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HIGH SPEED CRAFT VIABILITY ANALYSIS

F. Xavier Martínez de Osés[1] and Marcel·la Castells[2]

ABSTRACT

This paper presents a brief analysis on the applicability of high speed crafts in short sea trades, from different marine stakeholders point of view. The TRANSMAR research group of the Nautical Engineering and Sciences department from the Technical University of Catalonia, has continued the finished study (INECEU: Intermodality between Spain and Europe), proposing fast ships for serving some of the selected sea links in West Europe in it. The recent communication regarding the mid-term review of the European Commission's 2001 White paper on Transport, confirms that the evolution of modal split in freight transport from the year 2000 up to the year 2010, will show a steady share of 39% for the waterborne transport and a slight increase in the road transport. One of the four pillars of the European transport policy is the innovation in transport technologies and systems, improving its efficiency and logistics throughout the supply chain.

Key words: Short sea shipping, high speed crafts, logistical performances

INTRODUCTION

The European Commission and Member States drafted in the year 2001 a transport policy in order to get some goals beyond 2010. The reason of these programmes was the need to balance the share of the different transport modes, as the forecasted growth would be absorbed mostly by road transport. Still around 45% [1] of European Union foreign trade is carried by road and is consequently conditioned by traffic congestion or high fuel consumption, implying disadvantages related to

[1] Profesor lector y Secretario del departamento de Ciencia e Ingeniería Náuticas de la Universidad Politécnica de Cataluña, fmartinez@cen.upc.edu.

[2] Becaria F.I. del departamento de Ciencia e Ingeniería Náuticas de la Universidad Politécnica de Cataluña, mcastells@cen.upc.edu.

pollution and safety. Meanwhile up to 39% of the before mentioned volume is carried by short sea shipping. Short Sea Shipping in European waters has been considered by national and European governments as one of the most feasible ways to alleviate the congestion that gets worse every day on the roads and highways across Europe. The European Union has presented the mid-term review of the European Commission's 2001 White Paper on Transport, confirming the waterborne transport share, but increasing the road participation. The Marco Polo II action, with an overall budget of 740 millions € over 7 years (from 2007 to 2013), should include funding for motorways of the sea and also for modal shift programmes together with the traditional Marco Polo programme actions.

The shipping scenario.

The short sea shipping (SSS) fleet can be classified per cargo type, mainly container, Ro/Ro and passenger transport, but keeping apart passenger traffics from the perspective of the Community objective, container and Ro/Ro transport are the segments in SSS traffics in which modal-shift could be carried out. Keeping in mind that Ro/Ro (Roll on/Roll off) activities concern the loading and discharging of a road vehicle, a wagon or an inter-modal transport unit on or off a ship on its own wheels or wheels attached to it for that purpose (United Nations (Economic Commission for Europe), European Conference of Ministers of Transport (ECMT) and the European commission (EC), 2001).

Figure 1. Image of a high speed craft serving the domestic traffics in Canary Islands

Source: http://www.fredolsen.es/lineas/Benchijigua_especificacions.asp.

High speed maritime transport could be seen as a possible solution to current challenges in seaborne transport. In a first view it could be understood that small boats operating at high speeds, would be less efficient than bigger ships sailing at conventional speeds. This is quite logical due to different sea keeping performances, the fuel prices and additionally we face the higher building costs in the fast side sometimes around two and a half to ten times de price of a conventional Lo/Lo ship per freight slot [2].

However from a global point of view and considering all the logistical chain aspects, the fast maritime transport concept reduces the transit time, increasing the overall transport process speed. Then high speed crafts would be an efficient logistics solution in specific SSS services, reducing the associated freight costs, because speed minimises the workshop costs, affecting the logistical chain global costs (Bendall et al, 2001). Mainly when talking about "just in time" goods, where speed is seen as a quality service aspect. This superior speed is reached through not only adding speed at sea or increasing frequencies, but through quicker and more efficient operations on port and in general on shore [3,4].

EUROPEAN TRANSPORT POLICY

Today transport policy stimulates and recognises the need of an efficient multimodal transport chain as an alternative to road transport. The European transport corridors are intended as an overall transport network, where the maritime legs will be the future accesses to the motorways of the sea and the ports will become quality links between the sea transport and their terrestrial continuation. These thinking were firstly anticipated in the European White Paper on Transport Policy, also alerting of an imbalanced share of the modes of transport within the intra European exchanges. In order to compensate them, the Short Sea Shipping was considered a reasonable choice for reaching the objectives of sustainability and possibly absorption of the estimated 50% of increment in heavy traffic, contributing also to the modal balance and alleviating the terrestrial bottlenecks [5].

The European Commission has been promoting research on maritime transport mostly during the fourth and fifth framework programmes and in several calls in the sixth programme. Some of the projects related to the fast maritime transport were S@S, FASS, EMMA, SPIN-HSV or TOHPIC, and other ones related to the short sea transport, analysis and promotion as RECORDIT, INSPIRE or REALISE, inter alia. SPIN-HSV identified the policy to achieve a safer and more competitive high-speed maritime transport in the logistics chain and TOHPIC project analysed in deep the way to optimise the fast ships handling at port by means of a software fitted to each port particulars. Fast ships need dedicated port infrastructures in order to increase the efficiency of those ships operability, mainly [6,7]:

1. The identification of the operational features of a HSC in the port interface, affording quick loading and discharging procedures together with cargo tracking and tracing.
2. Applicable ruling in HSC procedures as a set of recommendations that combined with wake wash effects study, affording the Masters to know the real effect of his ship.
3. The study of the port control management systems and the provision of recommendations for improved traffic, safety and efficiency.

From the perspective of the Community objective, aiming for modal shift, transport policy needs to promote SSS more intensively by creating the right conditions to let shippers and logistic service providers use it more frequently in their supply chains. So that, we primarily focus on the SSS container and Ro/Ro market, because these two markets constitute almost the entire SSS market, and they are the segments in SSS transport in which modal shift could be carried out. But the promotion of HSC is second step after the previous one would be accomplished, id est first of all it is needed attracting good flows that do not yet use SSS. Then if a sufficient market demand requires faster service, then operators will invest in HSC. Today HSC are only deployed in specific niche markets (Becker et altri, 2004). If the right socio-economic conditions are settled, the HSC transport services could be offered by themselves, and market demand for fast SSS services would grow in the future. That would be the time when the stakeholders will seek for HSC solutions.

HIGH SPEED CRAFTS ANALYSIS.

Different advantages could justify the HSC serving in short sea trades, keeping in mind the difference between what it can be considered as fast conventional services (24 to 30 knots) and the pure fast ships sailing at speeds 50% to 100% greater than a conventional vessel's speed [8]. A superior speed implies the service reduces the transit time, aspect to be considered for specific goods, so that it is possible to serve more tight schedules and reduce further the cargo waiting time in port. Thus appears the capacity to compete against road transport because for example a 30 knots speed means 56 km/h, a figure much higher than mean freight train speed in Europe or comparable to mean long haul road transport considering the congestions and driving time legal limits. Also at sea there are almost no congestion, leaving room to cargo increasing volumes and no tolls.

However delays in ports are too frequent, sometimes due to a poor management or lack of adequate devices, those delays affect not only the ship schedules but the overall logistical cost, reaching sometimes the 35% of the total cost (Lagoudis et al. 2002). Another disadvantage is the fuel price, because the elevate rate of consumption of those ships due to the high power engine plan needed for developing the required speed. The last is related to the pollutant emissions of high intensity together with the CO_2 and NOx emissions. Also sea keeping performances should be kept in mind, as fast small ships have not so good sailing ability in bad weather than conventional ones, also a larger vessel has a greater navigability at worse sea conditions and therefore is less sensitive to delays at open sea. But the largest vessels are only deployed for intercontinental transport and the maximum average SSS vessel speed is in the region of 20 knots for conventional container transport and 23 knots for conventional Ro/Ro transport (TNO et al, 2004). Moreover bigger fast ships can operate in a wider range of sea conditions but they are only viable when enough demand exists.

The geographic analysis in Europe

Some shipping companies have opted for the fast ships in some short sea services in routes competing directly with the shore transport. This situation varies form one country to another and most of the companies are placed around the Mediterranean sea in France; Greece, Italy and Spain and in the Atlantic basin mainly in Norway and United Kingdom. The Mediterranean and the North Sea show the largest share of Short Sea Shipping, with 30% and 27% respectively. Only in the Ro/Ro market, the Mediterranean countries carry out almost all their Ro/Ro transport through domestic transport. The 7.8 million trailers totally shipped in Europe include 2.3 million trailers in Greece and 1.6 million trailers in Italy (ShipPax, 2002) as the countries with largest domestic transport volume.

Splitted by countries, in France operate on a regular basis companies like SNCM and Corsica Ferries, in Greece there are a lot of small companies operating HSC but the main ones are Hellas Flying Dolphins, Superfast Ferries and Minoan Lines. In Italy Grimaldi operates 9 ships but only 4 of them sail at speeds higher than 22 knots, the Ro/Pax Eurostar Roma and Eurostar Barcelona for example cover in 18 hours the trip between Barcelona and Civitavecchia at 27 knots, SNAV, Caremar, Siremar, Tirrenia or Ustica Lines and in Spain Acciona-Trasmediterranea, Balearia, Buquebus, Fred-Olsen and Garajonay Express.

The short sea transport in Greece uses extensively fast ships for linking the high number of islands with the mainland supported by a strong demand, but the strict control of the Merchant Marine Ministry, the seasonal demand and meteorological conditions even during the summer with strong winds and short waves, are the negative aspects in the other hand (Karayanis, 2000).

French and Spanish scenarios, are examples of link between the insular provinces with the main land using fast vessels using also Ro/Pax services. In France the link between Nice and Corsica island, is carried out by means of a fast steel made mono hull belonging to SNCM Ferryterranée company (other previous twin ships Alisó and Ascó are sailing under Greek flag today). In Spain fast ships serving the route between Barcelona and Balearic Islands during summer season, are placed in wintertime in the Gibraltar strait route. Additionally there are specific and efficient services linking different ports within the Canary archipelago all year around. The special conditions surrounding Canary Islands, exposed to all type of weather and swell, have given nowadays to the big multi hull units the exclusivity in the coming future [9].

In northern Europe fast ships operate successfully as regular passenger services in Norway along its coast connecting the most northern cities with the south, mainly by two big companies (Fylkesbatane I ognogFjordane and HSDSjo AS) with around 30 ships.

In United Kingdom there are also an extensive fast short sea freight network served by companies as Stena Line covering 18 routes with 34 ships, but only 4 of them are HSC. This company built in 1996 the first commercial fast ferry in the world, the *Stena Sea Lynx* the precursor of HSS series, being under operational status today this called 900 series carrying passengers, cars and buses and the bigger ones called HSS 1500 with a bigger capacity. Superfast ferries a Greek company that successfully adopted the high speed in routes between Italy and Greece, winning the international recognition when was selected to operate between Rosyth and the European continent. Further the services were expanded between the ports of Hanko (Finland) and Rostock. Isle of Man Steam Packet operates the services between Isle of Man and Ireland, together with Liverpool and He sham, offering high quality services carrying passengers and vehicles between Douglas and four other ports, using fast ships between April to October and conventional ones in winter. The ships are the Seacat and the Superseacat, the first one a catamaran made of aluminium can reach the 35 knots and the second one made in Fincantieri (Italy) is a 100 meters of length mono hull with a fully laden speed of 38 knots. Other companies are *Speedferries* operating with a third generation wave piercing catamaran, and the dissolved companies *Hoverspeed* and *Irish Sea Express*, that finished their activity some years ago.

A good example of successful motorway of the sea can be found in Japan, where around 12 companies hold a wide net of fast freight services, using ships capable of developing more than 30 knots, assuming the share of the 25% of trucks involved in trips longer than 100 kilometres.

In brief and apart from the military services the need for the speed at sea is not perceived among the shippers and receivers and while no need for it would appear, the high speed crafts will not be used in mature short sea traffics.

The vessel's classification

A shipper has the opportunity of selecting different types of vessels for operating a short sea shipping service, depending on the required qualities of the transport in itself. The choice is based mainly on the kind of cargo and the market demand. The maximum mean speed among ships dedicated to short sea is around 20 knots for conventional container carriers and 23 knots for conventional Ro/Ro (Becker et al., 2004).

High speed crafts are used mainly for the passenger transport as the 92% of the 1600 European fast ships are used only as passenger ships and the other 8% combining freight and passengers mainly catamarans and mono hulls. In fact the last ones have spaces for trucks and cars that could be used for freight. In order to assume a cargo increase in the maritime transport, ships could enlarge their cargo capacity, and this is the tendency instead of increase the speed, but this implies more

Table 1: Classification of speed ranges depending on ship types and trip.

Type of transport	Type of vessel	Speed
Conventional transport	Conventional (multipurpose, small tankers inter alia)	12-15 knots
Container transport	Conventional container carrier	12-20 knots
Ro/Ro transport	Conventional Ro-Ro Fast ship (Ro-pax) High speed (Ro-Pax)	15-23 knots 23-30 knots 30-40 knots

Source: own based on Becker et al, 2004.

time at port and worse service to the customer [10], only to be managed by means of faster port handling. The size is a question of economies of scale, reducing the cost per mile and also capable of sail at higher speeds recovering delays and being less dependent of the weather conditions.

When talking about the HSC short sea, its development differs between conventional and fast ships, due to considerations of business, commercial, port services and geographical port lay out. From a business point of view, faster ships permit to reduce the number of units but maintaining the service frequency, but there is a move from cost of capitals to operational or variable costs. So that the economic viability depends not only from investment costs but also of technical developments the rate consumption per carried metric tonne. From a commercial point of view, the natural market of fast short sea traffics is reduced to passengers and high value and time sensitive freight. Conventional ships are more viable in less value and indistinct dependency of transit time freight. Fast ships then can offer benefits in some Ro-Pax services and even Ro-Ro services with short turnaround time in port. Some examples of natural scenarios for fast short sea services are:

1. Ro-Pax transport from mainland to islands as Great Britain, Ireland or Balearic islands.
2. Ro-Ro transport among islands or in fixed freight volumes as European mainland to Great Britain and Ireland.
3. Ro-Pax transport between points where the shore transport is longer or more difficult as Scandinavian countries, Italy to Europe or Spain and Italy to Greece and with the African coast.
4. Ro-Pax transport between points where competitive alternatives of similar distance carry low cost containerised freight.
5. Ro-Pax transport between islands in archipelagos where the capacity of passenger and freight competes against the plane as in Canary Islands.

From a port service perspective, fast ships require quicker port operations and efficient hinterland connections. It is concluded that a reduction in port time has a double effect on the total transport time compared with the same reduction in sailing time (Laine & Vepsalainen 1994) so that the fast vessel operative would be more benefited using Ro/Ro (Ro/Pax) ships than traditional Lo/Lo ships, because the need for timeless port operations.

From a geographical port layout point of view, the fast ship port facilities never should be placed in the middle of the port, but in the outer part of the port as they do not need for marshalling and consolidation areas, needed for a quick link to the hinterland. This location benefits also passengers as they has not cross over industrial areas within the port.

THE CHOICE BETWEEN CAPACITY AND SPEED

For carrying out an in deep analysis of the high speed maritime transport, previously we should describe the different alternatives of the existing transport modes, so that a brief description backs on the further comparative. Each existing ship design is made depending on the initial requirements and focused on certain economic needs. Today there is a wide range of fast mono and multi hull designs demonstrating a lack of standardisation that could be required by the operators. However the advantage is the opportunity for compare the alternative designs by the operator side, and then look for the best price in a competitive market.

Among the ship builders there are the ones defending the mono hull design because they consider them safer in critical situations and in the opposite side the builders defending the catamaran design as they need 30% less power for the same deadweight and their capacity of maintaining a high speed in calm seas. Building materials are also matter of discussion as for example Incat and Austal use aluminium, Fincantieri (builder of mono hulls) uses steel and other builders a combination of both. This last affects the needed power as it depends of weight and required speed, being the most common the diesel engines and gas turbines, existing some combination of them (CODAG). Shipbuilders are waiting for demand of vessels with speeds in excess of 33 knots seeing in the future speeds of more than 50 knots in the near future (Baird, 2004).

The kept in mind variable to decide the final design are the freight volume, the cost of the carried good (the purchase cost and the possible delay costs), the trip distance, the frequency, the transit time and the type of products as for example manufactured goods have an added value compared with commodities.

Based on secondary studies and the above mentioned characteristics, high-speed vessels compared with conventional, container and Ro/Ro vessels can offer the same degree of flexibility as container and Ro/Ro ships, they are suitable for high-cost products, they can operate in a very wide range of distances, their level of service is very high, the transit times achieved are short and the type of products they can transport are both commodities and manufactured goods. A comparative between fast vessels has been made between the container ships and the Ro/Ro and Ro/Pax ships developing speeds in excess of 25 knots. In the first case, their size and speed has been increased up to mean values of 21 knots and maximum values of 27.5 knots, so it can not be confirmed the existence of high speed container ships. However projects of such kind of vessels as the Norasia or Fast-ship examples were cancelled before being carried out due to: doubts on her sea-keeping performances, weak perspectives on a solid demand and the need for investors assuming such a risk.

Despite the above, today the conclusion is that the improvement of performance should be sought from increasing the round trip frequency of ships, (Blauwens et al, 2003 and Becker J.F. et al, 2004) regarding the transport service between seaport and an inland terminal. A higher frequency can be achieved not only by ship's propulsion together with hull's design but cargo-handling system. The investment on cargo-handling may provide higher return than investment in ship propulsion and this is the reason because the SSS operators expand their fleet on conventional ships rather than fast ships. As the largest ships are deployed on intercontinental routes because the economies of scale of a great ship decrease on the cost per mile basis and the need for additional speed to overtake delays in her departure that is an added value for the intermodal operator, the maximum SSS vessel speed is in the range of 20 knots for conventional container vessels and 23 knots for conventional Ro/Ro transport. Regarding Ro/Pax ships, there is a wide variety of them dedicated to short sea trades with speeds superior to 25 knots and designs mainly of monohulls but also catamarans and SES. Most of the fast vessels have tonnages bigger than 500 GT and some of them exceed the 2000 GT, so this means that fast ships are not intended to carry a lot of cargo and are more addressed to carry passenger and cars together with small volumes of cargo. At this point we have classified three categories of ships depending on their maximum speed.

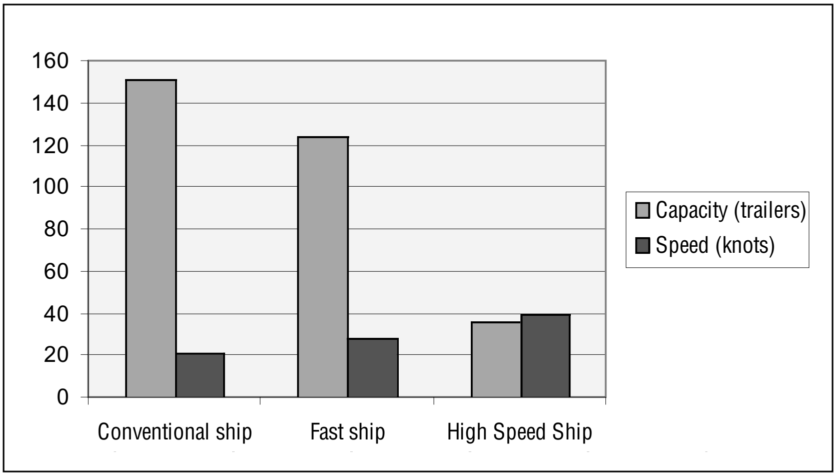
COMPARATIVE ANALYSIS.

From the precedent points and based also in previous studies on the high speed vessels particulars (Marchant, 2002), we are going to consider only the Ro/Ro only freight ships in this analysis, because the loading and discharge operations are quicker than in Lo/Lo ships and then cheaper, they need only a ramp but no cranes, and the port space needs are minor, together with some other technical particulars as less draught in general. However their freight capacity compared with same size Lo/Lo ships could be half, because goods are placed on wheels and the stiffeners in general are wider and need space for lifters, ramps, accesses together with dead spaces between trailers. We can say that in general Ro/Ro ships are double expensive per TEU slot than Lo/Lo ships, but in short distance traffics with the minor port costs make them a viable and efficient alternative.

Additionally it is thought that fast ships need to operate in short routes in order to ensure the frequency of one trip per day. In the other side fast conventional ships (superior deadweight, steel hull and speeds up to 30 knots) are used in longer routes with a limit of 500 miles that is a distance to be covered within 24 hours, a daily frequency can be ensured with two ships, that is the strategy followed by companies like *Superfast ferries*, *Sinihonkai ferries* or *Blue Highway*.

— Considering the classification of ships depending on their cruise speed:
— Conventional ship (speed less than 23 knots).
— Fast ship (Speed between 23 and 30 knots)
— High speed ship (speed in excess of 40 knots)

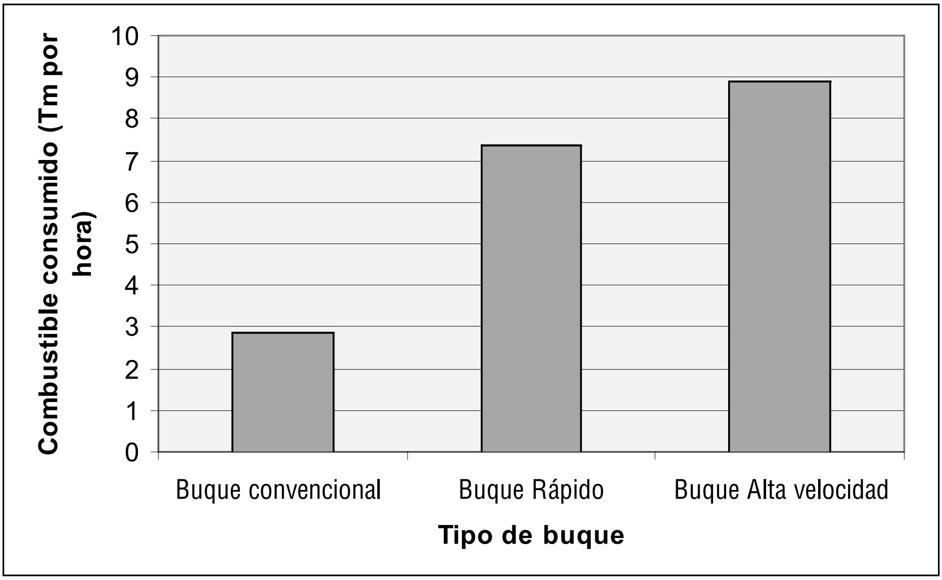
Figure 2. Freight capacity and speed rate by group of ships.



Source: Own based on Marchant, C. 2002

The main differences on deadweight capacity and speed, can be seen in the next diagram where it is seen that there is an opposite relationship between the speed and the deadweight capacity, although the freight levels are very similar between the conventional and fast ships, where technical considerations are not an obstacle for combine load capacity up to speed below 30 knots. A different situation exists when we talk about high speed crafts, where the freight possibilities are drastically reduced. Conventional ships offer more capacity but not only less speed because a minor fitted power but reduced fuel consumption. Fast conventional ships offer a mean term between conventional ships and high speed ships but still maintaining a high freight capacity. However the power needs use to be more than twice the previous group level, meaning an increase in fuel consumption and then increasing the operational costs.

Figure 3. Fuel consumption per hour



Source: Own based on Marchant, C. 2002

High speed crafts try to recover the high fixed costs, by means of only a crew and maximising the number of trips per day. They fit very well in a very high demand markets and shorter routes. Carrying out an analysis per trailer or freight slot, taking information from different published data and shipbuilders, we can confirm that the building cost per slot and the fuel consumption per slot are other variables to be kept in mind.

Comparing one example per group with their main particulars and performances, we would find the following figures:

— Conventional ship, this first case could be represented by the Stena Runner series with a 370 TEU's capacity or 2,700 lane meters (180 trailers x 15 m.), speed of 22 knots and a power plant based on four 5,760 kW (23.040 kW) engines coupled to twin variable pitch screws and a estimated consumption rate of 4,6 Tm /hour at 90%. Every freight slot cost around 100,000 €. An example in the Ro/Pax group would be the Fantastic owned by *Grandi Navi Velocci*, is a 7,150 deadweight tonnes ship with 1,850 lane meters (123 trailers x 15 m.), speed of 18 knots and a power plant of 4 engines developing a total output of 25,916 kW, coupled to twin variable pitch screws. The passenger and crew capacity in this case is 2,300 persons.

— Fast conventional ships, are a group where a superior speed supposes larger frictional forces and higher generated waves. There are ways to reduce these issues as reducing the wet surface by means of multihull designs or through a dynamic reduction of displacement. In this case we are going to use an example of a mono-hull design with a cargo capacity of 1,460 lane meters or 100 trailers or 4,000 Tm of deadweight and a maximum speed of 28 knots or 25 knots at 90% of power. A model of ship would be the Blohm & Voss Trailer ferry, used also in the EMMA EU project, propelled by twin 16,800 kW engines coupled to a single screw. The rate of consumption was around 6,0 Tm per hour and the building cost per slot reached 245,000 € or 2.5 times the previous example.

The Ro/Pax example in this case, is the *Eurostar Roma*, owned by Grimaldi Napoli with 5,717 tonnes of deadweight with 1,700 lane meters and a speed of up to 27 knots due to the four engines developing a maximum output of 31,680 kW coupled to twin variable pitch screws and consuming around 6 tonnes of fuel per hour.

— High speed catamaran ship with a cargo capacity of 100 TEU's and speed around 40 knots. There are quite examples as the HSS 1500 series of Stena with 1,500 tonnes of deadweight and a capacity of 1,500 passengers and 800 lane metres or 50 trailers or 375 cars. Her speed reaches the 40 knots and is propelled by 4 gas turbines developing 73,529 kW. Or the more recent *Benchijigua express* with similar dimensions and 1,350 passengers together with 727 lane metres for trailers or 123 cars. She develops 32.800 kW and reaches 40 knots at only 500 tonnes of cargo.

Figure 4. Conventional fast ship, Eurostar Roma.

Source: http://www.shortsea-es.org/casosexito/noticiasnewdesplegada.asp

CONCLUSIONS

The European Union is promoting the short sea shipping as a more sustainable transport mode. One of the ways to improve the competitiveness in front of the road transport and the air passenger transport is the extensive use of high speed vessels. However high speed crafts dedicated in some traffics can be more pollutant than other modes, mainly when speeds exceed from 25 knots or when reaching critical levels at 35 knots (depending on the routes, cargo conditions or road congestion). For example from the previous analysis a conventional ferry needs 0,125 MW per trailer that is a third of 0,350 MW needed by a fast conventional ship developing for example 28 knots (only 25% faster). A HSC sailing at 40 knots needs a mean of 1,120 MW per trailer that is ten times the conventional ferry power needs. The capital costs per trailer slot also differs depending on the type of ship, as the fast conventional ships costs around 70% more per trailer slot and the HSC up to four times the conventional ship cost.

It is evident that HSC reduces the sailing transit time however for maintaining the time earnings, the port operations should be reduced in order to diminish the total transit time. Some recommendations for facilitate the operability of such ships would be:

1. Reduction of waiting times derived from administrative and custom procedures and the need for one stop shop open 24 hours per day.
2. Investments in port infrastructures for reducing the port phase and then transit time.
3. The need for space in ports to accommodate the freight ready to be loaded, with almost no congestion in the facility accesses. This point is opposite to the needs of passengers who prefer to be near the city.
4. Today an accepted compromise is the use of passenger and freight ships, as HSC offer a limited cargo space and the costs could be covered with the passenger.

The showed ships as example represent different options in the short distance traffics. Each one can offer different performances, to be evaluated depending on the traffic or freight to be carried. In a general sense it can be confirmed that:

— The high speed craft needs to double the fast conventional power requirements.
— The high speed craft is almost a 50% faster than the fast conventional ship.
— The fast ship has around 89% more freight lane metres than the high speed craft.

However more speed means more power and then higher operational costs and more pollutant emissions. The additional speed can be profitable in specific routes and in specific conditions as a high demand for covering the high frequency or good weather all the year in order to exploit the ship all year around.

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ANÁLISIS DE LA VIABILIDAD DE LAS EMBARCACIONES DE ALTA VELOCIDAD

Resumen

Este artículo presenta un sintético análisis sobre la viabilidad de los buques de alta velocidad en los tráficos de corta distancia, obtenido a partir de la opinión de diferentes actores en el negocio marítimo. El grupo de investigación TRANSMAR del Departamento de Ciencia e Ingeniería Náuticas de la Universidad Politécnica de Cataluña, ha continuado profundizando en los resultados del estudio finalizado (INECEU: Intermodalidad entre España y Europa), proponiendo buques de alta velocidad para cubrir algunas de las líneas marítimas que se consideraron más viables en la Europa Occidental. La reciente comunicación relativa a la revisión a medio plazo del Libro Blanco de la Comisión Europea del 2001, confirma que la evolución de la distribución entre modos de transporte de carga entre los años 2000 y hasta el año 2010, mostrará un mantenimiento del 39% para el transporte marítimo y un ligero incremento para el transporte por carretera. Uno de los pilares de la política de transporte Europea es la innovación en las tecnologías y sistemas del transporte, mejorando su eficiencia y logística a través de la cadena de suministro.

Como conclusión se evidencia la voluntad de la Comisión Europea para promocionar el transporte marítimo de corta distancia, como un modo más sostenible. Uno de los posibles caminos para mejorar su competitividad frente al transporte por carretera y el aéreo, puede pasar por el uso extensivo de buques de alta velocidad. Sin embargo los buques de alta velocidad utilizados en algunos tráficos pueden ser más contaminantes que otros modos de transporte, principalmente cuando se superan velocidades de 25 nudos o la cifra crítica de lo 35 nudos (lógicamente dependiendo de la ruta, condiciones de carga y la congestión en la carretera). Por ejemplo del análisis realizado anteriormente un ferry necesita 0,125 MW de potencia por remolque, lo que supone un tercio de los 0,350 MW que necesita un ferry rápido que desarrolle 28 nudos (sólo un 25% más rápido). Un buque de alta velocidad navegando a 40 nudos, necesita una media de 1,120 MW por remolque transportado, lo que es diez veces más que la potencia necesaria para un ferry convencional. Los costes de capital por espacio de remolque transportable, también difieren dependiendo del tipo de buque, ya que los buques rápidos cuestan un 70% más por unidad de remolque, mientras que los buques de alta velocidad cuestan hasta cuatro veces más por unidad, que un buque convencional. Es evidente que los buques de alta velocidad reducen el tiempo de viaje, pero para mantener la ganancia en tiempo en la mar, las operaciones en puerto también deben de reducirse para poder mantener la ventaja en el tiempo de viaje. De modo que algunas recomendaciones en este sentido son:

1. La reducción de los tiempos de espera derivados de los procedimientos administrativos y aduaneros, además de la necesidad de poder realizarlos las 24 horas
2. Inversiones en infraestructuras portuarias que agilicen la operativa del buque.
3. La necesidad de espacios en Puerto que almacenen la carga lista para ser embarcada y una ausencia casi total de congestión en los accesos a la terminal. Este apartado se opone a la preferencia de los pasajeros al querer estar lo más cerca posible del centro de la ciudad.
4. El compromiso usado actualmente es el de utilizar buques mixtos, ya que los buques de alta velocidad tienen una capacidad limitada para la carga, peo pueden cubrir sus costes transportando pasaje.

Los buques usados como ejemplo representan opciones diferentes a utilizar en tráficos de corta distancia. Cada uno de ellos puede proporcionar prestaciones diferentes, cuya validez dependerá de las condiciones de la línea, tráfico o carga a transportar. En general podemos afirmar que:

— Los buques de alta velocidad necesitan el doble de potencia que los convencionales.
— Los buques de alta velocidad son en general casi un 50% más rápidos que los buques convencionales rápidos.
— Los buques convencionales rápidos disponen de un 89% más de capacidad de carga que los de alta velocidad.

Sin embargo más velocidad implica mayor consumo y mayores costes operacionales y sobretodo más emisiones contaminantes. Ese plus añadido en velocidad puede ser en algunos casos aprovechado en rutas y condiciones específicas tales como, una alta demanda para cubrir una alta frecuencia de rotación o unas condiciones de buque tiempo durante todo el año que permitan explotar el buque sin restricciones de tiempo.