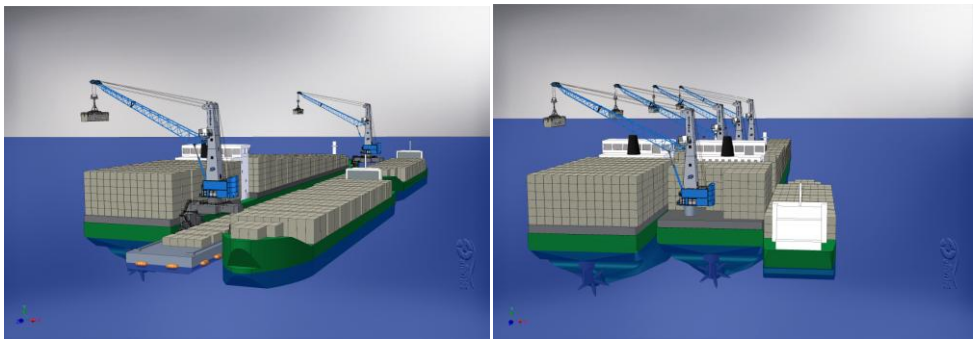
TEN THINGS YOU NEED TO KNOW ABOUT A FCSTT

(Floating Container Storage & Transhipment Terminal)



1) Explain the concept of a "floating port"?

The Floating Container Storage & Transhipment Terminal, or FCSTT, provides the capability to transfer (i.e. tranship) containers from one ship to another. It is based on using either a barge or converted containership as the FCSTT platform, upon which cranes are installed. The cranes can be either fixed or run on rails.

2) What are the competitive advantages of the floating Port?

Capital cost: at €40m, assuming a second-hand Panamax ship is used as the FCSTT, with 4 cranes fitted (either fixed pedestal, or running on rails), gives annual capacity of over 500,000 teu based on 600m berth length (i.e. 300m each side of the FCSTT). To create a land-based concrete terminal with piled quay wall 600m long would cost more than €120m (handling equipment included). The FCSTT dispenses with the need for much of the yard equipment required on a conventional terminal to shift containers between the berth and the stack; on the FCSTT the cranes simply place boxes into cells, although they can also do ‘dynamic’ transfers; that is, shifting containers directly from one ship to another, which allows for even faster transfers and lower container dwell times on the storage platform.

Operating cost: we estimate annual operating costs of the FCSTT would also be about one third that of a conventional concrete terminal. Mainly this is because the FCSTT does not need any yard equipment, nor does it require a large labour force to shift boxes around the stacks, or to manage terminal road gates (there are no gates on a FCSTT). In some countries the FCSTT might be able to avoid high labour rates and inflexible work practices synonymous with longstanding highly unionized dock labour arrangements. Reduced port fees levied on ships handled at the FCSTT is likely to be another beneficial feature.

3) How is this kind of port a cost effective solution?

The FCSTT is clearly far better in terms of capital and operating cost than a concrete land-based terminal, however the FCSTT can only handle transhipment traffic. So it is only applicable in situations where 100% transhipment is both practical and acceptable. In StratMoS DP5 we have found an increasing number of hubs around the world at which transhipment accounts for virtually 100% of traffic – e.g. Freeport, Salalah. For these kinds of terminals it does not really make sense to provide the same expensive infrastructure as at a typical gateway port. As the incidence of transhipment is rising faster than direct port-to-port traffic, this means there will be many more opportunities in future to provide terminal capacity dedicated to handling only transhipment traffic.

Providing additional capacity is also easier for the FCSTT. A new land-based port or port extension takes many years to plan and process through numerous environmental obstacles prior to construction. As a floating structure the FCSTT is a vessel, so does not need to go through the same process or overcome the same hurdles and this means the FCSTT can be put in place much more quickly.

The commercial risk is also reduced as the asset is mobile, unlike a land-based port; if a FCSTT does not work in one location then it can be moved to another. This factor, plus the lower cost aspect, would be expected to help in terms of raising finance for FCSTT's. In addition, the lower capital cost means payback of the investment is over a much shorter period than for a concrete land-based terminal (i.e. less than 10 years, compared with perhaps 25 years or more).

4) How can a floating port minimize environmental impacts?

The typical concrete land-based terminal uses and generally alters the coastline and eats up a lot of land; land is usually the most significant 'good' required by a seaport. The port (and often long access channels too) will probably require dredging, and reclamation. It may also need to build or expand a breakwater. By contrast, the FCSTT has no impacts on the land or coastline. All it requires is an anchor to the sea bed.

The FCSTT can be placed in a location that helps reduce overall steaming distance and time for connecting mainline ships (i.e. close to ocean trade lanes) and feeder ships, as is the case with Scapa Flow, thereby significantly reducing ship CO2 emissions. In addition, the offshore location may provide a more attractive option for intra-regional transhipment to take place, and this could result in modal shift from road to sea transport. Examples of such intra-regional trade might be cargo moving between Norway and Spain, or between Ireland and Russia, or between Scotland and Sweden, etc.

In terms of energy needs, the FCSTT can be connected to renewable sources, so limiting or even completely eradicating adverse emissions. This is particularly relevant in the context of the proposed Scapa Flow location, with Orkney now at the very centre of

Scotland's marine renewable 'revolution'. If connected to a renewable energy source this would make the FCSTT the ultimate 'Green Port'.

5) Can the floating port contribute to the development of short-sea shipping? What kind of vessels benefit from this port?

A major problem at the moment in large gateway hub ports handling transhipment traffic concerns delays to feeder ships. In the StratMoS project we have found that feeder ships calling at gateway hubs often have to make multiple visits to 4-5 terminals in the same port during each visit, sometimes also making double calls at these terminals. This means shortsea feeder ships are tied up in the hubs for days at a time, adding to vessel operating costs, inefficiencies and cargo transit time delays. It is well known that feeder ships do not receive priority at gateway hubs; the priority is given to the large deep-sea ships, as well as shifting containers via trucks and trains. With the FCSTT the feeder ships would have the same priority as the deep-sea ships as they are both complementary, being entirely dependent on one another.

It is also likely that the offshore hub would help transfer freight from road to sea for intra-European trade flows, exploiting the benefits of low cost feeder and relay ship capacity together with low-cost yet rapid hub transfers.

6) What is the future for floating ports?

The FCSTT is basically a variation of the FPSO – i.e. a floating production, storage and offloading facility for bulk oil. FPSO's are generally based on converted tankers. There are currently hundreds of FPSO's in operation worldwide, with another 150 on order. In a similar way the FCSTT is ideally based on a converted container ship. In StratMoS we have also seen how Gottwald Port Technology has developed crane barges to tranship cargo from bulk carriers offshore. So the FCSTT is more or less a variation on what has already occurred in bulk shipping sectors.

Another factor is trends in the container market itself. The incidence of transhipment is growing fast, year on year, and expanding much faster than direct port-to-port traffic. In northern Europe, transhipment now accounts for more than one third of all container traffic handled at the main hubs ports – this means over 10m teu out of 30m teu – and could ultimately comprise more than half of all container traffic. Transhipment traffic is expected to again double by 2020, even under a pessimistic economic scenario. So there is more than enough trade even today for a 100% transhipment FCSTT in northern Europe. Several 100% transhipment hubs are operating now in most regions of the world and northern Europe need not be excluded from this trend.

The Scapa Flow location also seems to be ideal in the context of the IMO Emission Control Area (ECA) as the deep-water sheltered anchorage is situated on the edge of the ECA. Handling even larger ships is another aspect where the FCSTT flexibility could be advantageous. For example, two FCSTTs could work a super post Panamax ship, one on each side, leading to even faster port handling than today.

So whilst the FCSTT concept is at an early stage, there are substantial opportunities for such a development, in Europe and elsewhere, not least to help overcome the high cost, planning difficulties and environmental impacts of conventional land-based port expansion plans.

7) What are the security benefits of the floating port system?

The FCSTT is located offshore so offers a completely different and by implication much improved security potential compared with any land-based port. This also means the FCSTT can be located away from densely populated areas, unlike current land-based ports which mostly tend to be located within or nearby cities, and where there are major difficulties when it comes to future expansion and access.

8) What security measures will be put in place to make sure the cargo isn't concealing illegal goods such as explosives or weapons?

The FCSTT would need to have the same scanning and security capabilities as any other port. In this respect it would be little different from a land-based terminal. Terminal operators are now investigating and trialing scanning systems that are fitted to crane spreaders, so that cargo contents, weight etc can be assessed as a container is being lifted. This and other approaches would help ensure security is kept at a high level whilst productivity is maintained.

9) How will the floating port benefit the Scottish (or any host nation) economy?

Transhipment hubs generate a number of major benefits for any host nation economy. To begin with, the various shipping services calling at a hub location provide low cost global transport connectivity and this helps improve the competitiveness of industry in the host nation. It also makes the host nation more attractive as a location for industrial and logistics services, and hence inward investment.

As the hub handles trade for many nations in the region served (e.g. perhaps 20 countries, maybe more), this tends to significantly increase the total value of trade passing through the host nation. It also provides the opportunity for much more added value logistics functions to be carried out on that trade, within the host nation. This shifts the host nation up to a higher performance level in terms of logistics capabilities and competitiveness.

At the local level the transhipment hub provides considerable direct, indirect and induced employment. But the major benefits are by far related to strengthening the global competitiveness of the host nation itself. Hence the reason many countries, often relatively small in terms of land area and population, promote transhipment hubs on their territory as a top priority in their efforts to secure competitive advantage (e.g. Singapore, Malta, Freeport Bahamas, Kingston, Panama, Tangiers etc).

Ultimately, being ‘home’ to a container transhipment hub places the host nation more firmly on the global map of nations, and this affords potential for added geo-political cooperation between national governments as well as improved scope for further commercial development and the strengthening of host nation competitiveness.

10) What are the next steps for the project?

A key challenge is the traditional approach of the shipping industry and well-known inertia of carriers to do something different. However, StratMoS DP5 partners have made good progress with a number of key industry actors and are developing a follow on EU project which is believed could help lead to commercial investment in an FCSTT for the North Sea Region.

There has in addition been strong commercial interest in the FCSTT concept from industry actors elsewhere – in the United States, in Latin America, Eastern Europe, and Africa. The FCSTT certainly has wide international applicability and appeal, especially in regions where financial resources are limited and the risks of long-term investment may be greater.

Of key importance in any major port development is the involvement of the national government concerned. In the context of Scapa Flow, StratMoS partners are expecting the Scottish government to work closely with them to make further progress in the follow-on project. More work will be necessary to finalise the design, undertake promotion, and perhaps also implement tendering for a FCSTT to be provided by the private sector, most probably together with public sector support (e.g. via the TEN-T Programme).

The financial and environmental cost and other benefits identified are so comprehensive that it does not really seem in doubt that a FCSTT as developed through the StratMoS-Gottwald collaboration will soon be operational somewhere. Further transnational collaborative initiatives however are considered necessary to help facilitate the FCSTT together with private actors as a realizable and important investment opportunity. Thus, ongoing activities are anticipated in order to help develop a FCSTT to serve the North Sea Region and neighbouring areas.