



Photo by Frits Olinga, the Netherlands

Arklow Shipping, headquartered in Wicklow, Ireland, maintains a continuous expansion scheme, updating and enlarging their fleet to meet the market demands. The fleet currently stands at 44 ships with a combined carrying capacity of over six million tonnes annually. Arklow Shipping has a very down-to-earth approach to business and long-term relationships with many European companies and Dutch shipyards. Therefore it is not surprising they chose Rotterdam, the Netherlands, as their base for a second ship management office.

It was this same down-to-earth approach, that Arklow found at the Ferus Smit shipyard. Although competition was (and still is) tough, Ferus manages to compete with shipyards in countries with cheaper labour costs by keeping most disciplines with their specific expertise in-house. This way they are able to build quality vessels at high speed, thus low cost, while at the same time integrating all equipment, piping and components during the steel block building process. The people from Arklow already had considerable experience with other Dutch shipyards, but were nevertheless convinced that Ferus Smit was the best choice as a partner for expanding their fleet with the newly designed B-series vessels.

In November 2011 Ferus-Smit was awarded an order to build six new bulk orientated general cargo vessels in the shipping company's B-series. The vessels will mainly be employed shipping wheat, corn and other bulk commodities in European waters. The *Arklow Bank*, as the first vessel will be named, was ready to be launched on Friday 15 November and handed over to the owners in January of 2014.

Ferus Smit

Ferus Smit is a family-owned shipyard, established over 100 years ago. Like most Dutch shipyards, they pride themselves on building long-term relationships with clients. Ferus Smit comprises of two shipbuilding locations, one

ARKLOW BANK

STILL WATERS RUN DEEP

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Builder

Ferus-Smit, Westerbroek, the Netherlands

Owner

Arklow Shipping Nederland, Rotterdam, the Netherlands

Principal particulars

Length oa	119.495 m
Length pp	116.895 m
Breadth	14.99 m
Depth	9.70 m
Draught max	7.16 m
Speed	14.3 kn

Cargo capacities

Total hold volume	9,915 m ³
Deadweight	8,660 tons
Gross tonnage	5,100 GT

Tank capacities

HFO/GO	270 m ³
Fresh water	50 m ³
Gas oil	45 m ³
Ballast water	3,500 m ³



* The upper deck, with closed hatch covers and the ventilation equipment on top of the hold separation

in the Dutch province of Groningen and the other in Leer, Germany. At both sites all the required core disciplines are in-house to build a complete vessel.

The head office, design and engineering offices are located at the primary yard in Westerbroek. Furthermore, the Westerbroek facility has a transverse slipway of 145 metres length, situated on the canal Winschoterdiep. As the bridges and locks in the canal en route to sea limit the maximum breadth of 'Dutch Ferus' vessels, a second production site was acquired. This shipyard is just across the border in Leer, Germany and facilitates the building of larger ships with a breadth of more than 15.87 metres.

The company has 160 permanently employed craftsmen and produces six to eight vessels annually. Their designs mainly consist of general cargo ships, bulkers, tankers and dedicated purpose vessels ('specials'), sized up to approximately 30,000 deadweight tons or 170 metres in length.

Arklow Shipping

Since their establishment in 1966, Arklow Shipping has focussed on the seaborne transport of dry bulk in Europe. They currently operate a fleet ranging in sizes from 3,000 to 14,500 tonnes deadweight and consisting of vessels ideally suited for the carriage of project cargoes, grain, generals and bulk commodities.

However, Arklow has diversified their activities and does not restrict themselves to just 'transport' only. The fleet managers of the vessels take care of the operational side of the business. Over the past four decades they have become specialists in the market of versatile short sea trading vessels. They are committed to the safe and efficient operation of the ships and a high quality of service to their customers. The fleet managers are supported by a technical department, overseeing all engineering and nautical aspects of the business from maintenance, new building, planning and supervision, crewing, to the implementation of new legislation.



* The wheelhouse forward area contains the T-shaped navigation console by SAM Electronics

*"Quality performance
against low operational
and maintenance costs"*

bridge wings are outside and each have a small control desk with relevant primary control facilities. All bridge equipment was delivered and installed by SAM Electronics.

Below the wheelhouse is the captain's deck with a dayroom, bedroom and bathroom for the Master Mariner; a spare cabin and a day head for public use can be found in the corridor. One level lower, the boat deck, contains similar, though smaller, facilities for the first and second mate and technical spaces. On both sides of this deck the life rafts and m.o.b. boat with their dedicated cranes are to be found on the open deck.

Another area of operation for Arklow Shipping is that of chartering and is performed by three dedicated teams of shipbrokers. They are located not only in Arklow and Rotterdam, but also in Liverpool, UK. These teams specialise in the management of logistics of high volume, high frequency, low stocking level contracts.

The Arklow B-series

The series of 'mini-bulkers' are of the new in-house developed Ferus-Smit 8400/150 design and have a double hull consisting of two box-shaped holds with a combined capacity of 9,915 cubic metres (350,000 cubic feet). The hull form features a special bow shape with a vertical stem profile and 'sharp' waterlines, resulting in reduced hull resistance for all loading conditions and draughts.

Furthermore, this 'bulbless bulker' is designed to transport relatively bulky cargo volumes at large displacement and moderate speeds. The small entrance angles of the waterlines and the lack of bow flare has the additional advantage of improved seagoing characteristics and thus less speed loss in more challenging sea states. The specific L to B ratio is typical for the design; the relatively high 'operational' length and draught, result in an impressive 8,660 tons deadweight.

This ultimate customised hull design is the result of the in-house knowledge of Ferus, combined with the use of CFD (Computational Fluid Dynamics) optimisation software.

With the first vessel already in action, the second vessel, *Arklow Bay*, due for delivery in April/May 2014, is already on the slipway at the Ferus Smit shipyard in Westerbroek, whilst block assembly and outfitting is progressing. The steel cutting of the third vessel, *Arklow Beach*, is also in progress and delivery will follow in August/September 2014. Number

four to six, to be named *Arklow Beacon*, *Arklow Brave* and *Arklow Breeze*, will be handed over at intervals of approximately four to five months (depending on seasonal holidays).

Accommodation and wheelhouse

The superstructure is located aft and facilitates comfortable accommodation for nine persons. All cabins are air-conditioned and equipped with private sanitary units. The air-conditioning is a cost-competitive and energy-efficient single-pipe system, which is relatively straightforward to design, install and maintain as it has less components and materials.

The wheelhouse forward area contains the T-shaped navigation console with all the required navigation, communication and ship control facilities. Both aft corners are home to the radio desk and chart table respectively. The

The main deck accommodates four crew cabins and a spare cabin, along with a dayroom, bedroom and bathroom for the chief engineer. This deck also houses all air-conditioning, hold ventilation and CO₂ equipment, as well as containing a provision storage, a changing room and an engine room workshop. Besides the mess room, the superstructure level on the raised quarter deck contains a galley with pantry, an office and the emergency generator. The carpentry work and finish of all wheelhouse and other accommodation furniture is performed by Helmers Accommodatie en Interieur, whilst all soft furnishings were supplied by Tjamme Vis.

* A single Berg CPP is powered by a MaK marine diesel engine via a JaKe gearbox



"More cargo volume efficiently transported per voyage at moderate speed"

Deck arrangement

When hatch covers are closed, the upper deck is flush between the forward bulkhead of the superstructure and forecastle deck, with a minor interruption amidships. This obstruction is necessary to accommodate the ventilation equipment on top of the bulkhead between the holds.

15 (nine aft plus six forward) pontoon type upper deck hatch covers and the same number of tween deck panels can be stowed in stacks at several positions in the hatch opening or in the hold itself, to obtain the least possible obstructions. Handling of all upper and tween deck pontoon hatch panels (or grain bulkheads panels) is done with a gantry crane on coaming rails. For storage, the hatch crane can be positioned aft, against the superstructure. Hatch covers and gantry crane are supplied by Coops & Nieborg.

The main deck in way of the cargo holds consists of side decks (gangways) only, which are fitted with guard rails on the ship's sides. The aft

main deck, behind the superstructure, is home to the aft mooring equipment. At the stern on port side of the centreline on upper deck is the Hatecke freefall lifeboat in its dedicated launch and recovery system. The anchoring and forward mooring equipment is on the open forecastle deck, where a paint store can also be found. All mooring equipment is supplied by C-Nautical from Sappemeer, the Netherlands.

Cargo holds

As stated above, the vessel features two cargo holds. The aft hold is completely 'box-shaped' with main dimensions of 50.25 times 12.33 metres, whilst the forward measures 34.84 times 12.33 metres and tapers to 5.73 metres at the forward end to accommodate the bow shape. The vertical bow profile allows the forepeak bulkhead to be located farther forward than normal, resulting in a higher overall hold length.

Both holds have a height of 9.65 metres and are provided with tween deck hatch covers over the complete hold length. The tween deck panels

can be positioned at one horizontal level or vertically, as grain bulkheads, using recesses in the cargo hold sides. Hence the hold can be divided into versatile compartments to provide flexibility in cargo storage.

The tank top in the hold is reinforced for 15 uniform load or 20 t/m³ non-uniform. The aft end of the tank top of the 50 metre hold is slightly sloped upwards toward the engine room, which is quite common and understandable when transporting bulk cargo. The tween deck hatch covers are designed for a maximum load of 3.5 t/m².

Between the two holds lies a corrugated bulkhead and cofferdam compartments with the ventilation equipment and ducts for both holds. The fuel tanks are located against the forward bulkhead of the engine room. All other 'engine room related' liquids are stored in tanks around the engine room, whilst all side and bottom tanks in the cargo area are primarily for ballast purposes to compensate trim and stability effects of various cargoes.

Both holds are equipped with ample ventilation, permitting up to six air changes per hour, and a dehumidification system. This allows most common types of cargo to be transported under optimal conditions. Both holds are also suitable for the transport of a wide range of dangerous goods.

At the stern on upper deck is the freefall lifeboat in its dedicated launch and recovery system

Photo by Frits Olinga, the Netherlands



Propulsion and manoeuvring systems

The ship is provided with a single Berg Controllable Pitch Propeller (CPP), which is powered by a MaK 8M25C marine diesel engine via a reduction gearbox. This 2,665 kW main engine is designed to run on IFO380. The gearbox, a Jahnel-Kestermann (JaKe), has a Power Take Off (PTO) to a shaft alternator of 390 kW. Ferus Smit performed the complete design and outfitting of the engine room, including ship's systems, piping and assembly, in-house, unlike most other shipyards that prefer to outsource this task.

In consultation with the shipyard, Arklow decided to use a free-flowing or 'open' propeller instead of 'nozzled'. As a result, the large diameter CPP, delivered by MAW Marine, is placed under a modified transom shape to create the required propeller/hull clearance. For that reason the bottom lines are faired in a steep upward slope towards the stern, while the 'cigar' shaped hull around the propeller shaft improves the flow and the wake characteristics.

Behind the 'open' CPP is a Schilling rudder, designed to improve the effective lift generated by the rudder and hence improve the manoeuvrability of vessels especially at lower and moderate speeds. The rudder is operated by Rolls-Royce Rotary Vane steering gear. The Jastram bow thruster, driven by a Leroy Somer 380 kW electric motor, also contributes to improve the manoeuvrability.

Beside the shaft generator, the auxiliary equipment consists of two 230 kW generator sets and an emergency generator set of 105 kW. All generator sets are a combination of Sisu diesel engines with a Stamford alternator, supplied by Caldic.

* On both sides of the boat deck are the life rafts and m.o.b. boat with their dedicated cranes



* Handling of all hatch panels is done with a Coops & Nieborg gantry crane on coaming rails

The shaft generator, referred to above, produces enough power for the entire vessel for all consumers during normal sailing. The generators are merely required when manoeuvring in harbour or for powering the hold ventilation when carrying demanding cargoes. Eekels Technology was responsible for the delivery and installation of the electrical systems on board.

Conclusion

The *Arklow Bank* is a well-designed mini-bulker, suitable for coastal transport, specifically for the short sea trade routes of Western Europe and Scandinavia. The philosophy behind this design is providing good timely transport at competitive costs. On the premise that a quality performance at manageable costs, is all about minimum fuel consumption at maximum loading capacity.

Tom Oomkens

* Photos by Henk Zuur, Delfzijl, the Netherlands

Subcontractors and suppliers of equipment fitted on board the *Arklow Bank* - YN 409

Alfa Laval Benelux, Breda	: plate coolers; separator; life saving appliances
Alutech, Nieuw Venneep	: wheelhouse chair
Ameron, Geldermalsen	: plastic pipes; air bottles
AMW-Marine, Hendrik-Ido-Ambacht	: <i>Berg Propulsion</i> cpp
Becker, Hamburg, Germany	: schilling rudder
BendIt, Groningen	: insulation
Boer Staal De, Uitgeest	: steel plates and profiles
Boll & Kirch, Kerpen, Germany	: automatic fuel filter
Bosch Rexroth, Boxtel	: remote control systems; reducers; air dryer
C-Nautical, Sappemeer	: winches
Caldic Techniek, Rotterdam	: <i>Stamford</i> alternator
Coops & Nieborg, Hoogezeand	: hatch covers; gantry crane
Duijvelaar Pompen, Alphen aan den Rijn	: hydrophore pumps
Dura Vermeer, Rotterdam	: radiators
Econosto Nederland, Rotterdam	: fittings; actuators; sounding clocks; reducers; air dryer
Eekels Technology, Hoogezeand	: electrical installation; frequency converters
Ellehammer, Copenhagen, Denmark	: ejectors
Fassmer, Berne, Germany	: gangways
GEA Westfalia Separator Nederland, Cuijk	: fuel oil and lubrication oil separators
Haan, Gebroeders De, Hoogezeand	: HVAC and climate control equipment; hold ventilation
Hatecke, Drochtersen, Germany	: rescue boat; davits
Heatmaster, Hendrik-ido-Ambacht	: heating system for fuel
Helmers, Sappemeer	: carpentry work and finish; accommodation furniture
Jahnel-Kestermann, Bochum Germany	: reduction gear
Jastram, Hamburg, Germany	: bow thruster
Jorritsma, Groningen	: installation HVAC
Jotun, Spijkenisse	: paint
Kral, Lustenau, Austria	: pumps on booster unit; HFO trim pump
Lankhorst Ropes, Sneek	: mooring ropes
Leroy-Somer, Slijedrecht	: e-motor bow thruster
Machinefabriek Bolter, Dordrecht	: <i>MaK</i> main engine
Megator, Pittsburg, USA	: dirty oil pump
Miele, Vianen	: dryer/washing machine
MX Brandbeveiliging, Amsterdam	: CO ₂ installation; water mist installation
Nautische Unie, Delfzijl	: nautical, safety, medical and fire-fighting equipment; navigational lights
NRF, Nederlandse Radiatoren Fabrik, Mill	: box coolers
PCC Eurovalve, Losser	: fittings; actuators
Reikon, Spijkenisse	: <i>Azcue</i> pumps and <i>Gefico</i> watermaker
Rockwool, Roermond	: insulation
Rolls-Royce Marine Benelux, Rotterdam	: steering gear
Sandfirden Technics, Den Oever	: main and emergency generator sets; <i>Stamford</i> alternator and <i>Sisu</i> diesel engines
SEC, Ship's Equipment Centre Groningen, Groningen	: lashing equipment; fairleads and chocks
Sperre Rotterdam, Ridderkerk	: compressor
TE engineering, Drachten	: booster unit
Theunissen Technical Trading, Malden	: SeaTeleCom communication
Tjamme Vis, Hoogkerk	: soft furnishings
Trinox, Hardinxveld-Giessendam	: windows and portholes
Uittenboogaart, Technisch Bureau TBU, Rotterdam	: <i>Jahnel-Kestermann</i> propulsion gear box; <i>SKF Blohm+Voss</i> turbulo separator; <i>Megator</i> sludge pump
Vaf Instruments, Dordrecht	: viscorator
VIKING Life-Saving Equipment, Zwijndrecht:	: life saving appliances
Vulkan, Herne, Germany	: flexible coupling
WineL, Assen	: steel and grp musketeer doors
Winteb, Winschoten	: air pipe heads for this hull
Wolff, Mainburg, Germany	: calorifier
Wortelboer, Rotterdam	: anchors and chains
York-Inham Refrigeration, Dordrecht	: ac equipment, fans; hold ventilators