

ಡ്രಿಡಿಂಗ್ ಕಾರ್ಪೊರೇಷನ್ ಆఫ് ಇಂಡಿಯಾ ಲಿಮಿಟೆಡ್
Dredging Corporation of India Limited



DARPAN
THE MIRROR OF DCI

Issue 7 | December 2021



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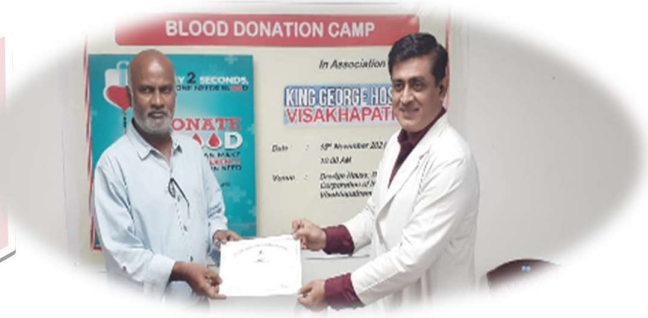
Welcome

Shri K Rama Mohana Rao, IAS Chairman DCI addressing shareholders during 45th Annual General Meeting of DCI. Prof Dr G Y V Victor, MD & CEO, DCI and other senior DCI officers also present.



Smt Nutan Guha Biswas, IAS (Retd) & DCI Independent Director, DCI greeted by Prof Dr G.Y.V Victor, MD & CEO, DCI.

Capt P.M Saravanan, General Manager – HR, HSE & Legal received certificate of successful completion of Blood Donation Camp in DCI from Dr Raj Gurbuxani, Medical Officer, King George Hospital, Visakhapatnam.



A group photo of DCI team along with the team of Cochin Shipyard Limited and IHC during their visit to DCI, head office.



Ongoing Projects of DCI

Maintenance Dredging Contract awarded at Southern Naval Command, Kochi

SOUTHERN NAVAL COMMAND, (SNC), KOCHI

DCI has been awarded the Maintenance Dredging Contract at Southern Naval Command, Kochi to dredge a quantity of 1.2 Million Cubic Meter at an estimated cost of Rs 26.02 CR. DCI carries out Dredging every year from the month of December and the dredging of the present year will commence from December 2021.



Sand Trap Dredging Contract awarded at Numaligrah Refinery, Ltd, Paradip

Numaligrah Refinery Ltd, Paradip

DCI has been awarded the sand trap Dredging contract at Numaligrah Refinery, Paradip to dredge a quantity of 1 Million cubic meter at an estimated cost of 30 CR. The dredging has commenced in the month of August October 2021. The completion period is five months from the date of starting the Dredging.



Maintenance Dredging Contract awarded at Visakhapatnam Port Authority

Visakhapatnam Port Trust

DCI has been awarded the Annual Maintenance Sand Trap Dredging Contract at Visakhapatnam Port Trust to dredge a quantity of 2.10 Lakh cubic meter at an estimated cost of 13.42 CR. The period of contract is 60 days (between December to March of every year) The Dredging is likely to start in the 2nd week of December 2021.





Capt. K.M Sreedharan



It was the second day since Gurmith was in a coma . No one close to him will forget the hateful December 2009, a truck hit his Mercedes Benz head on. He was the driver. He didn't see it coming from the wrong side of a blind turn returning home from his electronic hardware factory in Autonagar , downtown in Visakhapatnam, he was per pending over the contract wrapped with AP government a couple of hours ago for integrating all their street electric transformers for remote operation from a central control room . In one flash of a second his future was swept away.

Gurmith, a tall handsome sardarji was my best friend from school days. He had built a huge multicore electronic manufacturing unit raised from rupees two lakhs cadged from his father in summer of 1998. His fastidious attitude , consecrated professionalism and a canonical work ethics vaulted him and his enterprise, The Lotus Electronics Ltd , as one of the best small scale industries in India . His turnover had crossed 28 crores in the financial 2008. His technical collaborators from Finland and Germany were chuffed in awe of Gurmith.

The attending Doctors concluded the state of his concussion to a possible brain damage. He had suffered a skull fracture from the impact, both his eyes sustained fatal injuries, both his legs were pulled out by wrenching the driver's seat away out of the car. His entire body was a distressing sight. He was airlifted to Hyderabad, Appollo Health city at Jubilee hills. The family marshaled all resources they could muster for their best man. The neurosurgeon, the plastic surgeon, the Eye specialist , the Orthopedic surgeon and an array of equipments and associate attendants threw up together at ICU for several hours to stabilise and take Gurmith out of the woods. Nobody could set a timeline for his complete recovery. The Hospital could not

NEVER LOSE HOPE

vaticinate the possible extent of his recovery or indicate a date for Gurmith to walk home.

In the absence of its ambitious, objective and an intelligent leader , The Lotus Electronics suffered unfathomable losses. The AP contract was falling apart on its seam, the professional character of the company ebbed out , many of the employees quit . The turnover and productivity tumbled and the company balance sheet shot to red within months.

I was at sea when this tragedy befell Gurmith. I did reach out , connect , interact with friends and his family and was in the know about his slow progress at the hospital . My earliest opportune occasion to see him was on sign off from my ship around end Feb 2010. Within a couple of days on reaching home I packed to leave to Hyderabad. I was anxious to know his state in person. I was celebrating over meeting him for the first time after this disastrous tragedy. What could I tell him when I face him to assuage this tragic calamity? Suddenly I remembered events that my fathers enlisted boy endured and survived through WW II in the Arakan during the Japanese U-Go Offensive. He had a poem that he regarded as a sacred philosopher's stone, an elixir of his own life A poem that he propped and bankrolled in to me on every occasions of dullness, weakness, failures, you name it. I read, heard and was so hugely impressed and influenced by its lyrics that I carried a framed copy of this apothegmatic work wherever I went . I did know every word the author conveyed. I felt this is the most befitting gift to Gurmith . I printed a copy and bagged it.

On reaching the Hospital , Parvinder, Gurmith's son was waiting at the reception hall. I followed the lanky boy that led to a well appointed room with sophisticated clinical gadgetries . Gurmith was leaning on an angled bed, he seemed to be expecting me, his wife Neetha standing by his side was the first to see me . She smiled and shuttled her looks from me to Gurmith. His head and his right eye were covered, marks of dissolved stitches were visible on his cheeks. Both his plastered legs were resting on the bed. His left eye was alive, sparkling and smiling at me. His facial muscles were rigid. No danger or pain could exist in this

world for this man, I thought to myself. I held his hand and didn't speak a word. None was necessary. After a pause I asked "when will you be discharged in shape one?" He shook his head. Nobody answered. We discussed everything under the sun. After about fifteen minutes an attending nurse came to announce that all visitors must leave. I quickly opened my brief and took out the poem of my lifetime and delivered it to him like a savior handing over an emancipating lifeline.

"A POEM I LOVE. DO READ IT AT LEISURE" I SAID. I THOUGHT WHAT THE HECK, HIS EYES ARE NOT READY TO READ AND WRITE. BEFORE I COULD SAY ANYTHING, HE GESTICULATED TO PARVINDER, WHO TOOK THE SHEET OF PAPER AND NEATLY STOWED IT AWAY INSIDE A PULL DRAWER. AFTER A FEW PARTING MESSAGES I BID GOOD BYE TO ALL AND LEFT THE ROOM.



I couldn't meet Gurmithuntill mid of June 2010 when I visited his sprawling office at Visakhapatnam. He stood at the entrance to receive and greet me. His left eye alive and sparkling inside his high cheekbones over a gaunt hollow cheeks. He didn't need crutches to stand and move. The place was alive with people who seemed to be busy professionals working on tight, hectic schedules. I followed him to his chamber through a passage decked with plush marbles, carved teaks and glass. He beckoned me to a chair as he sat being an imposing table. The whole place had the luxury fit for a billionaire. I looked at him sitting opposite, he hasn't lost anything. He looked and behaved brilliantly like an emperor who had conquered the entire world. Behind him was a magnificent Badoglio wall glistening to match his profile.

THE POEM I DELIVERED WAS FRAMED IN POLISHED WOOD AND HUNG ON GEOMETRIC CENTRE OF THIS EYE-CATCHING WALL.

IF

BY RUDYARD KIPLING

*If you can keep your head when all about you
Are losing theirs and blaming it on you,
If you can trust yourself when all men doubt you,
But make allowance for their doubting too;
If you can wait and not be tired by waiting,
Or being lied about, don't deal in lies,
Or being hated, don't give way to hating,
And yet don't look too good, nor talk too wise:*

*If you can dream—and not make dreams your master;
If you can think—and not make thoughts your aim;
If you can meet with Triumph and Disaster
And treat those two impostors just the same;
If you can bear to hear the truth you've spoken
Twisted by knaves to make a trap for fools,
Or watch the things you gave your life to, broken,
And stoop and build 'em up with worn-out tools:*

*If you can make one heap of all your winnings
And risk it on one turn of pitch-and-toss,
And lose, and start again at your beginnings
And never breathe a word about your loss;
If you can force your heart and nerve and sinew
To serve your turn long after they are gone,
And so hold on when there is nothing in you
Except the Will which says to them: 'Hold on!'*

*If you can talk with crowds and keep your virtue,
Or walk with Kings—nor lose the common touch,
If neither foes nor loving friends can hurt you,
If all men count with you, but none too much;
If you can fill the unforgiving minute
With sixty seconds' worth of distance run,
Yours is the Earth and everything that's in it,
And—which is more—you'll be a Man, my son!*

Gurmith followed my gaze. He smiled and said "It made a difference to my life. The third para is my favourite.

Capt. P.M. Saravanan, GM (HR), (Legal) & (HSE)



UNINTENDED LESSONS OF A WEBINAR

Pre March 2020, no one would have thought that “online classes and meetings” would be the order of the day in March 2021. But, one pandemic by name COVID 19 has made that into a possibility. Now, in Nov 2021, there are students who are striking against “offline examinations”. Many organizations also shifted to online meetings and operations. The success of the online thing can be understood from the fact that Zoom an online meeting application, whose stocks were hovering around 67 USD in Jan 2020 have skyrocketed to 559 USD in Oct 2020, a 735% increase. It is still selling at 251 USD, a 275% increase.

With the success of the online education and meetings, Webinars have become the most heard about thing. There is a Webinar on every other day and every other topic. But, do all the webinars succeed and do justice for the organizers? Some succeed and some fail.

Why? 72% of the B2B marketers say Webinars are the best way to generate high quality leads and 61% of them rate webinars as the most effective content marketing tactic and use them for lead generation, thought leadership, training, internal communications and more. But, ironically more than 28% of the registrations occur only after the webinar is over.

Recently, I had the opportunity to attend 3 different Webinars conducted by 3 different organizations.

1. Vikatan Group – A Tamil Magazine Conglomerate
2. The Week – Leading English Magazine from MalayalaManorama Group
3. UlagaThirukkuralKootamaippu (World Thirukkural Federation) – ThirukkuralAayvarangam (Thirukkural Symposium)

All the 3 organizations have conducted the Webinars on 3 different topics. When I looked at the number of participants, each had a different numbers. The Vikatan Group’s Webinar had close to 550 participants whereas the one

by The Thirukkural Foundation had just 20 plus participants. The Webinar by The Week had the provision of knowing the number of participants deactivated; hence, I was unable to know.

THE TOPICS OF THE WEBINAR CONDUCTED BY EACH ORGANIZATION WERE AS BELOW:

1. Vikatan Group – Investment – A route to wealthy future – Investment in Mutual Funds
2. The Week – Path to prosperity – Again on investments through Mutual Funds
3. The Thirukkural Federation – Thiruvalluvar’s Truthfulness and Gandhi’s Non-violence

The Webinars by both the Vikatan Group and the The Week were sponsored by “Bajaj Capital” and the one by the Thirukkural Federation was sponsored by none. The language used was Tamil in the webinars of Vikatan and Thirukkural Foundation. The one by The week was in English.

The webinar by Vikatan Group had a famous Investment Guru Mr. V.Nagappan and the one by The Week had Mr. Radhakrishnan Pillai, famous Author of Best Seller Books such as Corporate Chanakya, Thus spoke Chanakya, Chanakya’s 7 Secrets of Leadership etc as Guest Speakers. Even the one by Thirukkural Foundation also had a Guest Speaker, but, he was not so famous.



Target Audience:

Before embarking on to anything else pertaining to a webinar, we first need to decide the target audience. Is it ladies or gents, or the working group or the house makers, or the educated or otherwise, etc.? The target audience will decide all the other factors such as the subject of the webinar, language of the webinar, day and time of the webinar, etc.

THE SUBJECT / TOPIC OF THE WEBINAR:

Subject of the webinar is one of the most important factors that will ensure that the participants are enthused to login. We need to do good amount of thinking / research to fix the topic which will benefit the larger part of the audience.

LANGUAGE OF THE WEBINAR:

The language of the webinar is the second most important factor which will ensure maximum participants. In spite of the English medium education, most of the India citizen are still comfortable to hear in their mother tongue. So, the language of the webinar should preferably be the lingua franca of the target audience.

HOW THE WEBINAR WAS ADVERTISED?

The number of the participants and the success or otherwise of a webinar depends on the modes used for advertising the occurrence of such a webinar. Participants cannot dream about a webinar and the organizers have to use all the possible channels such as Facebook, Twitter, Instagram, WhatsApp

THE DAY AND THE DURATION OF THE WEBINAR:

As most of target audience may belong to the working class, either working for someone or for their own selves, Saturdays and Sundays may be the best days. The time of the webinars should preferably be in the forenoon before 1300 hrs or in the afternoon after 1600 hrs as most of the potential audience may want to have their siesta. One should also keep in mind that 30 – 45 minutes is most ideal duration of a webinar and definitely never more than 1 hr. However, for a webinar on work related topics are better conducted on weekdays, preferably in the middle of the week.

STARTING AND CLOSING OF THE WEBINAR:

The organizer of the webinar should ensure that the webinar starts at the agreed time and is not delayed due to whatever reasons. Many a times, the webinar is delayed as the number of the participants is not decent enough. But, if the webinar does not start in time, those who have already logged in may feel let down and sometimes, log out also, thus ensuring failure, even before the webinar starts as they can treat the delay as a disrespect to them. The speaker should immediately get on to the subject and complete the webinar in time.

WHO ARE THE GUEST SPEAKERS?

The speaker is another important factor which pulls maximum audience. Having taken care of all the factors as above, if we fix the wrong speaker, the webinar will fail for sure. The Guest Speaker should preferably be a “Subject Expert” and a famous one whom the target audience are aware of and are looking forward to listening to him.

MODE OF DELIVERY:

The mode of delivery makes a huge difference in holding on to the participants once the webinar has started. Most of the webinar speakers do not understand the requirement of a medium, such as power point slides etc, between them and the audience and tend to speak throughout the webinar, which makes the webinar a monologue and the audience get bored and leave the webinar within few minutes of its starting.

ORGANIZERS AND SPONSORS OF THE WEBINAR:

The organization who is conducting and those who are sponsoring the webinar does have a big bearing on the success of the webinar or otherwise. Audience attach certain amount of confidence on those firms who are conducting and sponsoring and will throng to the webinar only with the trust what was developed by those firms over the years and there are all the chances that the webinar becomes a success even before it starts.

DO NOT USE THE WEBINAR TO PROMOTE THE COMPANY OR PRODUCT

It is 100% agreed that the organizations that are arranging and sponsoring the webinar have a right to promote their organizations or their products during the webinar. But, one should do that in the subtlest manner possible and should not go full blast with such promotions. If it is used as a promotional method, one can be rest assured that their next webinar will be a 100% failure.

HOW DO WE FOLLOW UP AND CLOSE THE WEBINAR?

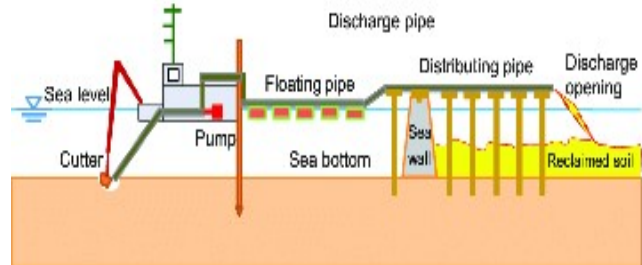
It may not be bad idea to issue a feedback form and collect the opinions and contact details of all the participants and maintain a databank which may be used in future to tinker with the future webinars and also communicate with the participants on the future webinars. Many webinar organizers issue a certificate of participation to all the participants.



T.V Suresh Kumar, HOD (R&D)

**BENEFICIAL USE OF DREDGE MATERIAL (NRL RECLAMATION SITE AT PARADIP)
-----WASTE TO WEALTH PROCESS**

Dredging is essential for development and maintenance of waterways and ports, create safe Navigation channel, land reclamation, environmental and ecosystem improvement, coastal and flood management. Dredging removes large volumes of sediments that need to be appropriately managed and beneficial use is the preferred way to manage dredged material. The best way to manage sustainably is by using dredged sediments beneficially. The most important principle to consider is that dredged material is a resource instead of waste. It should not be seen in terms of a material that needs to be disposed of. Instead it creates societal, environmental, and financial benefits with its reuse. Therefore, the option of retaining dredged material within the same Aquatic system (sustainable relocation) should be considered first.



There are many different types of beneficial use applications of dredged material as below summarized:-

	Type of Dredged Material					
	Rock	Gravel & Sand	Stiff Clay	to hard	Silt/Soft Clay	Mixture
Beneficial Use of dredged material						
Land Creation	✓	✓	✓		✓	✓
Land Improvement	✓	✓	✓		✓	✓
Berm Breakwater Creation	✓	✓	✓		-	✓
Shore Protection	✓	✓	✓			✓
Land reclamation		✓				✓
Replacement fill	✓	✓				✓
Beach Nourishment		✓				
Capping		✓	✓			✓
Feeder Berm Breakwaters		✓			✓	✓
Construction material	✓	✓	✓		✓	✓
Wet land restoration			✓		✓	✓
Aquaculture			✓		✓	✓

In this process, under the “Waste to Wealth “National programme, Dredging Corporation of India Ltd has taken up dredging and reclamation work of NumaligarhRefinery Limited (A Government of India Enterprises) for beneficial /commercial usage of dredged material at Paradip port for their project. Numaligarh Refinery Limited under their major expansion project of capacity augmentation from present 3 MMTPA to 9 MMTPA, NRL desires to import additional quantity of crude oil at Paradip Port and to develop Crude Oil Import Terminal (COIT) at Paradip and further transport it to through cross

country pipeline of around 1400 km from Paradip to Numaligarh. In this connection “Reclamation at NRL COIT site “ is required to be carriedout in order to raise the present existing level of the plot to the required finished ground level up to + 5.00 m by utilising the dredged material/ Sand. DCI has commenced dredging with one of its high capacity dredger Dr XVIIfrom the location .i.e Sand trap area at Paradip Port and pumping



Events in DCI



Shri Shantanu Thakur Hon'ble Union Minister of State Ministry of Ports, Shipping & Waterways, Govt of India visiting DCIL, NRLM reclamation site at Paradip.

DCI organized the Blood Donation Camp in DCI on November 18, 2021 at DCI head Office.

Dr Raj Gurbuxani, Medical Officer, King George Hospital, Visakhapatnam briefing Prof Dr G.Y.V Victor about the Blood Donation Camp.



A group photo of DCI HODs MD & CEO along with SmtNutanGuha Biswas, IAS (Retd) & DCI Independent Director

SmtNutanGuha Biswas, IAS (Retd)& Independent Director of DCI during her visit to DCI head office met the women employees of DCI. A group photo of SmtNutanGuha Biswas along with DCI women employees.





Print Media interactions

The New Indian
Express

THE NEW INDIAN EXPRESS, A LEADING BUSINESS DAILY ENGLISH NEWSPAPER HAS INTERVIEWED PROF DR. G.Y.V VICTOR, MD& CEO ON FUTURE GOALS OF DCI AND HOW DCIL WILL BE LOOKING FORWARD TO DIVERSITY.

IN AN EXCLUSIVE INTERVIEW TO THE NEW INDIAN EXPRESS PROF DR G.Y. VICTOR SAID THAT THE COMPANY IS LOOKING FORWARD TO EXPAND ITS EXISTING TURNOVER FROM 700 CR TO 850CR & HAS A BRIGHT FUTURE AHEAD. HE SAID THIS CAN BE ACHIEVED BY AUGMENTING THE ADDITIONAL PURCHASE OF 12000 HOPPER CAPACITY DREDGER. HE SAID DCI HAS RECEIVED APPROVAL FOR BUILDING A TRAILING SUCTION HOPPER DREDGER OF 12,000 M3 CAPACITY BY COCHIN SHIPYARD LIMITED. HE FURTHER ADDED THAT THIS WILL BE THE FIRST TIME THAT DCI SHALL BE BUILDING TSHD IN AN INDIAN SHIPYARD.

AS FAR AS ROAD OF DIVERSIFICATION IS CONCERNED MD & CEO PROF DR G.Y.V VICTOR SAID THAT WE HAVE PROPOSED TO DIVERSITY INTO NEW AREAS OF OPERATIONS SUCH AS DAMS AND RESERVOIRS, INLAND WATERWAYS, SAND MINING, AND FISHING HARBOURS. AS A PART OF IT, THE DCI WILL BE TAKING OVER THE MAINTENANCE OF ALL 10 ISLAND WATER WAYS OF THE UNION TERRITORY OF LAKSHADWEEP. AN MOU HAS BEEN SIGNED WITH THE UNION GOVERNMENT AND LAKSHADWEEP AND WORKS WILL START AFTER THE NEXT MONSOON SEASON, THAT WILL BE PROBABLY FROM SEPTEMBER OR OCTOBER.

ON THE QUESTION OF COVID 19 IMPACT ON DCI, WAYS OF BECOMING SELF RELIANT AND FUTURE PLANS OF DCI TO DEVELOP DREDGING AND MARINE ACTIVITIES IN ANDHRA PRADESH, PROF DR G.Y.V VICTOR REPLIED

LIKE OTHER COMPANIES COVID 19 HAD AN IMPACT IN SLOWING DOWN THE DCI OVERALL PROGRESS. DUE TO COVID 19 DCI WAS UNABLE TO COMPLETE THE DRY DOCK OF ITS SHIPS AS MANY INDIAN SHIPYARDS WERE NOT OPERATING AND TEMPORARILY SHUT DOWN THIS HAS IMPACTED DCI OVERALL FIRST COUPLE OF QUARTERS RESULT INTO NEGATIVE BUT GOING FORWARD HE SAID WE ARE QUITE CONFIDENT TO POST POSITIVE RESULTS.

On the question of Self reliant he said we have inaugurated a world class state of art soil lab in DCI premises which will enable us to identify the exact parameters of Dredging Material. He further added that DCI plans to offer consultancy to other firms on need basis in reclamation of land.

Finally coming to the question of how DCI is looking forward to develop the Marine activities in Andhra Pradesh he said in AP DCI has proposed to develop Antarvedi with Rs 2,000 CR as a part of the world class harbor, shipbuilding and repairing and training institute. The government will be earmarking 200 acres for the Antarvedi project. He also said that we have already had preliminary talks with the State Government and also with the AP Maritime Board and once they get the nod for the proposal they will prepare detailed report.

He said we are also in talks with the Kerala Government that are in the final stages with regard to the desilting of dams and reservoirs. There is every possibility that we may take up the desilting of rivers and reservoirs which have not been dredged for the last 60 years shortly.



CH.V. Chowdary, JM (T)

LIQUEFIED NATURAL GAS AS FUELS FOR DUAL FUEL ENGINES IN THE SHIPPING INDUSTRY

It was a century ago when shipping had transformed from “coal fuelled” to “oil fuelled”. After hundred years, again transformation to a newer fuel source is making waves, this time, it is to “gas”.

Driven by tougher international and environmental standards, (Liquefied Natural Gas) LNG is being termed as the fuel of the future. According to experts, large scale shipping is believed to be sourced by LNG in the near future.

REASONS FOR TRANSFORMATION

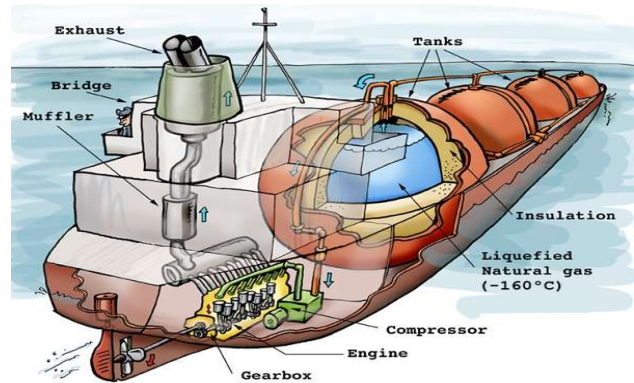
Increase in marine fuel oil prices have made way to development of newer technologies based on cost and environment efficient fuels such as natural gas. LNG is a potential winner in terms of being environment friendly, safe, reliable and cost effective. Due to the influential properties possessed by LNG, it is the only alternative fuel which is believed to drive the future. Studies have shown that usage of LNG as fuel has cut down the poisonous sulphur emissions or SO_x significantly with a substantial reduction in carbon dioxide (CO₂) and nitrox or NO_x gases.

LNG fuel surely holds a promising future in the shipping industry. However, only time can tell as to how well it becomes an integral part of the shipping industry in the days to come. LNG is Natural Gas cooled down to -162 °C, liquefying it and making it easier to use and more economical. LNG fuel is free of sulphur and particulates, meaning that no harmful emissions are released into the atmosphere. The combustion process is also different to that of MGO, resulting in far less nitrogen dioxide being emitted. In order to use LNG in the engines, it first has to be heated up and transformed into gas again. LNG is a non-toxic, non-corrosive, colourless, odourless, safe and clean form of natural gas. LNG is non-flammable, therefore, the liquid itself will not burn.

HOW IS THE TRANSFORMATION TAKING PLACE?

Some companies are building hybrid ships that are able to run on both oil and gas as fuel. These vessels will be powered by dual fuel engines, meaning they can run on conventional MGO (Marine Gas Oil) but also on LNG (Liquefied Natural Gas). The technology will see ships to be powered by natural gas for upto half way through the voyage and still be capable to switch over to bunker fuel for the remainder of the journey. Idea will be to use natural gas as the primary source of power and bunker fuel as a secondary / emergency one.

Moreover, LNG is a very pure fuel, therefore, the operational costs of the engine will decrease, the technical states of the



engines are better, and the number of emergencies and failures will drop.

DISADVANTAGES OF USING LNG AS FUEL

A potential disadvantage to using LNG is space. Since gas weighs more, volume-wise it requires more space as compared to bunker oil. The farther the journey, the equally larger amount of storage space is required.

Strict pollution regulations mean ship operators will be also installing more expensive units to cut emissions such as scrubbers. Another drawback before introduction of LNG is the availability of the fuelling stations, as these may have to be set up at major ports or at regular bunkering points.

Knocking is one of the severe problems of the LNG dual-fuel engine. One of the key initiatives to utilize LNG as a fuel in a diesel engine is to alleviate the knocking problem and take adequate precautions when knocking resistance is low. However, there is no specific technique to reduce knocking completely. One of the solutions to improve the knock resistance of LNG is to keep higher methane in LNG. During the manufacture of LNG, it should be ensured that the amount of methane is 99.4% or higher. Before taking a call for the change-over decision, ship operators need to identify the scope of transition with introduction to dual fuel system, price comparison of the commodities and the areas where their ships would ply.



M. Srinivas, JT Manager, Materials

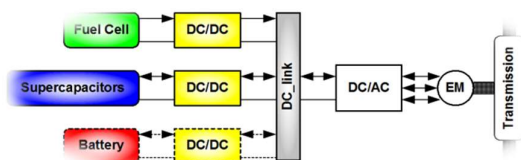
The large number of automobiles in use around the world has caused and continues to cause serious problems of environment and human life. Air pollution, global warming, and the rapid depletion of the earth's petroleum resources are now serious problems. Electric Vehicles (EVs), Hybrid Electric Vehicles (HEVs) and Fuel Cell Electric Vehicles (FCEVs) have been typically proposed to replace conventional vehicles in the near future. Most electric and hybrid electric configurations use two energy storage devices, one with high energy storage capability, called the "main energy system" (MES), and the other with high power capability and reversibility, called the "rechargeable energy storage system" (RESS). MES provides extended driving range, and RESS provides good acceleration and regenerative braking. Energy storage or supply devices vary their output voltage with load or state of charge and the high voltage of the DC-link create major challenges for vehicle designers when integrating energy storage / supply devices with a traction drive. DC-DC converters can be used to interface the elements in the electric power train by boosting or chopping the voltage levels

DC-DC CONVERTERS FOR ELECTRIC VEHICLES

electric drive system as shown in Figure. In EV the main energy source is assisted by one or more energy storage devices. Thereby the system cost, mass, and volume can be decreased, and a significant better performance can be obtained. Two often used energy storage devices are batteries and SCS. They can be connected to the fuel cell stack in many ways. A simple configuration is to directly connect two devices in parallel, (FC/battery, FC/SC, or battery/SC). However, in this way the power drawn from each device cannot be controlled, but is passively determined by the impedance of the devices. The impedance depends on many parameters, e.g. temperature, state-of-charge, health, and point of operation. Each device might therefore be operated at an inappropriate condition, e.g. health and efficiency. The voltage characteristics also have to match perfectly of the two devices, and only a fraction of the range of operation of the devices can be utilized, e.g. in a fuel cell battery configuration the fuel cell must provide almost the same power all the time due to the fixed voltage of the battery, and in a battery/supercapacitor configuration only a fraction of the energy exchange capability of the supercapacitor can be used.

ELECTRIC VEHICLES POWER TRAIN

An Electric Vehicle is a vehicle that uses a combination of different energy sources, Fuel Cells (FCs), Batteries and Supercapacitors (SCs) to power an



DC/DC CONVERTERS FOR ELECTRIC VEHICLES

This is again due to the nearly constant voltage of the battery. By introducing DC/DC converters one can chose the voltage variation of the devices and the power of each device can be controlled (Schaltz& Rasmussen, 2008).The different configurations of EV power supply show that at least one DC/DC converter is necessary

to interface the FC, the Battery or the Supercapacitors module to the DC-link.

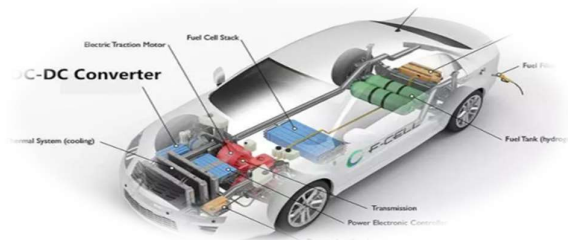
In electric engineering, a DC-to-DC converter is a category of power converters and it is an electric circuit which converts a source of direct current (DC) from one voltage level to another, by storing the input energy temporarily and then releasing that energy to the output at a different voltage. The storage may be in either magnetic field storage

Components (inductors, transformers) or electric field storage components (capacitors). DC/DC converters can be designed to transfer power in only one direction, from the input to the output. However, almost all DC/DC converter topologies can be made bi-directional. A bi-directional converter can move power in either direction, which is useful in applications requiring regenerative braking. The amount of power flow between the input and the output can be controlled by adjusting the duty cycle (ratio of on/off time of the switch). Usually, this is done to control the output voltage, the input current, the output current, or to maintain a constant power. Transformer-based converters may provide isolation between the input and the output. The main drawbacks of switching converters include complexity, electronic noise and high cost for some topologies. System.

In case of interfacing the Fuel Cell, the DC/DC converter is used to boost the Fuel Cell voltage and to regulate the DC-link voltage. However, a reversible DC/DC converter is needed to interface the SCs module. A wide variety of DC-DC converters topologies, including structures with direct energy conversion, structures with intermediate storage components (with or without transformer coupling), have been published (Lachichi & Schofield, 2006), (Yu & Lai, 2008), (Bouhalli et al., 2008).

Each converter topology has its advantages and its drawbacks. For example, The DC/DC boost converter does not meet the criteria of electrical isolation.

Moreover, the large variance in magnitude between the input and output imposes severe stresses on the switch and this topology suffers from high current and voltage ripples and also big volume and weight. A basic interleaved multichannel DC/DC converter topology permits to reduce the input and output current and voltage ripples, to reduce the volume and weight of the inductors and to increase the efficiency.



These structures, however, cannot work efficiently when a high voltage step-up ratio is required since the duty cycle is limited by circuit impedance leading to a maximum step-up ratio of approximately 4. Hence, two series connected step-up converters would be required to achieve the specific voltage gain of the application specification. A full-bridge DC/DC converter is the most frequently implemented circuit configuration for fuel-cell power conditioning when electrical isolation is required. The full bridge DC/DC converter is suitable for high-power transmission because switch voltage and current are not high. It has small input and output current and voltage ripples.



DCI SHARE PRICE OCTOBER 01 TO DECEMBER 31, 2021



In the last three months DCI share has performed reasonably well at par with the Nifty 50 benchmark indices. DCI share price remained consistent irrespective of the fact that DCI has posted loss in the 2nd quarter. This proves the point that our investors have full confidence on DCI's fundamentals.

The FII/FPI investors continue to hold DCI stock. DCI share continue to trade in a very positive trajectory despite high level of Market Volatility. This shows the fundamentals of DCI is intact and investors continue to have faith on DCI future growth prospectus.



DCI TURNAROUND QUARTER 2 PERFORMANCE AT A GLANCE

↑ **Standaloned Net Profit - YoY Growth in quarter ended Sep 2021 is 91.61% vs -112.97% in Sep 2020**

↑ **Operating Profit (PBDIT) excl Other Income - YoY Growth in quarter ended Sep 2021 is 324.17% vs -227.49% in Sep 2020**

↑ **Interest - YoY Growth in quarter ended Sep 2021 is -35.67% vs 15.11% in Sep 2020**

↑ **Operating Profit Margin (Excl OI) - YoY Growth in quarter ended Sep 2021 has improved from Sep 2020**

The MUMBAI STOCK EXCHANGE IN ITS ANALYSIS REPORT

stated that DCI overall performance started to turnaround compared to a very bad last couple of quarters performance which were hit badly due to Covid 19 Pandemic. It stated in its report that

- ✓ There has been YoY Growth in quarter ended Sept 2021 that is 91.61% vs -112.97% in Sep 2020.
- ✓ Operating Profit (PBDIT) excel other Income YoY Growth in quarter ended Sep 2021 is 324.17 VS -227.49% in Sept 2020.

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