

# The Manoeuvrability of Very Large and Ultra Large Container Ship

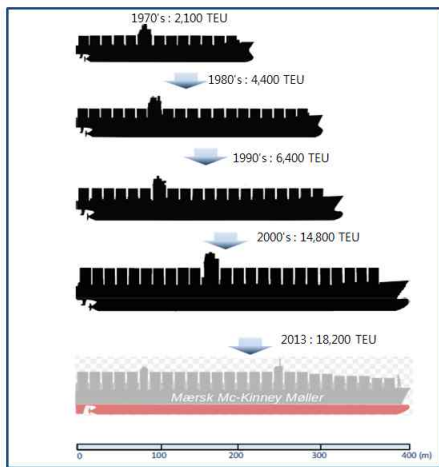
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**요약** : 안전운항 관점에서 보았을 때, 거대형선박의 조종운동특성에 대하여 실무적으로 파악하는 것은 대단히 중요한 문제이다. 이 논문에서는 선형에 따른 거대형선박의 조종운동특성에 대해서 다루고 있다.

**핵심용어** : 거대형선박, 조종운동특성, 선회성, IMO

## The enlargement of container ship



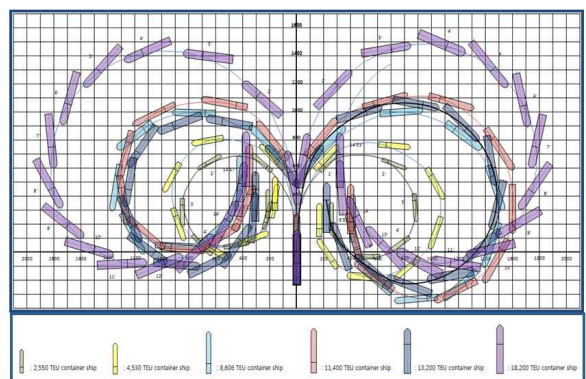
## Particulars of Container ship

Type of ship	G/T	Dwt	LOA(m)	Lpp(m)	Breadth (m)	Design draft(m)	LOA/B ratio	Block-coefficient	Design speed(kts)
Feedermax (2,550Teu)	26,836	33,434	210	199	30	11.5	7.0	0.64	21.0
Panamamax (4,530 TEU)	50,869	61,614	249	235	37.4	12.5	6.6	0.66	20.4
Post panamax (8,600Teu)	93,750	103,800	335	319	42	13.0	8.0	0.67	25.4
New panamax I (11,400Teu)	131,332	131,266	363	348	46	13.0	7.9	0.68	24.7
New panamax II (13,200Teu)	142,295	145,000	366	350	48	14.5	7.6	0.69	23.6
ULCV (18,200Teu)	194,849	194,397	399	376	59	16.0	6.8	0.71	23.0

## Size categories of container ship

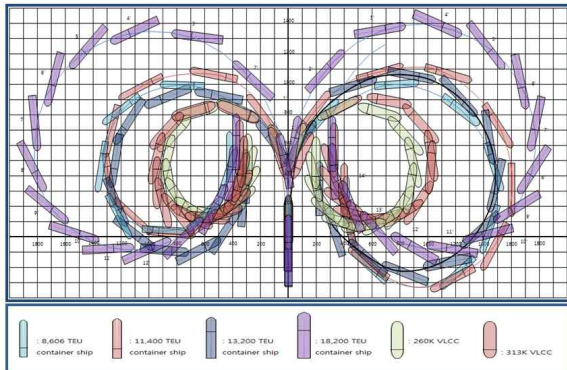
Name	Capacity (TEU)	Length	Beam	Draft
Ultra Large Container Vessel (ULCV)	14,501 and higher	1,200ft (366m) and longer	160.7ft (49m) and wider	49.9ft (15.2m) and deeper
New panamax	10,000-14,500	1,200 ft (366m)	160.7ft (49m)	49.9ft (15.2m)
Post panamax	5,101-10,000			
Panamax	3,001 - 5,100	965ft (294.13m)	106ft (32.31m)	39.5ft (12.04m)
Feedermax	2,001 - 3,000			
Feeder	1,001 - 2,000			
Small feeder	Up to 1,000			

## Turning circles of container ships

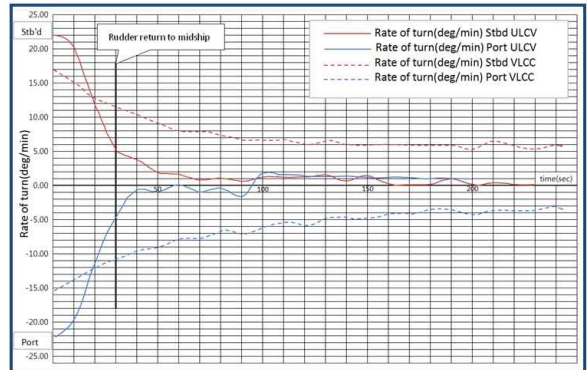


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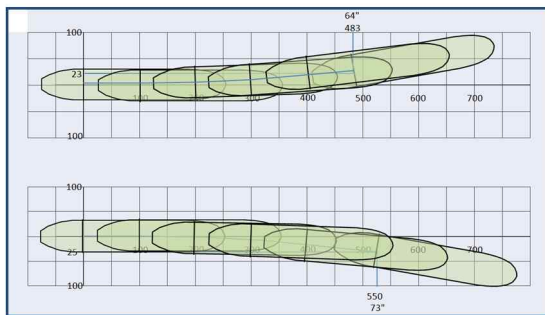
## Comparison of turning circles VLCS and VLCC



## Pullout test



## Initial turning ability



## Stopping inertia

Type of ship	G/T	displacement at trial (m <sup>3</sup> )	LOA(m)/Lpp	Breadth (m)	Full ahead --> Stop engine to 5 kts		Speed reduction ratio per Lpp	Remark condition initial speed
					Time	distance		
ULCV (18,200Teu)	194,849	about 92,000	399/376	59	11 min 50 sec	4,251m (11.30Lpp)	1.43kts	Ballast 21.2kts
VLCC I (260K dwt)	131,000	about 137,064	330/317	60	17 min 36 sec	4,429m (13.97Lpp)	0.79kts	Ballast 16.0kts
		about 300,000			16 min 43 sec	4,951m (15.62Lpp)		Laden 15.0kts
VLCC II (316K dwt)	163,066	about 356,210	333/319	60	18 min 27 sec	5,671m (17.78Lpp)	0.55kts	Laden 14.7kts

## Conclusion

### - Initial turning ability

It is amazing that there is not so much difference in initial turning ability between Ballasted container ships and fully loaded VLCCs. They range from 1.5 to 1.7 times of Their length.

## Conclusion

### - Turning ability

The turning ability of container ships, large or small, of which the length is larger compared with their breadth is not better than that of VLCC.

The advances of container ships range from 3.1 to 3.4 times of their length while VLCCs' range from 2.5 to 2.8.