Triple-E means Economy of scale, Energy efficiency and being Environmentally improved. This is the case with the new generation of very large container vessels.

**Key Words:**
- Implementation of low emission technologies
- Innovative vehicles, vessels and equipment
- Land use and spatial planning: assessment and siting of transport facilities and infrastructure

**Case Logo:**

The Triple-E sails on the Asia to Europe route, which represents almost one quarter of the line’s total business at a current value of several billion US dollars. This is the largest container trade route in the world where vessels of this size can be deployed efficiently and will remain so for the foreseeable future. Combined with an energy saving propulsion system, its size is a major factor in its efficiency and performance. Triple-E is the largest vessel of any kind in operation today and also the longest and widest container vessel possible based on current port restrictions.

**Benefits:**
- Financial benefits: lowering fuel costs
- Economic benefits: perhaps the slower speed will impact on the time of the trips. The number of containers per ships being higher resulting to a higher transport efficiency
- Benefits in services: The services will remain identical
- Benefits for society: Reducing climate change impacts
- Environmental benefits: at least 20 and up to 50% emission reduction per TEU

**Success Factors:**
- Decision to invest in 20 new container vessels of this size was taken as part of the fleet renewal programme.
- The price per vessel is approximately USD 185 mill.
- The estimate is for Maersk to have paid approximately USD 30 mill. extra per vessel in efficiency enhancing equipment leading to a difference in cost per TEU delivered of around USD 1,600 - 1,700.

**Supported Strategic Targets:**
- Ideal utilisation of infrastructure
- Increased efficiency / productivity of logistics processes
- Increased competitiveness
- Image
- Limited climate change

**Starting Point/Objectives/Motivation:**

The practice lowers very substantially the average fuel use per TEU compared to the standard type of vessels currently in use in global maritime shipping. Up to now, the largest vessel capacity was 15,500 TEU. The European shipping company Maersk is already a world leader in development of innovative vessels. With this type of development, the Triple-E operations becomes the most fuel efficient practice in ocean shipping.

Due to its size, the vessel increases the load factor and transport efficiency while reducing the shipping fuel use and emissions per loading unit. This vessel type is expected to contribute significantly to a reduction in shipping emissions generated from European trade.

**Solution**

The increased capacity is generated through an expanded inside cavity in U-like hull form – it can hold 18,000 20-foot containers (TEU) – gives it a capacity 16% greater than E-class vessels, equivalent to 2,500 more containers. The height (above baseline) of Triple-E is 73 metres.

Other principal measures of the Triple-E include:
- Beam (breadth): 59 metres; Draught: 14.5 metres;
- Deadweight: 165,000 metric tonnes;
- Reefer container capacity: 600; Top speed: 23 knots

The top speed is reduced by design and it lowers fuel use.
The main emission reduction effect will be the result of a combination of 3 beneficial impacts of the new construction:

- **Scale and hull design:** with a total capacity of 18,000 20-foot containers -16% greater than the biggest E-Class containers vessels- it will cut CO₂ emissions per container.

- **A combination of 2 smaller engines and 2 propellers:** The propulsion systems allow for a lower number of revolutions of the engine, leading to more than 10% energy savings.

- **Waste heat recovery:** all Maersk Line vessels on order will be equipped with a waste heat recovery system, which uses hot exhaust gas to provide extra propulsion for the ship. Without this, the Triple-E's fuel consumption would be approximately 9% higher.

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The effect on energy efficiency is expected to improve by 50% above the current average world container vessel fleet, and the emission reduction obtained will be about 20% below the current best E-class vessels available.

The normal operation of the vessel will be similar to the manning of the Maersk E-class vessels (22 crew members). It is, however, possible to operate with a crew of 13. If needed, the vessel can accommodate 34 persons in total.

Further readings and references:
http://worldslargestship.com/about/facts/

More information:

- **Transport mode or supply chain elements:**
  - Relevant transport modes
    - Maritime transport
  - Main actors involved
    - Shipping Line, freight forwarder and Logistics Service Provider

Pictures: Maersk Triple-E container vessel passing under the Great Belt Bridge, Denmark, in 2013

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