



# DRY CARGO

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*The world's leading and only monthly magazine for the dry bulk industry*

## Taking the bull by the horns and facing the problem head on



FC Princesse Abby:  
A large Panamax is loaded  
at about 20,000 tonnes  
a day.

Today's global economic downturn means that buyers and sellers must focus on seeking improvements to all sections of the supply chain writes *Mario Terenzio, executive director, Logmarin.*

This is the only area where efficiency developments and sustainable cost reduction could produce long-lasting and significant improvements.

Most of the existing ports are ageing and were built to accommodate vessels which were trading at the time of construction, and which are by far smaller than the modern Panamax and Capesize vessels. Existing restrictions mean that the end user is supplied with a more expensive raw material, which also has a knock-on effect on the competitiveness of the finished product.

The major factors in making a port project economically viable are: the availability of a large amount of the commodity to be handled, water depth at the site, and large flat areas for commodity handling and stores, such as is the case at Richards Bay. However, open land next to deep water is not always easily available and dredging, by its very nature, is an environmentally sensitive issue that usually causes concerns within the local community. Therefore, building new deepwater ports is expensive and time-consuming.

As the result of the above, some raw material producers and end users are penalized unless they are among those that can rely on the necessary infrastructure to accommodate larger vessels.

A floating terminal is a viable alternative solution. In many cases, coal, iron ore, copper and bauxite are handled using floating terminals. Nowadays, floating terminal facility technology has matured and the trend toward the utilization of this alternative is still growing.

### THE MAIN REASONS WHY SUPPLIERS AND OR END USERS SHOULD LOOK AT OFFSHORE/FLOATING TRANSSHIPMENT SOLUTIONS COMPARED TO FIXED INSTALLATIONS ARE:

- ❖ the magnitude of the investment required to build permanent port infrastructure by far exceeds anything provided by the afloat terminal solutions — the lead-time for implementation is also generally much shorter in the latter case.
- ❖ the present collapse of the freight market (and the following reduction in the value of new ships) also makes floating terminals more attractive. What used to cost US\$100 million six months ago now costs US\$40 million. Therefore developing a floating terminal is considerably lower, whereas fixed infrastructure developments may not have been subject to the same cost reassessments.
- ❖ A fixed shore infrastructure cannot be moved, and must be used only where it is built. A floating terminal can, by its very definition and nature, be moved elsewhere should demand call for it. The ability to relocate the facility and secure alternative employment limits the operation's exposure to unforeseen business disruption.
- ❖ In the case of a floating terminal the environmental impact is very limited; in the most cases it is hard to see from shore, therefore the NIMBY (not in my back yard) issue can be managed.
- ❖ Being floating, the facilities are considered almost like vessels and therefore have to comply with the safety regulations, issued by the maritime authority of the country whose flag the floating unit is flying (the flag state), therefore statutory permits are more easily accessible.

There is no 'one system fits all' solution for transshipment operations. Each project has its own characteristics, from the physical, environmental and product type.

## SOME RELIABLE AND POWERFUL CAPACITY FLOATING TERMINAL ALTERNATIVES:

### The *Princesse Abby*

The floating crane *Princesse Abby* (front cover) is the latest facility designed by Logmarin/Interprogetti, together with the major crane manufacturer Liebherr. In this project, a balance was found between the operational requirements and cost, thereby giving the best value for money, built under Registro Italiano Navale (RINA) and Logmarin surveillance/supervision.

PT Mitra Swire CTM BL (an Indonesian JV between PT Mitra Bahtera Segarasejati, and Swire CTM Bulk Logistics), enabled Logmarin to translate this new floating crane concept, into the reality of *Princesse Abby*.

In November 2008 the *Princesse Abby* completed her first transshipment operation at the Muara Pantai in the Sulawesi Sea (East Kalimantan). With the completion of the crane commissioning and on-going crew training (part of the services provided) the daily average turnover of 20,000t was achieved. This is an outstanding performance and throughput for a floating crane operating in open sea.

This positive result has been achieved by a combination of powerful and reliable equipment fitted on *Princesse Abby*, the crew and the technical and operative support provided by Logmarin and Liebherr.



*Princesse Abby, floating crane CBG 35(45)/35, turnover 20,000 tonnes per day.*

### COMPETITIVE, COST-EFFECTIVE SOLUTION FOR THE USER.

The hull structure of the *Princesse Abby* is a longitudinal duly reinforced frame with spoon bow, inclined stern and two skegs aft. Bilge keels are fitted on each side to the extent of about three-quarters of the length of the pontoon; structural anti-rolling fins are also fitted in way of the stern skegs.

Movement attenuation devices and suitable dynamic factors to bear stress and fatigue connected with continued heavy duty work in open seas, have been developed and incorporated in the design in order to maximize the equipment availability for the ultimate benefit of the end user. Therefore, the Logmarin floating crane concept is less sensitive to adverse weather conditions in comparison with standard floating cranes.

The crane is a dedicated heavy-duty high-performance four-rope grab crane type CBG designed and manufactured by Liebherr and has a lifting capacity in grab operation of 35t at an outreach of 35m. Designed for continuous operation, these CBG cranes incorporate specific features for open water and heavy duty conditions including:

- ❖ specially designed heavy duty hoisting winches;
- ❖ slew bearings conceived with triple rollers (thus minimizing the risk of breakdown to one of the most critical components of the crane);

- ❖ strengthened boom;
- ❖ the four-rope grab configuration;
- ❖ heel and trim alarm systems, thus ensuring high turnover;
- ❖ efficient and effortless loading/unloading from most types of vessels up to Capesize;
- ❖ Litronic — Liebherr's own crane control and management system — controls the simultaneous operation of crane motions, so ensuring the best possible performance and protection for the crane. It also records data about all individual

components in load collectives, all alarm signals and failures as well as peak values. The lifetime of components can thus be analyzed and plans for preventative maintenance and spare parts supply can be established, resulting in significantly reduced emergency breakdowns and an extended lifetime of the crane.

The double independent electrical generator sets (one set on duty, one stand-by/maintenance, to ensure 24-hour non-stop operation) meet the most demanding emission control regulations and have a highly fuel efficient and economical combustion system.

The cargo grab and crane cycle time is enhanced by using PEINER 24.3m<sup>3</sup> four-rope scissor grab. Thanks to the large spread of the grab lips (nearly horizontal when open) and the shorter closing stroke the floating crane

productivity is maximized.

*Princesse Abby* is also equipped with an inclinometer and accelerometer data logger (three axis acceleration and amplitude measurements in different sea and operational conditions). The recorded data is analyzed to allow final tuning and validation of a theoretical experimental sea keeping model developed by Logmarin to improve the reliability and the efficiency of the new floating terminal's design.

With over 3,000 tonnes of buffer storage, the utilization rate of this new concept can be maximized by way of using the idle time to transport the goods and for the purpose of the final trimming of the vessel.

Last but not least, the overall costs are highly competitive with those for standard floating cranes (capital cost is between 15% and 28% cheaper than that of cranes with comparable performance). Thanks to the standard and proven components duly assembled, together with Liebherr's worldwide service network, maintenance costs and spare parts availability are optimized, thus ensuring highest working reliability.

The K.I.S.S. principle (keep it simple and safe) has been incorporated in the design of the *Princesse Abby*.

The basic floating crane design can be further tuned to meet specific requirements of the client i.e. can be self-propelled, fitted

with sheltered areas for steel products, containers, heavy lift, larger storage capacity and so forth.

Through mastering proven technologies with in-depth and vast knowledge in the field of offshore dry-bulk logistics Logmarin Advisors can provide customized creative and innovative solutions and enable customers to enjoy the advantages of a global view of the supply chain.



*The copper concentrate logistics supply chain, each grab transhipped from shallow water feeders to export vessel worth about US\$ 95,000.*

### The Papua New Guinea copper concentrate

The Papua New Guinea Ok Tedi copper concentrate operation is another example of a 'smart' logistics solution. The copper concentrate is piped by slurry pipeline 150km from the mine site in Tabubil to the river port of Kiunga. Duly tailor-made designed shallow water multipurpose feeders (which can transport the copper concentrate downstream as well as diesel oil, container and B/B cargo up stream for mine operation). The feeders navigate 800km down Fly River to the floating terminal *Erawan* (Swire Group) and, thanks to a buffer storage of 64,000 tonnes, export vessels are loaded smoothly and efficiently.

### SWIRE CTM BULK LOGISTICS

Swire CTM Bulk Logistics is a 50:50 joint venture between the China Navigation Company Limited (CNCo), Swire Group and C Transport Maritime (CTM), Ceres Shipping Group. It specializes in providing efficient and cost-effective dry bulk transportation logistic solutions.

With the severely depressed shipping and steel industry and the recession we are facing, the new resources being commissioned — combined with factors like shallow draughts, the increase in the size of bulk carriers, environmental issues and the prohibitive set-up costs for deep water ports — Swire CTM Bulk Logistics caters to designing, building and operating reliable, and cost-efficient logistic systems, to improve the supply of dry bulk materials to the industry.

The mission of Swire CTM Bulk Logistics is to provide reliable, tailor-made and cost-effective dry-bulk sea-borne services from the supplier to the industry where constraints limit scale advantages.

While some competitors start with the idea of what they would like to sell to the potential client rather than what the actual customer want or need to buy, Swire CTM Bulk Logistics' objective is to find the optimal means of satisfying transport and markets requirements for its valued clients.

Swire CTM Bulk Logistics' network is spread throughout the

five continents. Its Hong Kong and Monte Carlo offices coordinate, supervise and manage the implementation of the logistics projects, right from the feasibility stage, each in its own hemisphere to overcome any time difference gap with the company poised to meeting the challenges of the different environments and cultures.

Swire CTM Bulk Logistics offers clients the opportunity to deal with only one partner providing, whenever possible, the full integrated seaborne logistics service (as it is the case with the Papua New Guinea operation), ocean freight included, 'door to door' coverage of dry bulk raw materials. The company looks forward to synergizing its resources and experience in order to provide total services to its clients. Swire CTM Bulk Logistics is currently working on a range of logistics projects worldwide, one of which is being implemented and will become operational in the Far East by the end of this year.

Services include: river and coastal specialized feeders, self-unloading vessels and barges, floating cranes, floating terminals and basic processing plants.

### LOGMARIN ADVISORS: SKILLS FOR COST EFFECTIVE LOGISTICS SOLUTIONS

Logmarin Advisors is a joint venture company set up among first class and internationally renowned partners in their related field of expertise, namely Rina Group (Italian Classification Society, IACS member), Charles Taylor Consulting, the Banchemo-Costa Group and Interprogetti, integrating it with its own shipping logistics know-how.

The advisory services aim to achieve optimization and consequent cost savings in the logistic supply chain for industry and energy.

The joint venture started its activities three years ago, whereby its members have almost 20 years of experience in this field including the development and design of various technologies for self-unloading vessels, floating cranes, floating terminals and transshipper vessels capable of operating in various environmental conditions worldwide.

Part of Logmarin's role is to make its customer more aware of the advantages arising from a global view of the supply chain. Creativity and innovation are necessary just as much as experience to ensure sound results suiting the specific client's situation, after identification of bottlenecks in the supply chain.

In addition to floating crane design (three units have been commissioned in the last 12 months), Logmarin is involved in project feasibility studies for commodities such as coal, iron ore, LNG, alumina etc. in Australia, South America, the Black Sea, India, Indonesia, Italy and in the Arabian Gulf. It provides, among other services, advisory support for ship handling, traffic management, port facility requirements, ship conversions, transshipment solutions and self unloading vessels design.

### ABOUT LIEBHERR

Leading crane manufacturer Liebherr has more than 40 years of experience in designing and producing maritime cranes. Over the years Liebherr has been able to further extend and strengthen its leading position on international markets through a steadily extending product range of maritime lifting equipment, high technical and quality standards, high flexibility, quick availability and proverbial punctuality combined with a worldwide network of Liebherr service stations. The experts at Liebherr-Werk Nenzing can provide optimum solutions for customers' specific requirements so ensuring maximum handling capacity at lowest running costs.