

Summary

The automotive production on commercial scale started in 1889. Between both World Wars the trade slowed down. After the Second World War the trade took flight and has been growing since.

The growth in the car trade forced expansion on the trade network; more and more cars were transported from the Far East to Europe and America. The first dedicated vessels en terminals arose around the 1960's. Recent globalization of the trade and ever increasing car production may have impact on the futures trading routes, vessel sizes, service demands of terminals and other trends in the automotive transportation industry.

The goal of this report is to give an overview of historic development, the state of the art, trends and possible future developments in the automotive transportation industry. In this report special attention will be given to the car carrier vessel types and sizes, car carrier fleet operators, ports and terminals and inland transportation.

In 1953 the first customized vessel for the oceanic car trade came into use. The MS Jakarta was the first bulk carrier fitted with insertable car decks which could be assembled in the hold for carrying cars. Till 1963 the car trade was almost exclusively handled by car/bulk carrier vessels using a load-on-load-off type of handling. In 1963 Wallenius Lines introduced the Roll-on-Roll-off system to their vessels, loading cars and other cargo via stern or bow ramps instead of with cranes.

Booming Japanese export trade led to the ordering of the first dedicated car carrier vessels for deep sea service. In 1965 Dyvi launched the first pure car carrier (PCC) with a capacity of 1350 cars. In the 1970's PCC's were mainly delivered to Japanese trade liners. These vessels were little different from the first PCC's except for their increase in capacity. Lifiable and strengthened car decks were introduced in 1976 enabling access for heavy commercial vehicles on to the heavy cargo decks.

Since the 1980's it is unusual to see a car carrier without the facilities as strengthened decks and a number of liftable car decks. The largest vessels around the 80's came to a "ceiling" accommodating between 6000 and 6300 cars, but also being able to accommodate high and heavy vehicles.

After a stabilising period between the early 1980's and late 1990's the total car carrier fleet had a capacity of 1,3 million car spaces aboard 333 vessels. The last decade between 1997 and 2007 the fleet expanded its capacity 230%. The fleet expanded to 587 vessels mainly new high capacity vessels. Order books to 2012 show an increase in high capacity vessels, 6000+ car carriers, indicating the on going growth of the fleet's capacity and the high capacity vessels taking over the trade.

The Japanese car trade dominated the automotive transportation industry from 1970's till the late 1990's. Late 1990's manufacturers tended to move their assembly plants from Asia to other parts of the world and by doing so globalizing the trade. Supporting the globalization is the trade in used vehicles to Japan and New Zealand.

The car carrier fleet operators had to react to the fragmentation of the manufacturing sector. The fleet operators sought to exploit the economies of scale and volume by creating a network of hub

terminals. Operators run high capacity vessels on the oceanic routes and smaller vessels on the short sea shipping routes.

During the last decade the environment has come under attention and the fleet operators try to take their responsibility by searching for solutions to reduce the environmental impact of their operations and conserve the use of energy and natural resources. By improving fuel efficiency and reducing exhaust emissions on their new vessels.

Two types of terminals can be distinguished. The main hub terminal with high throughput of vehicles mainly centrally situated between manufactures and the smaller secondary handling ports.

Europe's main hub port is Zeebrugge with an annual throughput of more than 1,7 million cars. The largest terminal in America is NewYork with an annual throughput of 1 million cars. Small terminals as for example Broekman Rotterdam have a throughput of 200.000 cars a year. Globalization of the automotive trade led to an oceanic hub and spokes network, linking big terminals to smaller terminals enabling operators to run large vessels fast and frequent between large hubs.

In the Far East the fleet operators are investing in upcoming China creating large port areas and manufacturing facilities in Dalian and Shanghai.

To fleet operators and manufacturers high service levels at terminals are very important. Terminals respond trying to provide higher service levels to compete with other terminals. High service levels lead to high capacity storage. In crowded ports terminals have to seek new means of storage like multi-story warehouses at Broekman Rotterdam.

Inland transportation is the first and final step in handling new vehicles. Transporting vehicles from manufacturers to the terminals and distributing from the terminals to the dealerships. Inland handling of cars is most commonly done by truck because of the flexibility and the capability of door-to-door delivery. For larger distances rail and inland barging combined with tri-modal inland terminals are an alternative for large distance road haulage.

An important issue in Europe is the modal split. Modal split is the transport term which describes the percentage freight using a particular type of transportation, usually expressed in ton kilometers.

Between the transportation modalities for road, rail, inland barging and pipelines the modal share of road accounted for a 73% share of the total freight transport in the EU-27 in 2006, as rail had a 17% share and inland barging and pipelines contributed each 5%. Congestion and accompanying environmental problems are a result. The European commission therefore is trying to rebalance the modal split by introducing the White Paper on European transport policy for 2010. Steps like legislation are taken to demote road transportation and promote shipping and rail transportation. The choice of modality used to lay with the shippers, service providers and freight forwarders but will be influenced by the European legislation.

Looking out on the future:

Last decade the car production has is rising even faster than before therefore an increase in production can be expected.

The trade used to be dominated by the Japanese export. As manufacturers in the Far East are moving their assembly plants from the Far East to European countries the car carrier fleet operators shifted

their activities from a Japanese centered distribution network to a globalized network. The movement in the trade introduced a hub and spokes network where large volumes of cars are shipped between large terminals by large vessels. By doing so fleet operators profit from large volume transport with fast turnaround times.

Looking at the pure car carrier order books more big vessels with a car capacity of 6000+ and even 8000+ will be built in the near future. This suggests higher volume flows and expansion of the hub and spokes network type of trade.

To stay attractive to fleet operators and manufacturers to call on, terminals have to either be in a central location between manufactures and accessible for large vessels to be a main hub, or be distinctive in service level. Value adding services create the need for high capacity storage .In expensive and crowded area's like the port of Rotterdam we will probably see more multi-story facilities like at Broekman. The big hub terminals do not need to expand very quickly when the handling of cars to other terminals is fast and frequent. When the terminal is exporting cars there is no need for value adding services and no need for extra storage capacity.

Inland transportation especially in Europe will be subjected to legislation. The European commission is trying to rebalance the modal split by introducing the White Paper on European transport policy for 2010. Steps are taken to demote road transportation and promote shipping and rail transportation. The choice of modality used to lay with the shippers, service providers and freight forwarders but will be influenced by the European legislation. The tri-modal inland terminals like in Born will probably become more popular. By linking modes on inland the benefits of long distance transportation by inland barge or by rail can be combined with the benefits like door-to-door delivery by road haulage.