

자율운항선박의 갑판부 필수 해기능력에 관한 연구

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A Study on the Standards of Competence Regarding the Deck Department of Autonomous Ship

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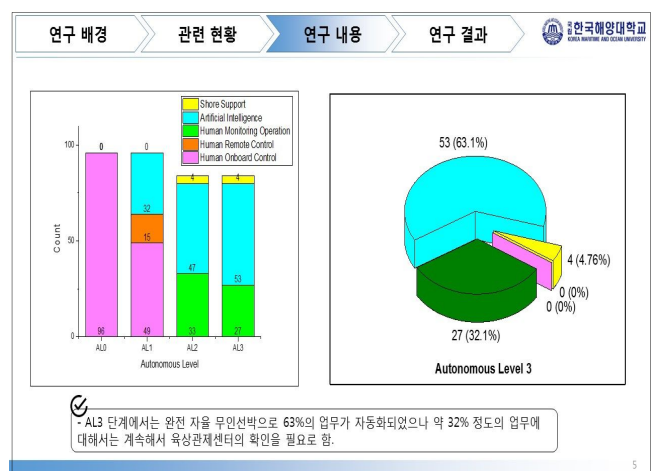
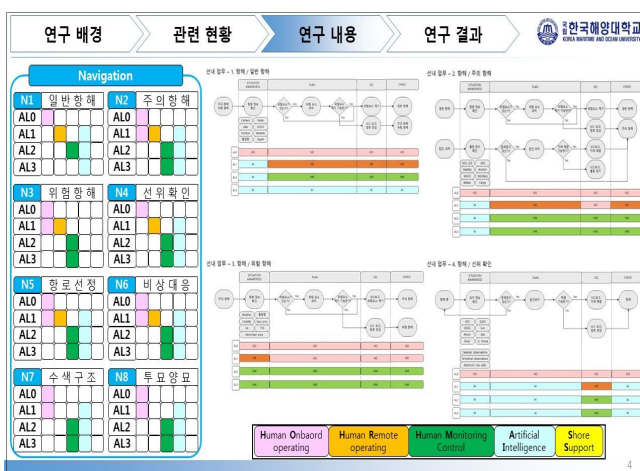
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핵심용어 : 자율운항선박, 무인화선박, STCW, 갑판부 직무, 해기능력

Key Words : Autonomous Ship, Unmanned Ship, STCW, Duty of Deck Department, Standards of Competence



Levels of Autonomy							
Bureau Veritas	Lloyd's Register	NFAS	Ramboll-Core	Rolls-Royce	UK Marine Industries Alliance	China and Liberia	France
Lv 0 Human operated	AL0 Manual	Decision support	M(Manual)	Lv 0 No autonomy	Lv 0 Manned	Lv 0-M Non-autonomous	Lv 0 Operated by a human
Lv 1 Human directed	AL1 On-board Decision Support	Automatic bridge	R(Remote)	Lv 1 Partial autonomy	Lv 1 Operated	Lv 0-R Non-autonomous, remotely controlled	Lv 1 Directed by a human
Lv 2 Human delegated	AL2 On&Off-board Decision Support	Remote control	RU(Remote, unmanned)	Lv 2 Conditional autonomy	Lv 2 Directed	Lv 1 Decision support	Lv 2 Delegated by a human
Lv 3 Human supervised	AL3 Active Human in the loop	Automatic ship	A(Autonomous)	Lv 3 High autonomy	Lv 3 Delegated	Lv 2 Partially autonomous	Lv 3 Supervised by a human
Lv 4 Fully autonomous	AL4 Human on the loop, Operator/Supervisory	Constrained autonomous		Lv 4 Fully autonomy	Lv 4 Monitored	Lv 3 Fully autonomous	Lv 4 Fully autonomous
	AL5 Fully autonomous	Fully autonomous			Lv 5 Autonomous		
	AL6 Fully autonomous						



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