 16 & 17
DBMS Priority Areas	Process	Subject Areas 18, 20, 21, 22, 23, 26, 29 & 30

TMSA-Elements		DBMS-Subject areas	
1	Management, leadership and accountability	1	Commitment to HSSE
		4	HSSE objectives & KPIs
1A	Developing and Maintaining a Safety Management System	3	SMS governing documents
		6	Master's reviews & company evaluation
2	Recruitment and management of shore-based personnel	7	HR management and recruitment (office)
		8	Technical & HSSE training (office)
3	Recruitment, management of vessel personnel	9	Crew management & recruitment
		10	Crew technical & HSSE training (vessels)
		11	Crew familiarization
3A	Wellbeing of vessel personnel	13	Crew welfare
4	Vessel Reliability and maintenance	14	Maintenance
		15	Dry dock and surveys
4A	Vessel Reliability and maintenance (Critical equipment)	16	Critical equipment
5	Navigational safety	21	Bridge procedures & standards
6	Cargo, Ballast, Tank Cleaning, Bunkering Operations	17	Engine room operations & bunkering
		20	Cargo & ballast
6A	Mooring and Anchoring operations	19	Mooring & anchoring
7	Management of change	26	Management of change including vessel acquisition
8	Incident Reporting, Investigation and analysis	30	Incident reporting, investigation & training
9	Safety management -Shore based monitoring	22	Risk assessment & management
		23	Permit to work
		12	Contractor management
9A	Safety management - Fleet monitoring	24	Safety culture improvement
		2	Vessel visits & communications
10	Environmental and Energy management	25	Environmental management
11	Emergency preparedness and contingency planning	29	Emergency planning including crisis management
12	Measurement, analysis and improvement - Inspections	18	Inspection planning, review and close out
12A	Measurement, analysis and improvement - Audits	5	Audit planning, review & close out
13	Maritime Security	27	Security management
		28	Cyber security

Goodwood Ship Management has already commenced a gap analysis between DBMS and our own HSQEEn procedures for compliance. Intention is for the resultant score to be at par with TMSA-3.

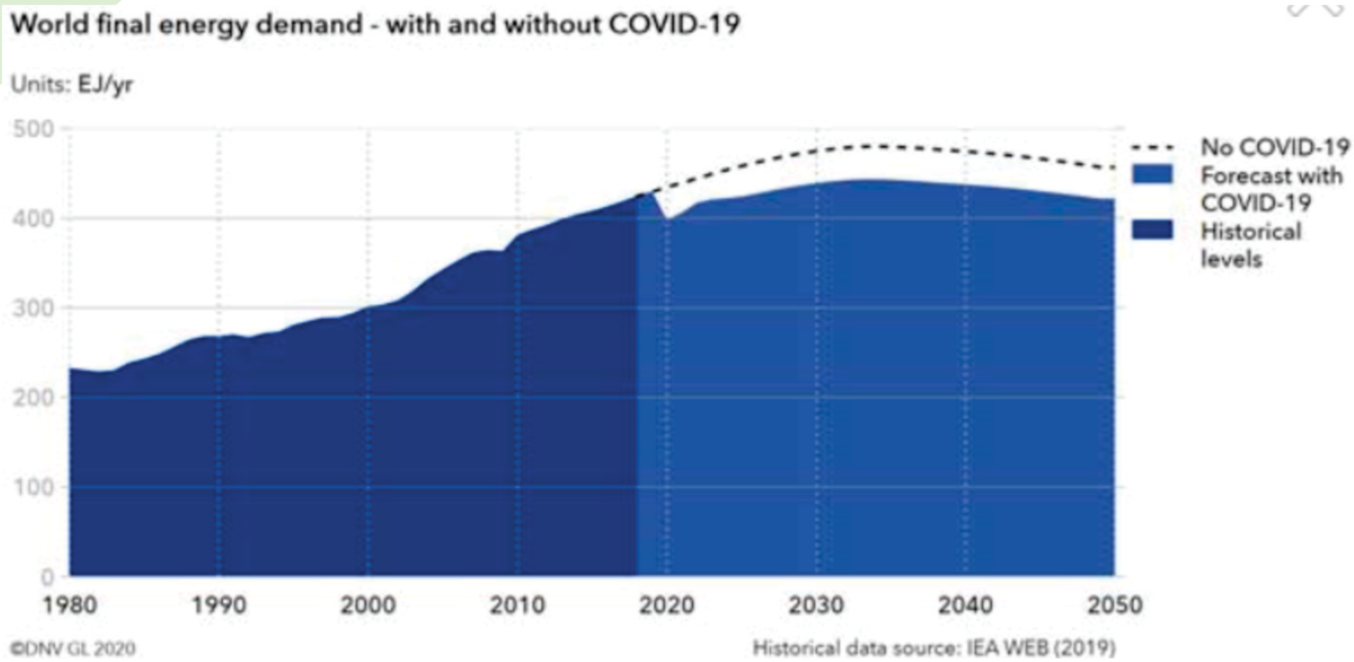
Compiled by HSQE Department

THE IMPACT OF COVID-19 ON THE ENERGY TRANSITION

Energy use is strongly linked to economic activity, which has and will continue to be significantly impacted by the novel corona virus pandemic. According to IMF's longer outbreak scenario, World GDP will shrink 6% in 2020. The lingering effects of the pandemic will take the wind out of the sails of the world economy for many years – reducing World GDP in 2050 by 9%, relative to pre-pandemic forecasts. Even with slower growth, however, by mid-century the world economy will still be twice its size today. In contrast, according to DNV-GL, energy demand will not grow. In 2050, it will be about the same as it is today, in spite of a larger population and world economy. This is largely due to significant improvements in energy intensity, but also due to the effects of COVID-19.

An 8% drop in Energy Use

Before the pandemic, DNV-GL predicted total global energy demand in 2050 at 456 exajoules (EJ), (Global energy demand using the latest historical figures was at 424 EJ in 2018.) Modelling now shows that the pandemic will reduce energy demand through to 2050 by 8%, resulting in energy demand in 2050 at almost exactly the level it was in 2018. This is illustrated in figure below:



Improvements in energy intensity will remain the most important factor in reducing energy demand in the coming decades, and the contraction due to COVID-19 comes on top of this. That is as a result of the brakes applied to economic activity generally by the pandemic, as well as some specific sectoral impacts. Lasting changes linked to COVID-19 are mainly behavioural in nature and include the impact of the pandemic on the transport sector, especially aviation, but also on less office work and changed commuting habits, which will result in transport energy use never again reaching 2019 levels. Demand for manufactured goods globally will need almost four years to recover to 2019 levels, and the energy-intensive iron & steel industry, impacted inter alia by lower demand for new office space, may never reach its pre-pandemic heights.

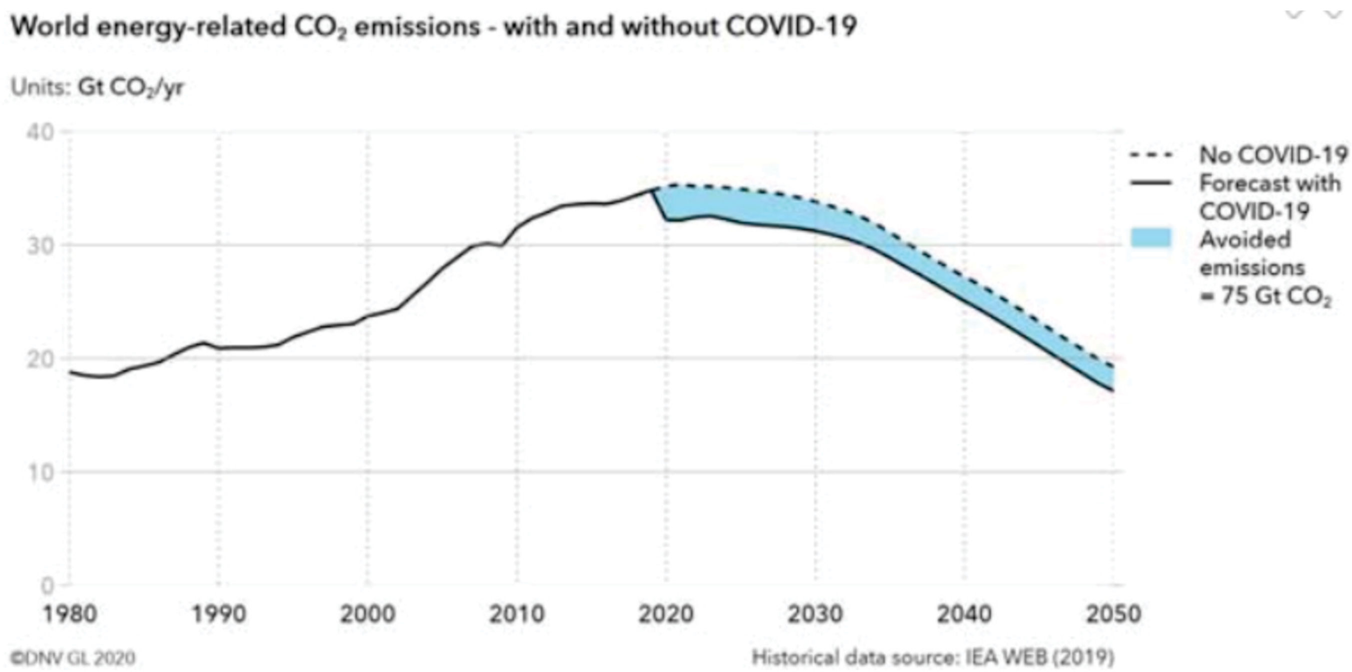
Hydrocarbon Challenges

On the face of it, this appears to be good news for decarbonisation – transport remains heavily oil dependent and iron & steel is one of the key so-called 'hard to abate' sectors, relying as it does to a large degree on hydrocarbons to supply high-heat processes. Declining demand in these sectors is one of the main reasons for the price weakness in hydrocarbons, with widespread write-downs in oil and gas assets.

It is certainly not game over for hydrocarbons, and especially not so for natural gas, which is forecast to take over from oil as the largest energy source in this decade. However, the reduced return oncapital and the increased volatility in fossil fuel prices is making many investors look at these assets in the post-COVID world with a greater degree of caution; they may also now regard renewable assets more favourably, even though the pandemic is placing a temporary check on the expansion of renewable sources of energy. Renewables have first place in the merit order of the power mix due to their very low operating costs, short design and construction times. These assets are therefore more robust and it is predicted that recovery of the non-fossil capital expenditure will be slightly faster in the next couple of years than will be the case for fossil energy.

Limited Long-term Effects on the Climate

With the earlier than anticipated plateauing of oil and the continued rapid decline of coal use, DNV-GL forecast shows that CO2 emissions most likely have already peaked (in 2019), as shown in Figure below:



Again, this appears to be good news from a climate goals perspective – but the longer-term decline in emissions is not significantly accelerated by the pandemic. Even with peak emissions behind us, and flat energy demand through to 2050, the energy transition forecast by DNV-GL is still nowhere near fast enough to deliver the Paris ambition of keeping global warming well below 2°C above pre-industrial levels. To reach 1.5-degree target, we would need to repeat the decline we're experiencing in 2020 every year from now on.

To put this in perspective, the COVID-19 impact on energy demand only buys humanity another year of 'allowable' emissions before the 1.5°C target is exhausted (in 2029) and a couple of years before the 2°C warming carbon budget is exhausted (in the year 2050).

It should also be acknowledged that emissions have been declining in the first half of this year for the wrong reasons. The corona virus pandemic is exacting a heavy and tragic toll on lives and livelihoods, increasing poverty and hunger and reducing growth prospects for those that need it most. There is a potential for a much more just and sound energy transition that does not cause the harm and disruption associated with the COVID crisis.

Looking into the Future

The economic and behavioural ramifications of COVID-19 will significantly reduce global long-termenergy demand and speed up the decline in CO2 emissions. According to fresh research results from DNV-GL, there will be significant short and long-term effects of the pandemic:

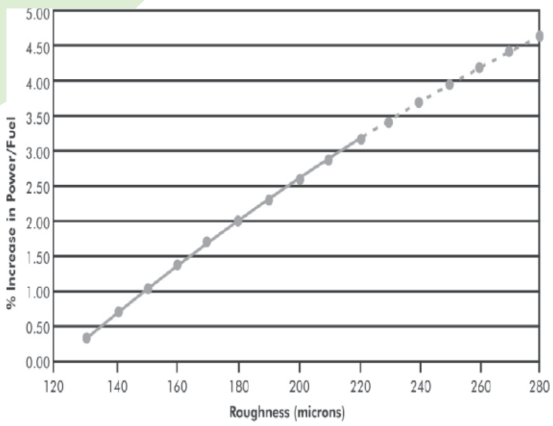
- Energy required by humanity in 2050 will be 8% lower.
- Energy demand from the transport sector will never reach pre-pandemic levels.
- CO2 emissions most likely peaked last year.
- Emission reductions due to Covid-19 buys us less than 2 years before exhausting the carbon budget.
- We are not on track to meeting the Paris goals.

Contributed by: Mr Sanjeev Bhandari (HSQE Department)

HULL AND PROPELLER CONDITION MANAGEMENT

Taking care of the propeller and underwater portions of the hull is all about minimizing roughness. Regular in-service cleaning to remove fouling organisms (which are a form of roughness) is clearly beneficial unless it is carried out in a way that results in a damaged coating or one that has been 'roughed' up. From a fuel efficiency point of view, the emphasis should be on hull and propeller roughness management and not just on the control fouling.

Resistance of a ship's hull is composed of frictional and wave making (or form) resistance. Frictional resistance, based on the wetted surface of the hull and appendages, is the primary component of total resistance, especially for full form ships. A tanker at its design speed will use the majority of its fuel overcoming frictional resistance when in calm water. For high-speed, fine-form ships wavemaking resistance becomes more important. However, frictional resistance still dominates the total resistance. The size of the frictional resistance is dramatically impacted by the roughness of the surface exposed to the flow. It has been suggested that each 10µm to 20µm of additional roughness can increase total hull resistance by 1 percent for full form ships and about 0.5percent for full form ships at high speeds. This is shown in the figure below.



It is not uncommon for a new ship to be delivered with surface roughness as low as 75µm and later in life enter the drydock with a roughness of 250µm. historical records have shown that even with good maintenance practices average hull roughness can increase by 10 to 25µm per year, depending on the hull coating system, even when fouling is not included. Even if the rate of increase in resistance for roughness shown in the in resistance for roughness shown in the savings from keeping a smooth hull are significant.

Surface roughness comes in many forms and from many sources which can be broadly categorized as physical. These sources are further grouped based on size as either micro-roughness (Less than 1mm) or macro-roughness (greater than 1mm).

The physical micro-roughness can be increased in service by mechanical damage, failure of the applied coating (Peeling, blistering, cracking, dirt inclusion, Etc.), and even improper preparation of the surface and / or improper application of a new coating. For instance, overly aggressive blasting, inadequate repairs to the previously applied coating, dry over spray and uneven dry film thickness can increase the surface roughness. After the first drydocking post-delivery where a spot treatment and a full coat of fresh antifouling has been applied, it is possible to see roughness of 250µm and more.

Based on the rule of thumb for added resistance a ship with this hull surface (Even when no fouling is present), 3 to 4 percent more fuel may be used than at delivery. The consequence of improper coating maintenance and application can be catastrophic from a hull resistance point of view. For this reason, due care must be taken when dry docking a ship so that the paint specification is robust, there is good quality control to monitor surface preparation and paint application and the painters are well trained.

Biological roughness (Fouling) also has a significant impact on resistance, even at the micro level (Slime, algae, Etc.). predictions based on model tests of a light displacement fine-form ship indicate that a light slim covering the entire wetted surface can increase total resistance 7 to 9 percent. A heavy slim results in a total increase on the order of 15 to 18 percent. Small barnacles and weeds push this up to a 20 to 30 percent increase in total resistance.

The purpose of in-service, underwater hull cleaning is to remove biological roughness or fouling. Depending on the coating, the cleaning process can have the added benefit of rejuvenating the active biocide layer. Proper cleaning removes all traces of fouling and does not remove or damage the coating or cause any increased surface roughness.

Underwater cleaning is accomplished by a diver with a manually operated scrubber incorporating some type of rotating brushes or pads. Some vendors offer cleaning vehicles that can be remotely operated from the surface. Depending on the degree and type of fouling to be removed a diver squad (often three men) can typically clean 2,000 m2 per hour of flat surfaces (less on the bow and stern areas). The underwater cleaning vendor will typically provide sufficient diver squads to clean the area requested in six to 12 hours, during normal ship stops (bunkering, anchorage, waiting for canal passage, etc.).

In the case when only partial cleaning is possible due to operational circumstances, the areas should be cleaned in the following order to provide the best performance enhancement:

- Propeller
- Forward third of hull
- Remainder of hull working from forward to aft

Source: ABS Ship Energy Efficiency Measures

HOW TO PROTECT YOUR HEARING ONBOARD

Historically noise on board ships can cause temporary or permanent hearing loss. It is usually gradual because of prolonged exposure to noise, such as working in an engine room without wearing hearing protection. However, hearing loss may also occur due to continuous ringing, whistling, buzzing or humming in the ear, which can lead to disturbed sleep.

The largest group of seafarers who are affected by abnormal audiometry results in hearing usually work in engine rooms. Hearing defects is one of the top causes of Pre-employment Medical Examination failure. A study conducted by UK P&I revealed that hearing defects as the main reason for failure has increased by 40%.

Good Hearing is Vital

Adequate hearing is essential for interpersonal and radio/telephone communications at sea. These communications often take place with background noise or interference and often have to transcend language barriers. Frequently failure to hear and to respond to a message correctly is safety critical. Additionally, audible alarms are the main function used on modern ships and systems to signal safety information. They form the usual means of arising attention of crew members or alerting those off duty.

Noise Levels Onboard Ships

IMO Res. A.468(XII) has set a specific thresholds for noise levels on board, while the ILO/MLC provides guidance on occupational hearing problems. Overall, ear protectors should be worn when the noise level is above 85dB(A).

Areas onboard

Nr.	Work Spaces	dB(A)
1.	Machinery Spaces (continuously manned)	90
2.	Machinery spaces (not continuously manned)	110
3.	Engine Control Rooms	75
4.	Workshops	85
5.	Non-specified work spaces	90
	Navigation Spaces	
1.	Navigation bridge and chartrooms	65
2.	Navigating bridge wings and windows	70
	Accommodation spaces	
1.	Cabins and hospitals	60
2.	Mess rooms	65
3.	Recreation rooms	65
4.	Open recreation areas	75
5.	Offices	65
	Service spaces	
1.	Galley and pantries	75

Key Measures while Onboard

- Each ship needs to place warning signs in different areas for crew protection, including signs for the ear protection use.
- Do not enter an area or space marked with such signs without using protection.
- Prefer to listen to music from loud speakers in medium to low level than using headphones.
- Keep the sound level in your cabin as lowest as it can be.
- Do not sleep with music on.
- Keep the duty hours with the use of ear protection as required.

Plan to see medical officer on board in case any hearing problems are identified.

Contributed by HSQE Department

INCINERATOR

WASTE OIL INCINERATOR - EFFICIENT OPERTAION BY UNDERSTANDING THE FINER POINTS

Proper understanding of the Incinerator burner and control program is required to ensure trouble free and efficient operation. TEAMTEC incinerators are all controlled by a state-of-the-art PLC ensuring a simple and reliable operation, maximum capacity utilisation and minimum fuel consumption. Minimum attendance is needed during operation.

The diesel oil burner heats up the incinerator. The burner runs in different steps, each program calculates the required burner steps and the burner responds accordingly by controlling the diesel oil valves, the burner air damper, the burner motor and the ignition electrodes. The airflow through the burner is adjusted by the burner damper to different air flow at different steps on the burner. The damper opening is corrected for the actual pressure in the combustion chamber and the actual speed of the sludge dosing pump. Do note that the sludge dosing pump has variable speed, which is controlled by a frequency inverter. The speed at start and timely increase in steps of RPM are controlled by the control program, which monitors, combustion chamber temperature, combustion chamber pressure and sludge regulation counter (also known as sludge quality number).

The burner has the following steps:

0 - Burner stopped
1 – Nozzle 1 Diesel oil (small)
2 – Nozzle 2 Diesel oil (big)
3 – Nozzle 1 and 2
4 – Nozzle 1 and sludge
5 – Nozzle 2 and sludge
6 – Nozzle 1 and 2 and sludge
7 – Sludge only

The Combustion Chamber Pressure set point is controlled by the combustion chamber temperature, flue gas temperature and burner step. When the combustion chamber temperature has reached 680°C set point “min combustion chamber temperature for run Sludge”, the steam line will flush for 10 seconds to drain out condensate water before starting up the sludge burner. The sludge dosage pump starts. If the temperature increases to 690°C after 60 seconds, the diesel oil burner reduces “combustion chamber temperature increase sludge – decrease diesel oil”. If temperature decreases below 640°C, sludge burning stops and retries to bring back the combustion chamber temperature to 680°C with a higher burner step. The higher burner step will depend on “sludge quality number” or “sludge regulation counter”. At 870°C set point of combustion chamber, diesel oil burner support will stop. The sludge program will start burner step 7 if sludge quality number is between 0 - 5 and “run sludge alone” if selected in the sludge settings.

The sludge dosage pump is controlled by a frequency inverter. Sludge dosage pump will increase sludge dosing pump RPM if combustion chamber temperature is equal or rising as compared to the previous sampled temperature, until combustion chamber temperature has reached set point for maximum combustion chamber temperatureof1150°C or flue gas temperature rises above 350°C, which is maximum flue gas temperature. The control system will then adjust sludge dosage pump RPM to keep combustion temperature and flue gas temperature below maximum set points.

All checks of temperature are made in time intervals. After each change in state or function, further adjustments are not made until time interval has elapsed. At the end of each time interval (30sec), the change in combustion chamber temperature is calculated. Depending on temperature raise (or drop), adjustments are made, according to calculations, to components that will influence the combustion chamber temperature and the present combustion chamber temperature is stored. At the end of next time interval, new calculations are made with reference to stored data and then the combustion chamber temperature and components are adjusted.

Understanding the Sludge Regulation Counter OR Sludge Quality Number

The automatic sludge control logic is designed for burning a maximum amount of sludge, consuming a minimum amount of diesel oil and maintaining the combustion chamber temperature above 850°C.

Sludge “quality” is an important factor for the sludge burning process. The system is capable of handling sludge with a high-water content, but this might, however, result in higher diesel oil consumption.

Please refer to below different sludge counter no. and corresponding Burner stage

SLUDGE REG COUNTER NO	0 - 22	Counter (automatic) that controls the burner stage burning sludge. Can be set manual for special occasion. NO <6 stage 7 NO >6 and <12 stage 4 NO >12 and <16 stage 5 NO >16 stage 6

At combustion chamber above 650°C, the sludge burner starts and display will show **STAGE NO. 5** at line 4 on display panel. After 30 seconds it will show **STAGE NO. 4.**

Sludge dosing pump starts at 400 rpm [RPMST] and will run at this RPM for 5 minutes, prior to any control of sludge burning.

Temperature limits

650^{0}C [CCTSS]	**Start sludge burner.**
640^{0}C [CCTSS] - [HCCTS]	**Temperature decrease to this level stop sludge burner and increase sludge program counter with 2.**
800^{0}C [CCTSS] + [HCCTLA]	**Alarm level for low combustion chamber temperature.**
850^{0}C [CCTSO]	**Temperature allowing burning sludge alone.**
840^{0}C [CCTSO] - [HCCTS]	**Start a diesel support burner in addition to the condition at 850^{0}C and increase sludge program counter with 2.**
870^{0}C [CCTSO] +(2 x [HCCTS])	**Above this temperature the sludge program counter will step down one step at the time.**

<u>650 to 850°C</u>

Case 1- Assuming that sludge is of good "quality" the temperature will start to rise. If the temperature rise is >=0 over 30 seconds the sludge dosing pump increases 3 RPM. There will be sampling temperature each of 30 sec. and provided there is temperature rise. A new step of 3 rpm will take place. This will go on up to a temperature of 850°C.

Case 2- If the sludge contains too much water or chemicals, the temperature is likely to fall below 640°C and the sludge dosing pumps stops. Burner will change to STAGE 3, and the sludge program counter increases with 2. When the temperature rises above 650°C, the sludge burner will start again. The burner stage will then depend on sludge program counter. (See Figure:10)

At program counter 12 (Stage 6), sludge increase will not be allowed before the temperature has increased to above 850°C.

<u>Above 850°C</u>

At temperature raise above 850°C, the sludge burner stages decrease one step:

STAGE 4 changes to STAGE 7 (Sludge alone)

STAGE 5 changes to STAGE 4

STAGE 6 changes to STAGE 5 (Program counter < 19)

NOTE: For burning sludge alone STAGE 7 [SLUDGE ONLY] in menu "PROGRAM SELECT" must be at "1". If "0" is selected the diesel burner (STAGE 4) will be on at all times at temperature above 850°C.

Temperature falling below 840°Cwill increase the burner stage with 1 and the sludge program counter with2. If this results in STAGE 6, the sludge dosing pump will decrease by 3 RPM. If the temperature then rises above 850°C, the increase of sludge dosing pump RPM can take place.

<u>Above 870°C</u>

At temperature above 870° C the sludge program counter decreases with 1 for each step of the sludge pump speed. This will reduce diesel consumption and increase sludge capacity. Sludge dosing pump maximum speed is 1500 RPM.

It may be required to manually lower the sludge regulation counter number between 0 and 5 if the sludge burner is required to be run alone. If the sludge regulation counter number is 6 or above, it can be seen that the sludge will never burn alone. Sludge regulation number between 6 and 12 will cause the sludge burning to upgrade only to Stage 4 (that is sludge burner being assisted by small diesel oil burner). Sludge regulation number between 13 and 18 will cause the sludge burning to upgrade only to Stage 5 (that is sludge burner being assisted by big diesel oil burner). Sludge regulation number is 19 or above, it will cause the sludge burning to upgrade only to Stage 6 (that is sludge burner being assisted by small and big diesel oil burner).

Do note that in each Stage other than Stage 7, the diesel oil is being used in running the Waste Oil Incinerator.

Contributed by Mr. Vijoy Dick (Fleet 4)

Goodwood Ship Management Pte Ltd

20 Science Park Road
#02-34/36 Teletech Park
Singapore 117674

Ph +65 6500 4040
Fax +65 6500 4050

Goodwood Marine Services Pvt Ltd
(Manning office in India)

Unit 905, 9th Floor
and Unit 1222, 12th Floor
Hubtown Solaris
N. S. Phadke Marg,
Andheri (East),
Mumbai - 400069
Maharashtra, India

Ph +91 22 6720 0400
Fax +91 22 6720 0404

application@goodwoodship.com

Goodwood

www.goodwoodship.com