+++ The Big Boats Are Coming +++

a Report by Jan Svendsen and Jan Tiedemann

A short introduction to the vessel type that stole the headlines in the first half of this year and that will dominate the world's container trunk routes in the next decade: The +12,000 TEU jumbo container carrier.

Part One – A Quick Market Review

Today's Mainline Vessels

In recent years, the world's mainline container services have taken a tremendous development: Not very long ago, ships of only around 5,500 TEU used to be the standard vessels on most trunk routes in the trade between Asia and Europe, as well as on transpacific container services. Numerous of these so-called standard-post-panamax vessels have entered service since the mid-nineteen-nineties. With some exceptions, the majority of the major shipping lines employed a more or less homogenous fleet of such vessels on their flagship services. Over the last three or four years, this container carrier type has been pushed off its throne by a larger type of boxship: Today, the generation of +8,000 TEU vessels has taken over almost every intercontinental trunk loop between the Far East, Europe and the north American continent. The requirements of the market and the restrictions that a number of ports posed, eventually led to the emergence of something like a standard size for these ships: Today's typical mainline carrier is about 335 metres long and stows 17 containers across deck. Its capacity lies between about 8,000 and 8,750 TEU. In very recent years, a number of even larger vessels has established a presence (mainly) in the trade between the Far East and Europe: At 350 metres in length or with a 45.60 metre beam, these ships are either one 40'-bay longer or one row wider than most common container jumbos. In both cases, their intake is higher by about 1,000 TEU. Compared to the last decade's panamax ships, today's larger vessels can offer some substantial economies of scale: A modern 8,750 TEU ship for example consumes less than three litres of bunker per 100 kilometres and TEU slot. Nevertheless, the shipowners' drive for even greater economies of scale in a very competitive market and the advances in shipbuilding technology led to the design of vessels of hitherto unknown proportions.

Emma Maersk: The Measure of All Things to Come

Late in the year 2005, a number of hints pointed toward something going on at Odense's Staalskibsværft. At that time, the Danish yard was building a series of very large container carriers. With an extraordinary length of 367 metres, these ships were the largest boxships afloat: Despite the fact that Maersk Line was underselling the vessels' true capacity and classed them at 7,000 TEU, the new units were widely believed to take in up to 10,000 boxes. Nevertheless, it looked as if yard number L-202, a ship to be named Georg Maersk, should be the last unit of her type and Odense's Staalskibsværft had developed an even bigger container vessel. Maersk Line however, never confirmed an order for what might be the world's first ultra-large container carriers. In 2006, as the construction work on yard number L-203 was progressing, it became pretty obvious that a boxcarrier of gigantic proportions was taking shape in Odense's building dock. All doubts were resolved on the ninth of June 2006, when a fire completely destroyed the superstructure of yard number L-203, that had just been erected on the ships unfinished hull: The extensive media coverage of the accident brought with it a flood of images that clearly revealed the vessel's true dimensions. Your editors' earliest calculations led to the result that the new ships could take in at least 13,000 boxes. Counting in a healthy proportion of overlong containers and high-cubes, the vessel's TEU intake would be even higher. Today we know that L-203, or Emma Maersk as she is meanwhile known, and her sisters can take in up to 14,500 TEU. The ships are 397.70 metres long and 56.40 metres wide. These ships are very likely to mark the upper end of the containership size range for years to come. Any significantly larger vessel would soon overstrain the capabilities of most ports' infrastructure. Even Maersk Line, the world's leading container carrier, had to work for years to provide the facilities needed to handle ships of the E-class' size in a sufficient number of ports in Asia and Europe. Furthermore, ships of even larger dimensions would soon outgrow the available range of engines needed to drive them. Despite their huge 14-cylinders, even Maerk's E-class ships are basically underpowered and the vessels' designers had to make amends for this by a number of rather unique design approaches. Compared to most large container ships for instance, Emma Maersk's hull is unusually slender and accommodates no more than two container bays with an identical cross section along its short parallel midbody. Furthermore, the ship is equipped with an electric booster engine that has been fitted to the propeller shaft.

Emma Maersk's maiden arrival in Germany
Photo: Boris Paulien.

The Race is On – But Shipyard Building Slots are Scarce

When Maersk Line's competitors finally decided to follow suit and introduce ultra large containerships themselves, they were facing a very difficult market environment: Container ship building had clearly developed into a sellers' market over the past few years. Less than a decade ago it had still been possible to have new boxships delivered just two years after signing the contracts. Today, every experienced container ship builder is booked out for years. The production schedules of the major shipyards in Japan and South Korea are so tight, that not a single ship can be squeezed in, even if the owner was willing to pay a premium for early delivery. On top of that, the average steel price had more than doubled since the beginning of the new millennium. In combination with the impact of high energy and feedstock costs, the tense market situation led to a rapid increase in the price for new container tonnage. Shipping lines thus had to both be quick and willing to dig deep in their pockets, in order to build their vessel pipelines. Presently, all major containership yards are booked to capacity until late 2010. Some well-known shipbuilders already accept orders slated for delivery in 2013. As we know, shipping and shipbuilding always used to work in pork cycles: The time lag between periods of peak demand and the delivery of newly ordered tonnage has however, hardly ever been longer than today. The queue for container vessels would have been even longer these days, had not a significant number of gas field exploration projects been delayed: The corresponding orders for large LNG tankers were subsequently re-negotiated with the aim to postpone vessel deliveries. Capacity freed here, was quickly given over to containerships. When the first containership owners approached the yards earlier this year and asked for a redesign of the ships they had contracted, excessive vessel beams turned out to be the production bottleneck: Typically, a large building dock measures about 100 metres in width. Since most yard's scrupulously planned building schedules will require the parallel construction of two ships in the dock, vessel width is generally limited to about 45 metres. Even if building wider ships was technically feasible, it would only be possible if such ships were carefully fitted into the production schedule as soon as they are ordered. The yard would simply have to make sure that each super jumbo is built next to a smaller vessel, like a panamax. Retroactively upgrading existing vessel orders and fitting the new ultra large hulls into the production scheme however, turned out to be immensely difficult. The abovementioned LNG-ship cancellations finally gave the yards some breathing space and the opportunity to rework their construction schedules. Many LNG building slots were given over to mid-sized container vessels, thus allowing a number of existing vessel contracts to be significantly upgraded in terms of TEU intake. Another challenge that soon became evident was the tight supply of large diesel engines. Only a handful of highly specialised engine manufacturers are able to produce the kind of diesel plants that are required for the propulsion of ULCS. Just like the shipyards, these companies are presently booked to capacity for years in advance. Unless shipyards successfully managed to re-negotiate the engine type they ordered, some ultra-large container vessels will eventually have to be fitted with engines that were originally laid out to drive somewhat smaller ships. Your editors are convinced that the following shipyards are presently capable of designing and building container vessels of 12,000 TEU or larger. Since we decided to include thorough shipbuilding experience in the field of large container carriers as a criterion, a number of large shipyards with huge dock facilities (like for example the Aker Group or the Italian Fincantieri Yards) have not been included in the list.

Daewoo S&ME	Koje Island Yard	South Korea
Hanjin HI	Subic Bay Yard	Philippines
Hyundai HI	Ulsan Yard	South Korea
Hyundai HI	Samho Yard	South Korea
Imabari Shipbuilding	Mihara Yard ('Koyo')	Japan
Ishikajima-Harima (IHI)	Kure Yard	Japan
Mitsubishi Shipbuilding	Kobe Yard	Japan
Odense Steel Shipyard	Odense Yard	Denmark
Samsung Shipbuilding	Koje Island Yard	South Korea
STX Shipbuilding	Jinhae Yard	South Korea

Furthermore, we believe that the following shipyards should be able to build ULCS after the year 2010:

China Shipbuilding	Kaohsiung Yard	Taiwan
Dalian Shipbuilding	Dalian Nr. 2 Yard	China
Hudong Shipbuilding	Hudong Yard	China

Jiangnan Ship Group	Chengxi Island Yard	China
Shanghai Chengxi	Chengxi Island Yard	China

Spring 2007: The Superjumbo Order Frenzy

Admittedly, it took some time before the world's leading shipping companies followed Maersk Line in the race for ultra-large tonnage. Vessel concepts had been available for several years, but most companies seemingly did not want to be the first to venture into the new terrain of jumbo container vessels. One must not forget that the majority of shipping lines had only just completed their trunk routes' upgrade to 8,000 TEU ships at the time Emma Maersk was delivered. As soon as Maersk seemed to have overcome their leviathan's first teething troubles and had thus proven that ultra-large tonnage could be operated feasibly, the industry's runner-up lines got off the starting block. MSC and CMA CGM, the container shipping business' number two and three went to great lengths to catch up with the Danes. Much to the companies' detriment however, the leading container ship builders were booked to capacity for years. As described in the above paragraph, the yards were not able to rearrange the building schedules overnight. It was CMA CGM who eventually managed to re-negotiate their order for a series eight 9,700 TEU ships into 11,300 TEU units. For some strange reason, the French line initially claimed that it was actually Hyundai Heavy's proposal to enlarge the ships to over 11,000 TEU.

Allegedly, CMA CGM had asked all major yards to upgrade ships in the carrier's pipeline to 13,000 TEU, but the shipbuilders declined since they lacked the capacity to build the ships. In April Daewoo Shipbuilding announced that the Mediterranean Shipping Company had ordered a single ship of 13,200 TEU for delivery in the last quarter of 2010. Since a single large vessel would have been useless for MSC, this new order was also a pointer towards the Swiss carrier's successful re-negotiation and capacity upgrade of some of its existing newbuilding contracts. The shipping line however did not comment the deal. The information finally leaked to the public in May, when it became clear that MSC had managed to upgrade no less than 16 contracts for 9,700 TEU ships to contracts for what are believed to be 13,200 TEU vessels. At the present time it is however, virtually impossible to obtain any more detailed information concerning the ships' designs, their delivery dates and exact capacities. All three yards involved in building the ships, Daewoo, Samsung and Hyundai, claim to already have developed their own ULCS-design. Unless further modifications to MSC's vessel pipeline are made, the Swiss carrier will now receive five 13,200 TEU ships from Daewoo. Two or three similarly-sized units will be supplied by Hyundai and a further eight or nine by Samsung. The first of these jumbo carriers was originally scheduled for delivery in December 2008. It remains to be seen whether the design changes have delayed the building schedule or not. The ship will be launched as MSC Daniela. MSC's large-scale orders also revealed that CMA CGM would sooner or later need more than just one set of 11,300 TEU ships in order to compete with both MSC and Maersk. According to some unconfirmed shipbrokers' reports, the French carrier managed to buy Hamburg's Claus-Peter Offen out of four contracts for 9,700 TEU ships and up the ships' size. Allegedly, Hyundai Heavy will now deliver the units as 11,400 TEU vessels. Furthermore, your editors have reason to believe that CMA CGM successfully converted four similar vessel orders at Daewoo. Together, the two series of ships would nicely fit onto an Asia-Europe service with a homogenous weekly capacity of 11,400 TEU. A few weeks later, the first jumbo vessel orders by a non-operating ship owner (although that term hardly fits here) were published. The German city of Hamburg again cemented its reputation as the world's container finance and management capitol, when Peter Döhle announced to have ordered eight 12,500 TEU units at

Samsung. The ships are to be delivered until late 2010. Much to everyone's surprise, Döhle claimed that the ships were still charter free. This statement resulted in the scratching of many heads and plenty of speculation about a potential charter. Hapag-Lloyd was frequently named at first, but later ruled out after ordering an own series of 8,750 TEU vessels and stressing the advantages of a more balanced vessel fleet with many similarly-sized units. The next ULCS order came as a bit of a surprise: A relatively young non-operating shipping company ordered a set of 12,800 TEU ships at a non-existent yard. Hamburg-based NSC Schiffahrt signed the vessels at Hanjin's new Philippine outlet at Subic Bay. So far, this yard has not yet delivered a single vessel. Nevertheless, Hanjin Heavy Industries is very confident that both the new yard's and the new ships' tight building schedules will be maintained. NSC's pipeline at Hanjin Subic Bay presently stands at four ships, with four options attached to the deal. The lead ship of the series is slated for delivery in March 2010, with the fourth unit due at the end of that year. Should NSC decide to pull their options timely, the second quartet would be delivered in the first half of 2011.

Voilà le géant: How will CMA CGM's jumbos look like? computer rendering: Jan Tiedemann

It June it was again the French Line CMA CGM, who stunned the container industry by placing one of the largest orders in the history of mercantile shipping: First, the Marseille-based carrier turned out to be the hitherto unnamed European buyer of eight 9,200 TEU ships that had been signed at Daewoo. Only a day later, the company furthermore signed eight vessels of 12,562 TEU. Again, the deal was bagged by Daewoo, who will deliver the entire series of ships before the end of 2010. With this order, CMA CGM's vessel pipeline grew to 24 ships of 11,000 TEU or larger. In less than three years' time, the French will thus be able to upgrade three mainline Asia-Europe services to super jumbos. June was finally the month that most shipping companies let their hair down: By now it was clear that the super jumbo vessel would eventually develop into the standard mainline ship of the next decade. The question was no longer 'if' these ships would take over the world's trunk container services, nor was it 'when'. The question seemed to be: 'How can I get one?'. Zim finally answered that question and snatched up no less than twelve ULCS-building slots at Hyundai Heavy Industries. The Israeli carrier's vessels will have an intake of 12,500 TEU. Again, this order came as something like a surprise, since Zim presently does not even have a stand-alone Far East – Europe service that would be able to accommodate the ships. Such a service will however be started in the near future. Furthermore, twelve ships are four too many for such a service. On the other hand twelve is one unit to few to launch both an Asia – Europe and an Asia – America service. Quite likely, Zim thus plan to either charter out or resell the ships, or engage in a large joint-venture service, operated with a partner who brings in four own ships. Shortly after Zim, two Hamburg-based companies finally knocked at Hyundai's door and lined up for more super jumbos: Bertram Rickmers signed a letter of intend for four 12,500 TEU ships and an option for another quartet of such vessels. Almost in passing, the company also ordered four 8,500 and four 6,800 TEU units at Hyundai Heavy. The deals are believed to be financed by Rickmers' newly set up Singaporean outlet. The first quartet of 12,500 TEU ships is slated for delivery in 2010. A few days later, Bertram's brother Erck Rickmers and his E.R. Schiffahrt also signed a letter of intend with Hyundai. The deal included four more ships of 12,500 TEU with deliveries due in 2010 and

2011. Most analysts believe that this contract also includes four options, but this has not been confirmed so far. Now that Hyundai, Samsung, Daewoo and Hanjin had all successfully acquired orders for +12,000 TEU ships, the South Korean STX Group announced that their shipbuilding division was also capable of producing container super jumbos. The yard was recently linked to Theophilos Priovolos’ Niki group and the Dynaliners newsletter even listed an order for eight ULCS that the Greek allegedly placed at STX. So far however, your editors did not come across any sources that wanted to confirm such a deal.

With at least twenty-nine ULCS now on order by non-operating shipping companies, quite a lot of speculation has arisen about who will finally employ these ships. Until recently, APL used to be a hot candidate for one set of such vessels. Since the company recently splashed out on eight +10,000 TEU container vessels and is reportedly close to buying a set of 8,000 TEU ships, the Singaporeans seem to be out of the charter race. The same goes for Hapag-Lloyd who recently announced to stick with their proven 8,750 TEU ships for the next few years. China Shipping and Coscon are surely hot candidates for a set of ULCS. Especially CSCL who closely cooperate with CMA CGM on some mainline services have been put on the spot by the French’s recent order craze. Coscon will soon introduce a set of 10,000 TEU ships to their Asia – Europe main loop, but even these vessels will not be big enough to satisfy the very strong demand on this trade. The 9,500 TEU ships employed on these routes today are running to capacity on almost every sailing and Coscon even had to leave containers behind since demand had outgrown their ships’ capacity. Furthermore, one must never underestimate the Mediterranean Shipping Company's hunger for capacity and your editors are pretty sure that MSC would like to operate more than two ultra-large loops between Asia and Europe. Of course one must not forget Maersk Line either. With the competition now racing ahead, the Danes will surely want to add a second ULCS-loop in the near future. The most interesting question in this respect is, if Maersk will continue to rely on Odense-built ships for the top end of their fleet, or if chartering a set of jumbos from an Asian yard is an option for the Danes. Finally, one must not underestimate the potency of Japanese shipyards and shipping companies. Quite likely, at least one of the big players from Nippon will be among the ULCS operators of the future. However, the Japanese traditionally tend to be extremely tight-lipped when it comes to their future plans. In the recent past, it was not uncommon for Japanese shipping companies or shipyards to deny even the most obvious vessel orders, despite the fact that the ships were already taking shape in the building docks. While there is no shortage of speculations, we will have to wait and see what is actually going to happen. So far however, your editors have not added any Japanese ULCS order to the containership-info data base.

Ultra Large Container Ships and Port Infrastructure

This year's container ship order frenzy should also be regarded as something like a wake-up-call for terminal operators and port authorities all over the world. As soon as by mid-2011, there will be at least twelve Asia-Europe services that employ a fleet of ULCS. Most of these loops will already come on stream during 2010. In three years' time, every main port will thus have to be ready for the big ships. Any failure here will literally be the death warrant as towards a port's claim to leadership. A terminal unable to handle ULCS by 2010 will no longer play in the premier league of container shipping. The emerging breed of super jumbos will not only pose new challenges for terminals: It will also put seaward approach channels and hinterland connections to the test. Especially ports that are not situated on the coastline but in a river estuary, will have to struggle to provide the best possible access for ultra large ships. Strong growth trends at Hamburg and Antwerp for example, have shown that river ports can offer a cost advantage over coastal ports by eliminating a significant amount of wheeled inland container transport. This advantage can however, easily be outweighed by poor accessibility and short tidal windows for ships with a high draught. Dredging work in some ports' approach channels is imperative and the issue needs to be addressed quickly. The same goes for improvements in hinterland access – the recent trade growth led to congestion in most container main ports and boxes are piling up at almost every terminal. Since larger ships will mean bigger call sizes, ports will have to act now and remove bottlenecks like insufficient gate capacities and storage spaces. Your editors believe that every Euro invested here will be money well spent, so ports and terminal operators should not be too hesitant to dig deep in their pockets. A very rapid development has taken place along the quay wall, where super-post-panamax gantries have become pretty much the standard for every new terminal development.

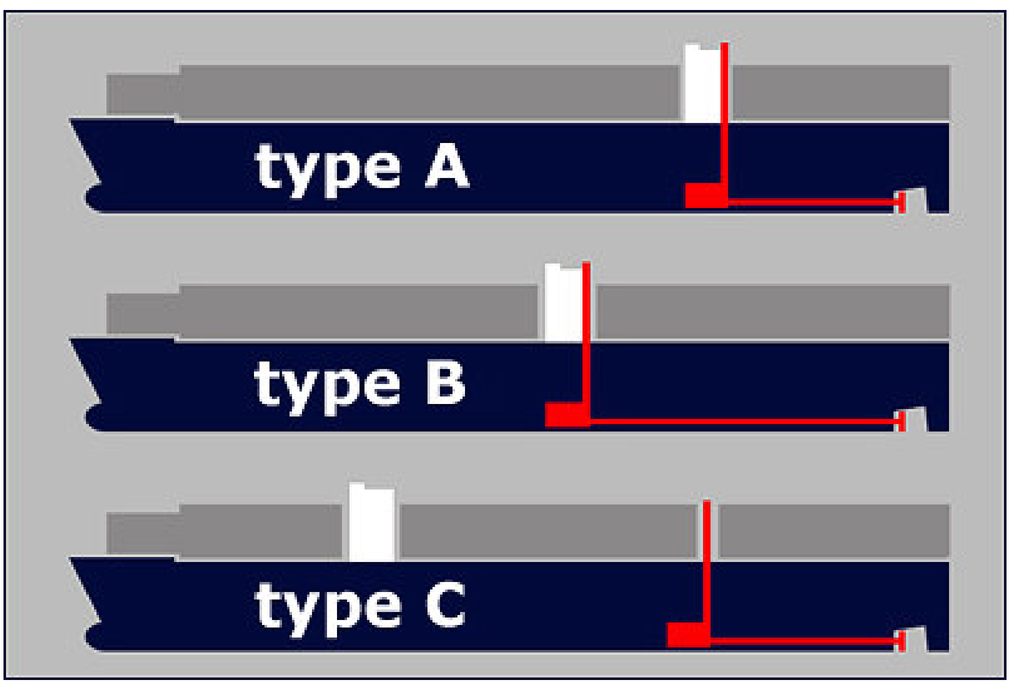
New container handling equipment is being installed at all major ports: Here, a ship with new super post panamax gantries comes into the port of Hamburg. photo: Jan Tiedemann

In recent years, the Shanghai-based manufacturer ZPMC has gained a dominant market position in this segment and presently provides more than two thirds of all ultra-large container cranes. Today, most mainline ports will provide a sufficient number of super-post-panamax cranes for ULCS.

Part Two – Vessel Design

General Layout

Since container vessels of 12,500 TEU or more will reach dimensions of almost 400 metres in length and about 50 metres in width, it will hardly be possible to entirely stick to a conventional vessel design that is nothing more than a scaled-up version of today's jumbo container ships. In many respects, those designs' margins seem to be more or less exhausted and new design approaches will be needed to face the challenges posed by building and operating ultra-large container ships. Achieving a sufficient torsional stiffness for instance, has always been a vital challenge in container ship design: The large number of hatch openings in a container ship's structure has to be compensated by very heavy scantlings in the upper deck and side coamings. This task becomes increasingly difficult with an ultra-wide ship of twenty or more rows.

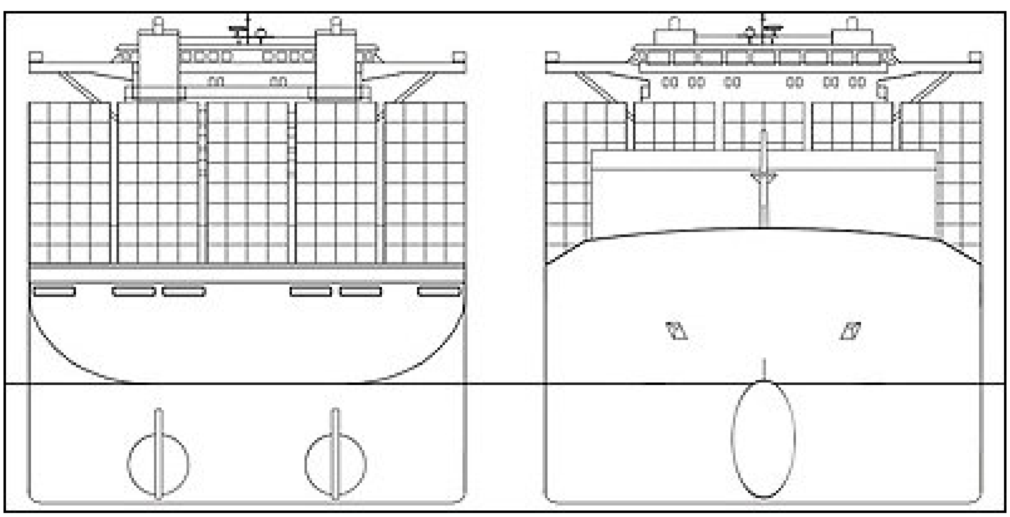


alternative general arrangements of ULCS
illustration: Jan Tiedemann

It might therefore be an appropriate measure to relocate the accommodation block and bridge of very large container ships to a more forward position, compared to a conventional design. (Like shown in the 'type B-design' in the illustration.) This would allow the construction of a strong transverse joint - stronger than the ones between the holds – between the vessel's sides at a more favourable position than the common three-quarters-aft. Odense's Lindø Shipyard for example, has chosen such a layout for their 14,500 TEU Maersk E-class vessels. This ship type features 13 bays forward of its superstructure and ten bays abaft. Another alternative would be a separation of the superstructure from the engine room. (the 'type C-design' in the illustration.) This would allow for the integration of two strong transverse joints. Furthermore, a more forward position of the deckhouse would reduce the height that is needed to maintain a sufficient sightline over deck containers loaded forward of the wheelhouse. One inherent disadvantage of such a design however, is the amount of 'wasted' space underneath the accommodation block. Since it is not accessible for payload containers, this space has to be given over to other uses like the storage of bunker.

The Propulsion Challenge

The design and construction of the drive train for an ultra large containership still poses a considerable challenge. In recent years, vessel designs have literally outgrown the range of readily available diesel engines. In other words: Engine design has been pushed to the limit by the ever growing size of vessels. The most powerful diesel engines available today, are 14-cylinder plants with a 98-centimetre bore. These turbocharged engines are rated at about 80MW. Most contemporary container ships in the size range between 8,000 and 9,500 TEU are powered by a twelve-cylinder diesel with an output of about 68 MW. For many years, this used to be the largest type of diesel engine available on the market. Such an engine is however not powerful enough to drive an ultra-large container vessel at the required speed of 24 to 25 knots. The design of ULCS will thus either require the installation of larger engines or a twin screw propulsion. Given containership operators' preference for single-propeller, single-engine installations, the abovementioned 14-cylinder diesel will be the weapon of choice for most of the big ships to come. For the largest container vessels on the drawing board, even such an engine will hardly suffice to propel the ship. As already mentioned in an earlier paragraph, the designers of Emma Maersk had to build an unusually slender vessel and add a 10-MW propeller shaft booster engine, in order to maintain a sufficient service speed. Since the booster engine is partially driven by a funnel-mounted exhaust gas turbine, this elaborate installation has the added benefit of contributing to an improved fuel utilisation: It recovers some of the energy that would otherwise be lost through hot exhaust fumes. Your editors however don't believe that the majority of ship owners actually wants such a very sophisticated vessel. Instead, they will try and make do with a rather conventional drive train. We therefore believe that the majority of the recently-announced ULCS will actually be significantly smaller than Maersk's E-class vessels. The typical vessel length for a ship in the size range of around 12,500 TEU might level off at 365 metres (22 bays) or 380 metres (23 bays) with a beam of 48,40 metres (19 rows) to 51 metres (20 rows).



Twin propulsion concepts have not really caught on with most recent designs for ultra large container ships. illustration: Jan Tiedemann

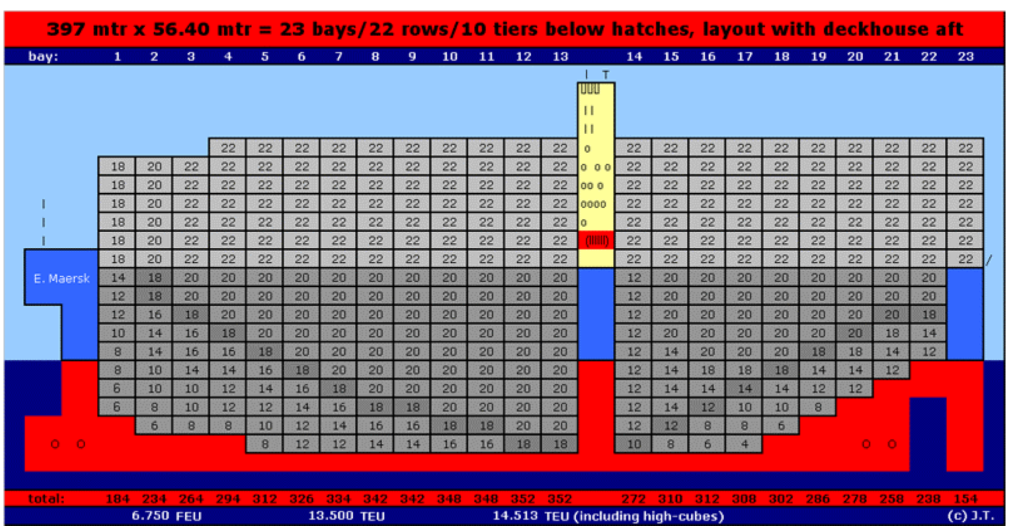
Such ships might dispense with the necessity of booster engines and entirely rely on main engine power. Separating the accommodation block from the main engine, as suggested in the above paragraph ('type c-design') , would also allow to keep the propeller shaft length a conventional level. The overlong shaft and its bearings had turned out to be one of the chinks in Emma Maersk's design and caused some significant teething troubles. Admittedly however, it looks as if these issues could be sorted out by Odense Staalskibsværft's engineers. Nevertheless, an excellent shaft alignment and the drive system's ability withstand hull deflections has become ever more vital as vessels progress in size. Some of the design challenges in the propulsion of ULCS could be avoided by opting for a combined twin-screw and twin-engine design. Such a vessel layout was favoured by Germanischer Lloyd and Hyundai Heavy who jointly presented a cutting-edge 12,600 TEU ship design a few years ago. The design approach favoured the installation of two main engines of a type that is commonly used on panamax-sized vessels. Since each engine would drive its own propeller, the approach guaranteed a high degree of propulsion redundancy as an added safety benefit. While both the shipyard and the classification society claimed that the vessel could be build forthwith, market response was poor and not a single ship was ordered. Today, Maersk Line and Odense shipyard delivered the final proof that a single-engined 14,500 TEU ship can be build and operated successfully. It is therefore highly unlikely that the twin-engine design will catch on anytime soon. Despite its advantages, it is simply too expensive to build and maintain.

Some Exemplary Design Illustrations

In this paragraph, we would like to illustrate a number of recent designs for ultra-large container vessels. Since reliable data of these ships is scarcely available, most of the following illustrations and calculations must be considered rough estimates, rather than detailed general arrangement plans. Please be advised that we cannot take any responsibility for the correctness or the completeness of the designs' particulars.

The 14,500 TEU Ship

Odense's E-class ships are the largest container carriers afloat. At 397 metres in length and 56 metres in width, the ships are true leviathans. Despite the fact that a number of shipping lines announced their own 13,000 TEU ship projects, none of these new carriers will come close to the E-class. Your editors are convinced that the Emma-type ships will remain at the top of the Market for a long time. This type of vessel poses numerous challenges for its potential ports of call: All its dimensions are excessive: The vessels are 45 metres longer than any other containership outside the Maersk fleet. At 23 rows across, they are also eleven metres wider than any other boxship design. Both the ships' scantling draught of 15.50 metres and their massive air draught greatly limit the range of suitable ports for Emma and her sisters. In order to maintain the required sightlines for save navigation, the E-classes' high deckhouse and bridge have been installed almost in an amidships position. The ships' engine room is thus also located in a very forward position, resulting in a 130-metre propeller shaft - probably the longest in any contemporary vessel. The unusual position of both deckhouse and main engine was also dictated by the E-class design's very slender hull. It also helps to reduce the length of the uninterrupted row of bays in the forward part of the hull. As described in an earlier paragraph, such a design adds to the structural integrity of the vessel and reduces hull distortion, when the ship sails through transverse seas.

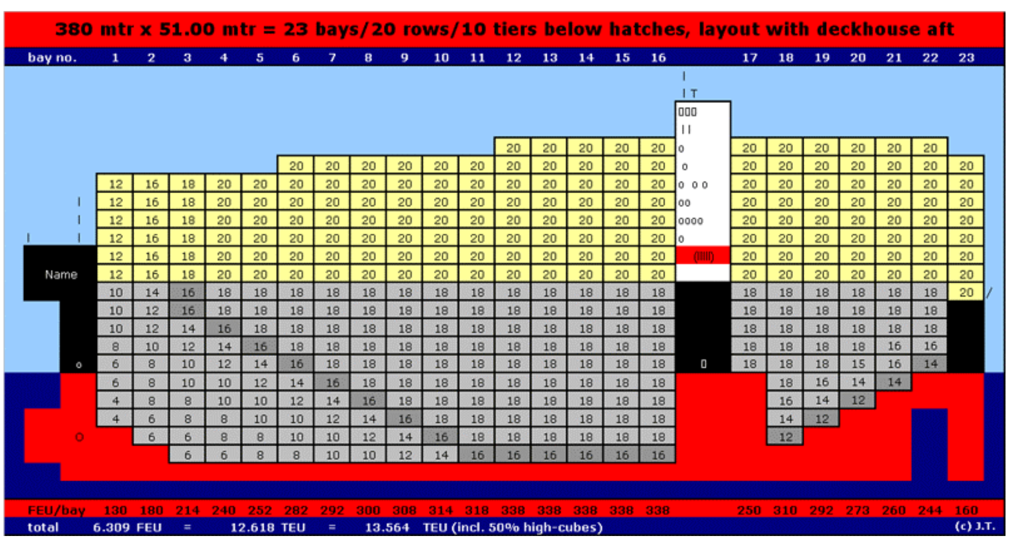


Emma Maersk: The mother of all super jumbos: Your editors calculated her intake at 14,513 TEU calculation sheet: Jan Tiedemann

Your editors' rough calculation of Emma Maersk's container intake resulted in a capacity of 13,500 boxes. Taking into account that a large proportion of these containers may be high cubes, our capacity estimate finally generated an maximum intake of 14,513 TEU, provided seven tiers of containers are carried in the holds. It is worth noticing that the E-class ships 'only' feature 23 container bays despite their excessive length. Theoretically, it would be entirely possible to accommodate 23 bays on a 380-metre ship. Your editors believe that Emma's unusual exterior dimensions can be explained by three reasons: Firstly, due to the ship's ultra-wide beam, the transverse girders between the holds have to be stronger – and thus thicker – than on smaller vessels. Secondly, the design includes a high percentage of slots for overlong 45' and 48' containers. Thirdly, the E-classes' large width combined with the vessels' slender hull leads to a rather long forecastle in front of the first container bay. Our capacity calculation does not account for Maersk Line's peculiar habit of a parametric stow – instead, we have limited the ships' deck load to seven tiers of containers to 'simulate' the loss of TEU slots caused by the parametric stow.

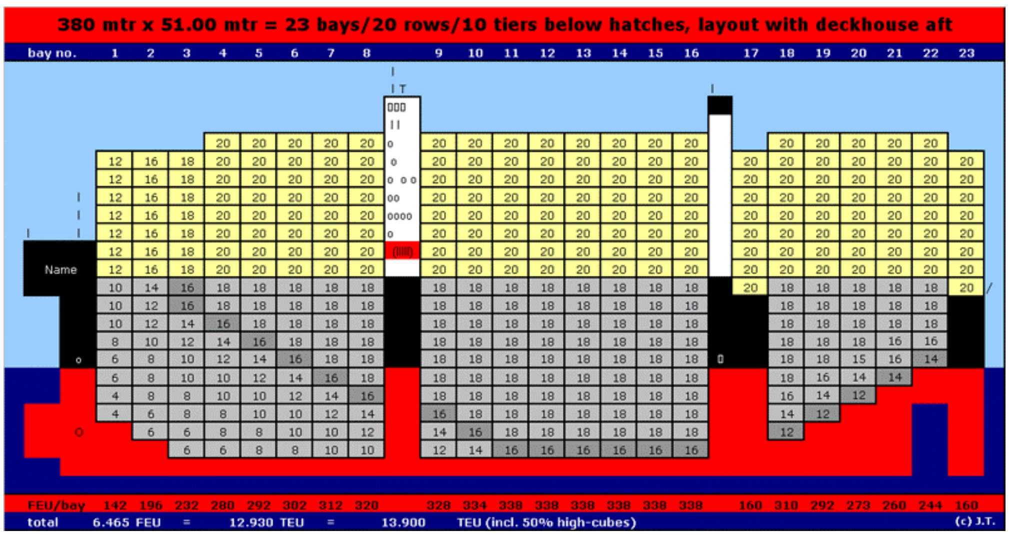
The +13,000 TEU Ship

In spring of 2007, it eventually became obvious that some container shipping lines really wanted to follow Maersk Line and



exemplary general layout of a conventionally designed 13,564 TEU container vessel calculation sheet: Jan Tiedemann

introduce ultra-large vessels to their mainline trades. Thus it did not come as a real surprise when MSC finally announced orders for a series of 13,200 TEU ships. As mentioned earlier, the orders were not entirely new, but instead resulted from a lengthy re-negotiation of earlier contracts the Swiss company had placed at various Korean shipyards. Both the shipping line and the shipyards involved in the project however, decided not to publish any vessel particulars. Your editors thus had to literally put the cart before the horse and try to approach the ships main dimensions by drawing inferences from the alleged TEU capacity.

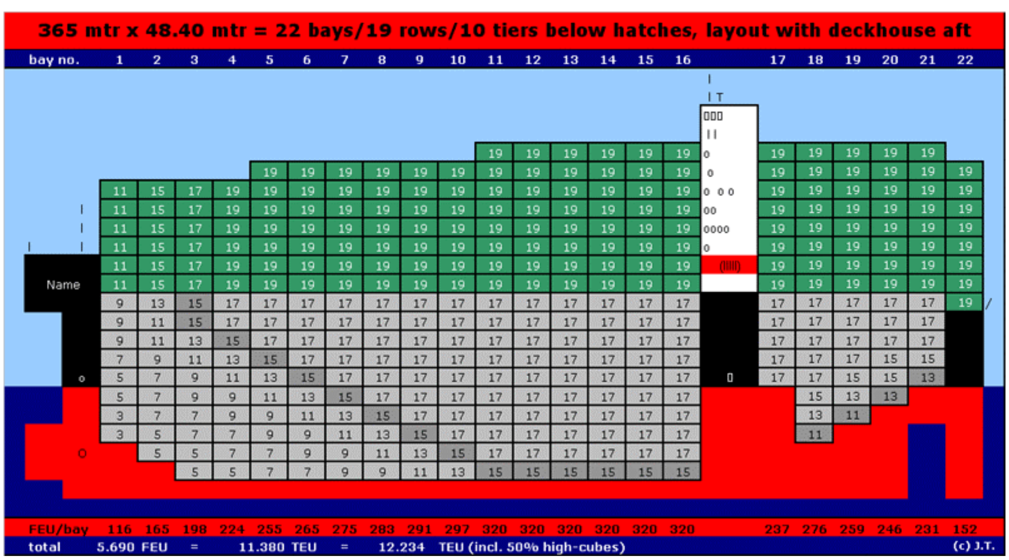


exemplary general layout of a 13,900 TEU container vessel with the bridge moved to a semi-forward position calculation sheet: Jan Tiedemann

Since the ships were ordered by the Mediterranean Shipping Company, a few operational restrictions posed by MSC's European hub of Antwerp helped to add to the overall picture. MSC's home terminal at Antwerp for example is only equipped with gantries that straddle 20 rows of containers – two or three rows less than most of today's super-post-panamax cranes. In order to achieve a container intake of more than 13,000 TEU, a 20-row wide ship will have to accommodate 23 container bays. The vessel will thus be about 380 metres long and 51 metres wide. Your editors believe that these dimensions presently represent the maximum size for safely navigating into Antwerp. Even a ship of the abovementioned dimensions would have need a special permit to sail on the river Scheldt as far as Antwerp. Furthermore a ship of 'only' 380 metres would also be advantageous at other river ports like Hamburg. Instead of building the vessel to a conventional layout. One or more of the yards that will deliver the MSC ships, might also opt for a split layout vessel with the deckhouse in a more forward position, separated from the engine room. Such a layout would increase the number of containers that could be stowed on deck. In case of the exemplary designs shown here, a split layout would increase the ships' intake by 336 TEU.

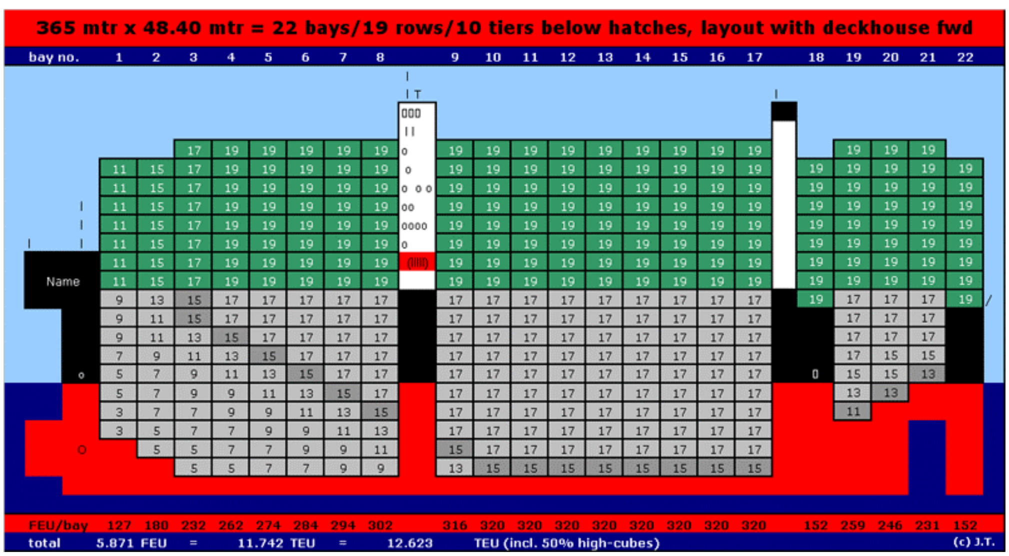
The +12,000 TEU Ship

Opposed to the very large ships of 13,000 TEU or more, a great number of recently ordered jumbo vessels will in fact be somewhat smaller. Presently it looks like ships with a length of 22 bays and a beam of 19 rows will develop into a common size class. Depending on their design, vessels of this size might carry a TEU load between 12,000 and 12,800 TEU. The below illustration shows how such a ship might look like when built to a conventional design. Lengthwise, the ships could be compared to Maersk Line's Odense-built G-class vessels. Their design features 16 bays forward and six bays abaft the superstructure. The major difference is the ships' beam.



exemplary general layout of a conventionally designed 12,234 TEU container vessel calculation sheet: Jan Tiedemann

A 12,500 TEU vessel would have a beam of 48.40 metres, compared to the Danish ships' 42.80 metres. Irrespective of deadweight restrictions, the amount of container slots carried on the forward part of the deck is limited by the necessity to maintain the required 500-metre sightline from the wheelhouse. Alternatively, 12,500 TEU ships could also be designed with a split layout. This would allow a rather high TEU intake on a ship with comparatively compact dimensions. Hamburg-based NSC for example, recently revealed the main parameters of a series of ships the company ordered at Hanjin's Subic Bay yard in the Philippines: The new carriers will be 365.60 metres long and 48.40 metres wide. According to NSC, the new vessels will have an intake of 12,825 TEU. Your editors believe that such a high TEU intake can only be achieved by using a split design with the deckhouse located in a semi-forward position. Our exemplary layout features four holds (eight bays) in front of the vessels superstructure. A further four holds are fitted in between deckhouse and engine room. Since one of these holds is three bays long, a total of nine bays can be fitted into the ship's centre section.



exemplary general layout of a 12,623 TEU container vessel with bridge moved to forward position calculation sheet: Jan Tiedemann

Another three-bay-hold can be found abaft the engine room bulkhead. In addition to the number of containers carried in holds and on top of hatch covers, two stacks of containers are carried on deck: One is placed on top of the engine room and one is carried over the poop mooring deck. Since it lacks a row of centre supports, the rear bay cannot accommodate 20" containers. The below calculation sheet illustrates that your editors did not manage to generate the number of TEU slots that Hanjin claims to have fitted into and onto a 365-metre-vessel. We therefore believe that the yard's design will incorporate eleven tiers of containers below the hatch covers. However, one might be sceptical as towards the feasibility of such a solution under everyday working conditions. One advantage of the relatively compact 12,500 TEU vessel is the option to install a 12-cylinder engine. Rated at 68.5 MW, such a diesel should be sufficiently strong to drive the ship at a speed in excess of 24 knots, provided the vessel is only loaded to its design draught. Maintaining this service speed under full displacement conditions would certainly require the installation of a 14-cylinder plant with about 80 MW. Alternatively, additional power from auxiliary engines would have to be fed to the drive train by means of an electric booster engine on the propeller shaft. Given most owners' preference for simple propulsion concepts, the latter alternative seems pretty unlikely at the present time. A look at the world shipyard order book shows that among the ships that are most likely to follow the above design approach are NSC's 12,800 TEU ships from Hanjin Subic Bay, Peter Döhle's octet from Samsung and CMA CGM's 12,600 TEU ships from Daewoo. Furthermore, the most recent +12,000 TEU orders from E.R. Schiffahrt, Rickmers and Zim might well follow the design outlines described here, although neither Hyundai, Daewoo nor Samsung revealed any details so far. One thing that could be said about Hyundai Heavy is that the yard already developed a conceptual 13,500 TEU ship with a split-layout. As previously mentioned, this unique design was the result of a cooperation with Germansicher Lloyd and used a twin-engine and twin-screw propulsion.

Part Three – Annex

Let's conclude this report with a compilation of today's ULCS container fleet and the respective shipyard order book. Surely, our readers will not fail to notice that, with the exception of five Maersk E-class vessels, the (below) list entirely consists of ships that are not yet delivered. Compared to the existing container fleet, the pipeline of jumbo vessels scheduled to come on stream until 2011 is however, very impressive. As of July 2007, a total of 3,382 ships with individual container intake of 500 TEU or more has been in service. This fleet consists of fully cellular containerships, conro ships and general cargo vessels, equipped for the transport of standard containers. The aggregate capacity of these vessels is 10.26 million TEU. Adding all vessels in today's shipyard order book to the list will bring the totals to 5,848 ships with a box capacity of 17.07 million. This is however, only a theoretical figure, since it can be expected that numerous elderly ships will be scrapped over the next couple of years. In terms of overall fleet capacity, the effect of scrapping will almost be negligible: Supposing that all ships above the age of 29 years would be deleted from the registers until 2011, some 700 vessels with a total capacity of just over one million TEU slots would have to go. This number would be far outweighed by today's vessel pipeline of almost seven million TEU slots. Thereof, 133 units can be considered ultra large ships by today's standards. Adding in the five existing jumbos, these 138 ships will boast an aggregate container capacity of 1.65 million TEU. This translates into 10.4 percent of the world fleet capacity. Together, the ships' main engines will be able to generate an output of 10 gigawatts – more than twice as much the Europe's largest power plant and the equivalent of the consumption of 15 million people. Lined up one behind another, with just one ship length in between vessels, the queue of ULCS would stretch along the lower river Elbe from the North Sea to Hamburg. The 138 ships' deadweight will be larger than that of all 366 containerships delivered in 2006. It will also be larger than the combined deadweight of all of today's active container vessels built during the first 20 years of the containerisation age. 2009 will see the delivery of 445 container ships with a capacity of 1.94 million TEU. Of these ships, 21 are super jumbos. In 2010, a total of 284 ships with a capacity of 1.57 million TEU will be added to the fleet. This includes 57 jumbo ships.

Container Vessels of +10,000 TEU
- present fleet and shipyard order book -

NAME	FLAG	MGMT	CHARTER	DELIVERY		YARD		LOA	BEAM	DFT	TEU	DWT
Maersk E-class tbn	DEN	Maersk	Maersk	2007	10	OSS	DEN	397,70	56,40	15,50	14.500	158.200
Maersk E-class tbn	DEN	Maersk	Maersk	2007	12	OSS	DEN	397,70	56,40	15,50	14.500	158.200
ELLY MAERSK	DEN	Maersk	Maersk	2007	08	OSS	DEN	397,70	56,40	15,50	14.500	158.200
EVELYN MÆRSK	DEN	Maersk	Maersk	2007	04	OSS	DEN	397,70	56,40	15,50	14.500	158.200
ESTELLE MÆRSK	DEN	Maersk	Maersk	2006	11	OSS	DEN	397,70	56,40	15,50	14.500	158.200
EMMA MÆRSK	DEN	Maersk	Maersk	2006	08	OSS	DEN	397,70	56,40	15,50	14.500	158.200
ELEONORA MÆRSK	DEN	Maersk	Maersk	2007	01	OSS	DEN	397,70	56,40	15,50	14.500	158.200
EBBA MÆRSK	DEN	Maersk	Maersk	2007	05	OSS	DEN	397,70	56,40	15,50	14.500	158.200
MSC KALINA	PAN	MSC	MSC	2009	09	SAM	SKO	380,00	51,00	15,00	13.200	150.000
MSC IRENE	PAN	MSC	MSC	2009	07	SAM	SKO	380,00	51,00	15,00	13.200	150.000
MSC Hyundai 13200 tbn	PAN	MSC	MSC	2008	12	HHI	SKO	380,00	51,00	15,00	13.200	150.000
MSC Hyundai 13200 tbn	PAN	MSC	MSC	2009	02	HHI	SKO	380,00	51,00	15,00	13.200	150.000
MSC GAIA	PAN	MSC	MSC	2009	12	SAM	SKO	380,00	51,00	15,00	13.200	150.000
MSC EVA	PAN	MSC	MSC	2009	12	SAM	SKO	380,00	51,00	15,00	13.200	150.000
MSC EMANUELA	PAN	MSC	MSC	2009	10	SAM	SKO	380,00	51,00	15,00	13.200	150.000
MSC Deawoo 13200 tbn	PAN	MSC	MSC	2009	11	DAE	SKO	380,00	51,00	15,00	13.200	150.000
MSC Deawoo 13200 tbn	PAN	MSC	MSC	2010	01	DAE	SKO	380,00	51,00	15,00	13.200	150.000
MSC Deawoo 13200 tbn	PAN	MSC	MSC	2010	04	DAE	SKO	380,00	51,00	15,00	13.200	150.000
MSC Deawoo 13200 tbn	PAN	MSC	MSC	2010	10	DAE	SKO	380,00	51,00	15,00	13.200	150.000
MSC DANIELA	PAN	MSC	MSC	2008	12	SAM	SKO	380,00	51,00	15,00	13.200	150.000
MSC Daewoo 13200 tbn	PAN	MSC	MSC	2009	08	DAE	SKO	380,00	51,00	15,00	13.200	150.000
MSC BETTINA	PAN	MSC	MSC	2009	06	SAM	SKO	380,00	51,00	15,00	13.200	150.000
MSC BEATRICE	PAN	MSC	MSC	2009	02	SAM	SKO	380,00	51,00	15,00	13.200	150.000
SUBIC	LIB	NSC	?	2010	09	HSB	PHI	365,60	48,40	15,50	12.825	142.500
SARANGANI	LIB	NSC	?	2010	12	HSB	PHI	365,60	48,40	15,50	12.825	142.500
SAPIAN	LIB	NSC	?	2010	06	HSB	PHI	365,60	48,40	15,50	12.825	142.500
SAMAR	LIB	NSC	?	2010	03	HSB	PHI	365,60	48,40	15,50	12.825	142.500
NSC Hanjin 12800 tbn	LIB	NSC	?	2011	?	HSB	PHI	365,60	48,40	15,50	12.825	142.500
NSC Hanjin 12800 tbn	LIB	NSC	?	?	?	HSB	PHI	365,60	48,40	15,50	12.825	142.500
NSC Hanjin 12800 tbn	LIB	NSC	?	?	?	HSB	PHI	365,60	48,40	15,50	12.825	142.500
NSC Hanjin 12800 tbn	LIB	NSC	?	?	?	HSB	PHI	365,60	48,40	15,50	12.825	142.500
Döhle Samsung 12600 tbn	LIB	Döhle	?	2010	06	SAM	SKO	366,00	48,40	15,50	12.600	142.500
Döhle Samsung 12600 tbn	LIB	Döhle	?	2010	07	SAM	SKO	366,00	48,40	15,50	12.600	142.500
Döhle Samsung 12600 tbn	LIB	Döhle	?	2010	09	SAM	SKO	366,00	48,40	15,50	12.600	142.500
Döhle Samsung 12600 tbn	LIB	Döhle	?	2010	10	SAM	SKO	366,00	48,40	15,50	12.600	142.500
Döhle Samsung 12600 tbn	LIB	Döhle	?	2010	11	SAM	SKO	366,00	48,40	15,50	12.600	142.500
Döhle Samsung 12600 tbn	LIB	Döhle	?	2010	12	SAM	SKO	366,00	48,40	15,50	12.600	142.500
Döhle Samsung 12600 tbn	LIB	Döhle	?	2010	01	SAM	SKO	366,00	48,40	15,50	12.600	142.500
Döhle Samsung 12600 tbn	LIB	Döhle	?	2010	02	SAM	SKO	366,00	48,40	15,50	12.600	142.500
CMA CGM Daewoo 12600 tbn	FRA	CMA-CGM	CMA-CGM	2010	01	DAE	SKO	370,00	48,40	15,00	12.600	148.000
CMA CGM Daewoo 12600 tbn	FRA	CMA-CGM	CMA-CGM	2010	03	DAE	SKO	370,00	48,40	15,00	12.600	148.000
CMA CGM Daewoo 12600 tbn	FRA	CMA-CGM	CMA-CGM	2010	05	DAE	SKO	370,00	48,40	15,00	12.600	148.000
CMA CGM Daewoo 12600 tbn	FRA	CMA-CGM	CMA-CGM	2010	07	DAE	SKO	370,00	48,40	15,00	12.600	148.000
CMA CGM Daewoo 12600 tbn	FRA	CMA-CGM	CMA-CGM	2010	09	DAE	SKO	370,00	48,40	15,00	12.600	148.000
CMA CGM Daewoo 12600 tbn	FRA	CMA-CGM	CMA-CGM	2010	11	DAE	SKO	370,00	48,40	15,00	12.600	148.000
CMA CGM Daewoo 12600 tbn	FRA	CMA-CGM	CMA-CGM	2010	12	DAE	SKO	370,00	48,40	15,00	12.600	148.000

CMA CGM Daewoo 12600 tbn	FRA	CMA-CGM	CMA-CGM	2010	12	DAE	SKO	370,00	48,40	15,00	12.600	148.000
C. P. Offen Daewoo 12600 tbn	LIB	C.P. Offen	MSC*	2010	5	DAE	SKO	370,00	48,40	15,00	12.600	148.000
C. P. Offen Daewoo 12600 tbn	LIB	C.P. Offen	MSC*	2010	6	DAE	SKO	370,00	48,40	15,00	12.600	148.000
C. P. Offen Daewoo 12600 tbn	LIB	C.P. Offen	MSC*	2010	7	DAE	SKO	370,00	48,40	15,00	12.600	148.000
C. P. Offen Daewoo 12600 tbn	LIB	C.P. Offen	MSC*	2010	9	DAE	SKO	370,00	48,40	15,00	12.600	148.000
C. P. Offen Daewoo 12600 tbn	LIB	C.P. Offen	MSC*	2010	10	DAE	SKO	370,00	48,40	15,00	12.600	148.000
C. P. Offen Daewoo 12600 tbn	LIB	C.P. Offen	MSC*	2010	12	DAE	SKO	370,00	48,40	15,00	12.600	148.000
C. P. Offen Daewoo 12600 tbn	LIB	C.P. Offen	MSC*	2011	1	DAE	SKO	370,00	48,40	15,00	12.600	148.000
C. P. Offen Daewoo 12600 tbn	LIB	C.P. Offen	MSC*	2011	2	DAE	SKO	370,00	48,40	15,00	12.600	148.000
C. P. Offen Daewoo 12600 tbn	LIB	C.P. Offen	MSC*	2011	3	DAE	SKO	370,00	48,40	15,00	12.600	148.000
Zim Hyundai 12500 tbn	ISR	Zim	Zim	2010	06	HHI	SKO	367,00	48,40	15,50	12.562	142.500
Zim Hyundai 12500 tbn	ISR	Zim	Zim	2010	06	HHI	SKO	367,00	48,40	15,50	12.562	142.500
Zim Hyundai 12500 tbn	ISR	Zim	Zim	2010	06	HHI	SKO	367,00	48,40	15,50	12.562	142.500
Zim Hyundai 12500 tbn	ISR	Zim	Zim	2010	06	HHI	SKO	367,00	48,40	15,50	12.562	142.500
Zim Hyundai 12500 tbn	ISR	Zim	Zim	2010	06	HHI	SKO	367,00	48,40	15,50	12.562	142.500
Zim Hyundai 12500 tbn	ISR	Zim	Zim	2010	06	HHI	SKO	367,00	48,40	15,50	12.562	142.500
Zim Hyundai 12500 tbn	ISR	Zim	Zim	2010	06	HHI	SKO	367,00	48,40	15,50	12.562	142.500
Zim Hyundai 12500 tbn	ISR	Zim	Zim	2010	06	HHI	SKO	367,00	48,40	15,50	12.562	142.500
Zim Hyundai 12500 tbn	ISR	Zim	Zim	2010	06	HHI	SKO	367,00	48,40	15,50	12.562	142.500
Zim Hyundai 12500 tbn	ISR	Zim	Zim	2010	06	HHI	SKO	367,00	48,40	15,50	12.562	142.500
Zim Hyundai 12500 tbn	ISR	Zim	Zim	2010	06	HHI	SKO	367,00	48,40	15,50	12.562	142.500
Zim Hyundai 12500 tbn	ISR	Zim	Zim	2010	06	HHI	SKO	367,00	48,40	15,50	12.562	142.500
Rickmers Hyundai 12560 tbn	GER	Rickmers	?	2010	06	HHI	SKO	367,00	48,40	15,50	12.562	142.500
Rickmers Hyundai 12560 tbn	GER	Rickmers	?	2010	08	HHI	SKO	367,00	48,40	15,50	12.562	142.500
Rickmers Hyundai 12560 tbn	GER	Rickmers	?	2010	10	HHI	SKO	367,00	48,40	15,50	12.562	142.500
Rickmers Hyundai 12560 tbn	GER	Rickmers	?	2010	12	HHI	SKO	367,00	48,40	15,50	12.562	142.500
E.R. Hyundai 12560 tbn	GER	E.R.	?	?	?	HHI	SKO	367,00	48,40	15,50	12.562	142.500
E.R. Hyundai 12560 tbn	GER	E.R.	?	?	?	HHI	SKO	367,00	48,40	15,50	12.562	142.500
E.R. Hyundai 12560 tbn	GER	E.R.	?	?	?	HHI	SKO	367,00	48,40	15,50	12.562	142.500
E.R. Hyundai 12560 tbn	GER	E.R.	?	?	?	HHI	SKO	367,00	48,40	15,50	12.562	142.500
MSC Hyundai 11300 tbn	PAN	MSC	MSC	2008	11	HSH	SKO	366,00	45,60	15,00	11.312	130.000
MSC Hyundai 11300 tbn	PAN	MSC	MSC	2008	12	HSH	SKO	366,00	45,60	15,00	11.312	130.000
CMA CGM Hyundai 11400 tbn	FRA	CMA-CGM	CMA-CGM	2009	06	HHI	SKO	366,00	45,60	15,00	11.312	150.000
CMA CGM Hyundai 11400 tbn	FRA	CMA-CGM	CMA-CGM	2009	07	HHI	SKO	366,00	45,60	15,00	11.312	130.000
CMA CGM Hyundai 11400 tbn	FRA	CMA-CGM	CMA-CGM	2009	08	HHI	SKO	366,00	45,60	15,00	11.312	130.000
CMA CGM Hyundai 11400 tbn	FRA	CMA-CGM	CMA-CGM	2009	11	HHI	SKO	366,00	45,60	15,00	11.312	130.000
CMA CGM Hyundai 11400 tbn	FRA	CMA-CGM	CMA-CGM	2008	06	DAE	SKO	366,00	45,60	15,00	11.312	130.000
CMA CGM Hyundai 11400 tbn	FRA	CMA-CGM	CMA-CGM	2008	12	DAE	SKO	366,00	45,60	15,00	11.312	130.000
CMA CGM Hyundai 11400 tbn	FRA	CMA-CGM	CMA-CGM	2009	06	DAE	SKO	366,00	45,60	15,00	11.312	130.000
CMA CGM Hyundai 11400 tbn	FRA	CMA-CGM	CMA-CGM	2009	12	DAE	SKO	366,00	45,60	15,00	11.312	130.000
CMA CGM Hyundai 11300 tbn	FRA	CMA-CGM	CMA-CGM	2009	03	HHI	SKO	366,00	45,60	15,00	11.312	130.000
CMA CGM Hyundai 11300 tbn	FRA	CMA-CGM	CMA-CGM	2009	05	HHI	SKO	366,00	45,60	15,00	11.312	130.000
CMA CGM Hyundai 11300 tbn	FRA	CMA-CGM	CMA-CGM	2009	08	HHI	SKO	366,00	45,60	15,00	11.312	130.000
CMA CGM Hyundai 11300 tbn	FRA	CMA-CGM	CMA-CGM	2009	10	HHI	SKO	366,00	45,60	15,00	11.312	130.000
CMA CGM Hyundai 11300 tbn	FRA	CMA-CGM	CMA-CGM	2009	12	HHI	SKO	366,00	45,60	15,00	11.312	130.000
CMA CGM Hyundai 11300 tbn	FRA	CMA-CGM	CMA-CGM	2010	02	HHI	SKO	366,00	45,60	15,00	11.312	130.000
CMA CGM Hyundai 11300 tbn	FRA	CMA-CGM	CMA-CGM	2010	04	HHI	SKO	366,00	45,60	15,00	11.312	130.000
CMA CGM Hyundai 11300 tbn	FRA	CMA-CGM	CMA-CGM	2010	04	HHI	SKO	366,00	45,60	15,00	11.312	130.000
GUNVOR MÆRSK	DEN	Maersk	Maersk	2005	10	OSS	DEN	367,30	42,80	15,00	10.150	115.700
GUDRUN MAERSK	DEN	Maersk	Maersk	2005	05	OSS	DEN	367,30	42,80	15,00	10.150	115.700
GRETE MAERSK	DEN	Maersk	Maersk	2005	08	OSS	DEN	367,30	42,80	15,00	10.150	115.700
GJERTRUD MÆRSK	DEN	Maersk	Maersk	2005	12	OSS	DEN	367,30	42,80	15,00	10.150	115.700

GERD MAERSK	DEN	Maersk	Maersk	2006	02	OSS	DEN	367,30	42,80	15,00	10.150	115.700
GEORG MAERSK	DEN	Maersk	Maersk	2006	04	OSS	DEN	367,30	42,80	15,00	10.150	115.700
Maersk G-class tbn	DEN	Maersk	Maersk	2008	02	OSS	DEN	367,30	42,80	15,00	10.150	115.700
Maersk G-class tbn	DEN	Maersk	Maersk	2008	04	OSS	DEN	367,30	42,80	15,00	10.150	115.700
Maersk G-class tbn	DEN	Maersk	Maersk	2008	06	OSS	DEN	367,30	42,80	15,00	10.150	115.700
Maersk G-class tbn	DEN	Maersk	Maersk	2008	08	OSS	DEN	367,30	42,80	15,00	10.150	115.700
Maersk G-class tbn	DEN	Maersk	Maersk	2008	10	OSS	DEN	367,30	42,80	15,00	10.150	115.700
Maersk G-class tbn	DEN	Maersk	Maersk	2008	12	OSS	DEN	367,30	42,80	15,00	10.150	115.700
COSCO EUROPE	CHI	Cosco	Cosco	2008	01	HHI	SKO	349,20	45,60	15,00	10.046	120.000
COSCO ASIA	CHI	Cosco	Cosco	2007	08	HHI	SKO	349,20	45,60	15,00	10.046	120.000
COSCO AMERICA	CHI	Cosco	Cosco	2008	03	HHI	SKO	349,20	45,60	15,00	10.046	120.000
COSCO AFRICA	CHI	Cosco	Cosco	2008	07	HHI	SKO	349,20	45,60	15,00	10.046	120.000
COSCO PACIFIC	CHI	Cosco	Cosco	2008	07	NAN	CHI	348,50	45,60	14,50	10.000	120.000
COSCO OCEANIA	CHI	Cosco	Cosco	2008	03	NAN	CHI	348,50	45,60	14,50	10.000	120.000
Cosco Nantong 10000 tbn	CHI	Cosco	Cosco	2009	?	NAN	CHI	348,50	45,60	14,50	10.000	120.000
COSCO INDIAN OCEAN	CHI	Cosco	Cosco	2008	11	NAN	CHI	348,50	45,60	14,50	10.000	120.000
COSCO ATLANTIC	CHI	Cosco	Cosco	2009	03	NAN	CHI	348,50	45,60	14,50	10.000	120.000
Hanjin Samsung 10000 tbn	PAN	Hanjin	Hanjin	2010	08	SAM	SKO	350,00	45,60	15,00	9.954	117.000
Hanjin Samsung 10000 tbn	PAN	Hanjin	Hanjin	2010	10	SAM	SKO	350,00	45,60	15,00	9.954	117.000
Hanjin Samsung 10000 tbn	PAN	Hanjin	Hanjin	2010	12	SAM	SKO	350,00	45,60	15,00	9.954	117.000
Hanjin Samsung 10000 tbn	PAN	Hanjin	Hanjin	2010	07	SAM	SKO	350,00	45,60	15,00	9.954	117.000
Hanjin Samsung 10000 tbn	PAN	Hanjin	Hanjin	2010	07	SAM	SKO	350,00	45,60	15,00	9.954	117.000
ZIM Hyundai 10000 tbn	LIB	Zim	Zim	2009	06	HSH	SKO	349,20	45,60	15,00	9.850	113.900
ZIM Hyundai 10000 tbn	LIB	Zim	Zim	2009	07	HSH	SKO	349,20	45,60	15,00	9.850	113.900
ZIM Hyundai 10000 tbn	LIB	Zim	Zim	2009	09	HSH	SKO	349,20	45,60	15,00	9.850	113.900
ZIM Hyundai 10000 tbn	LIB	Zim	Zim	2009	10	HSH	SKO	349,20	45,60	15,00	9.850	113.900
ZIM Hyundai 10000 tbn	ISR	Zim	Zim	2010	01	HSH	SKO	349,20	45,60	15,00	9.850	120.000
ZIM Hyundai 10000 tbn	ISR	Zim	Zim	2010	02	HSH	SKO	349,20	45,60	15,00	9.850	120.000
ZIM Hyundai 10000 tbn	ISR	Zim	Zim	2010	05	HSH	SKO	349,20	45,60	15,00	9.850	120.000
ZIM Hyundai 10000 tbn	ISR	Zim	Zim	2010	05	HSH	SKO	349,20	45,60	15,00	9.850	120.000

Please note: The above table contains both confirmed and estimated figures. Whilst all care has been taken in putting together this overview, your editors cannot guarantee for the correctness and the completeness of the list. Shipyard abbreviations: DAE = Deawoo Shipbuilding, HHI = Hyundai Heavy Industries, HSB = Hanjin Subic Bay, HSH = Hyundai Samho Heavy Industries, NAN = Nantong Oceanship Engineering, OSS = Odense Staalskibsværft, SAM = Samsung Heavy Industries. *MSC is believed to charter the Offen ships, but the contract has not been confirmed so far. An alleged APL-order for very large container vessels has not been accounted for, since no details are available. The same goes for the Greek Niki Grpup who are believed to have signed a letter of intend for ULCS at South Korea's STX shipyard.