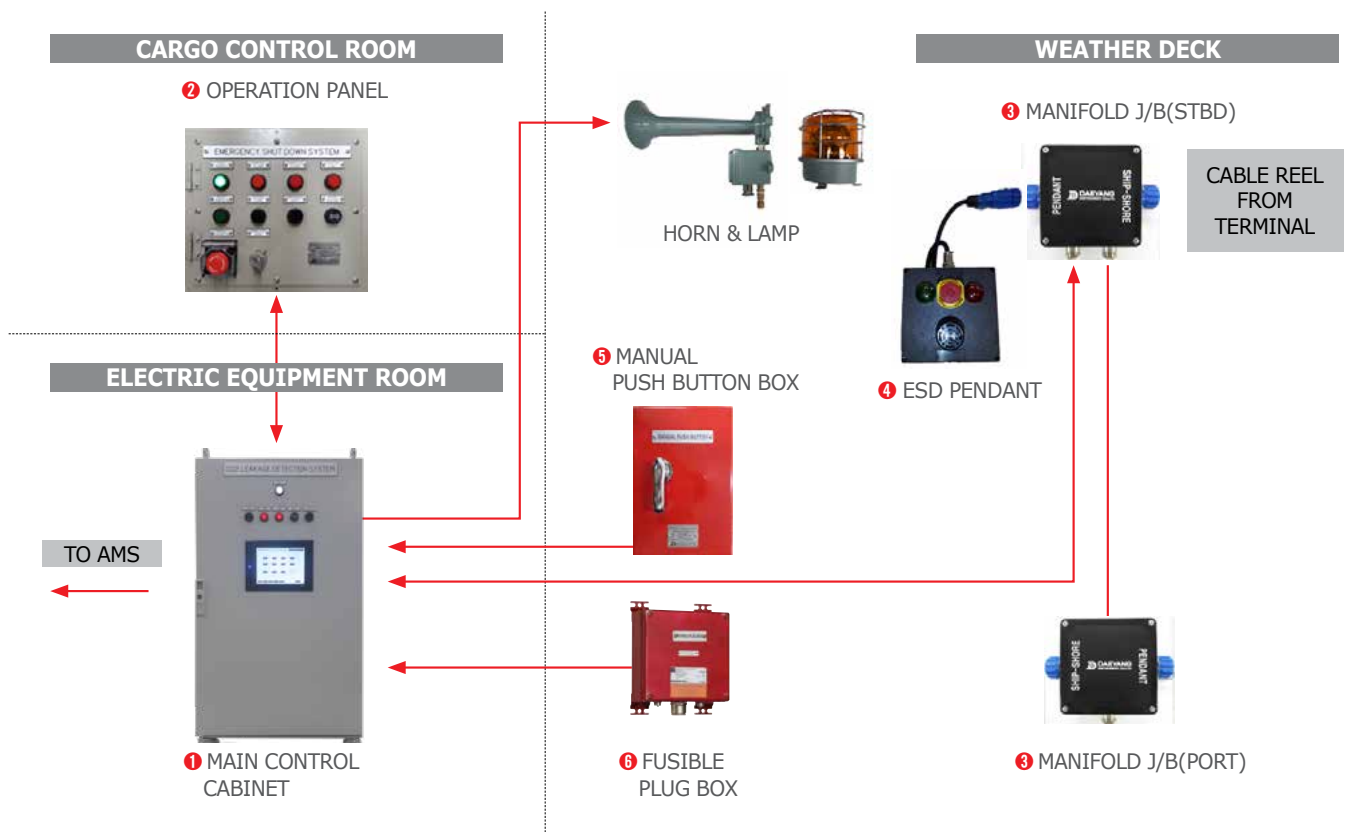


6-1. Emergency Shut Down System

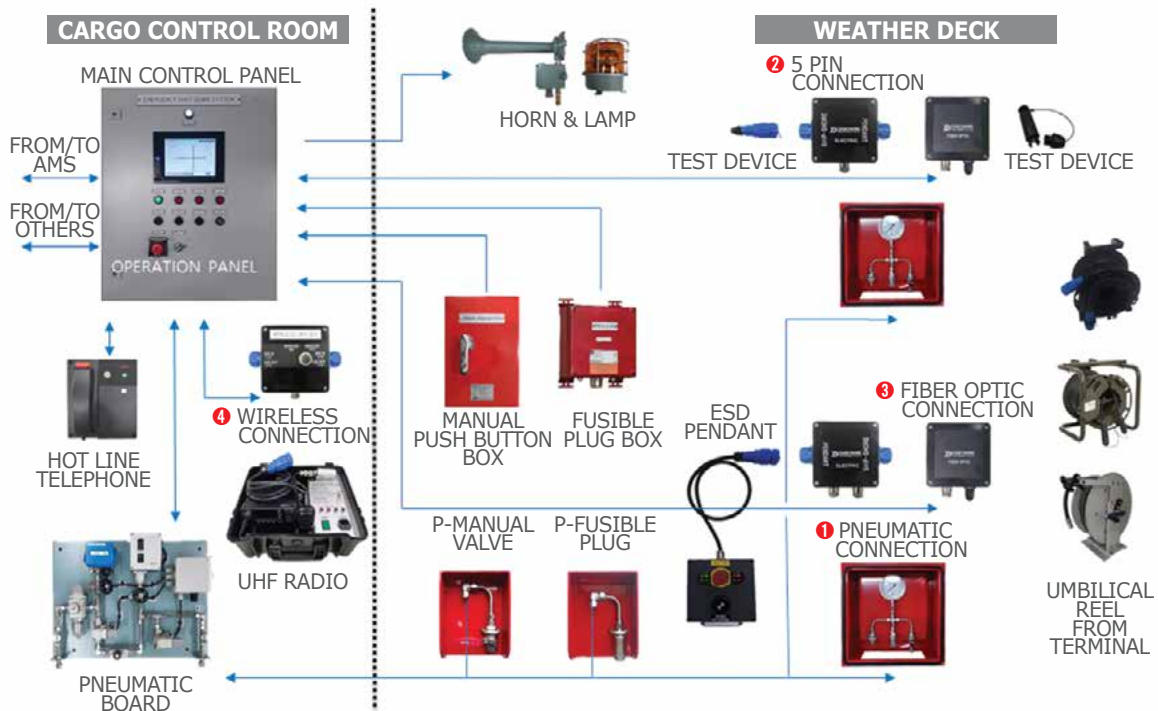
The ESD system improves operational safety during the transfer of Oil/Chemical Carrier between ship and terminal. It provides a quick and safe way of stopping the transfer of cargo and, where applicable, isolating ship and terminal cargo systems in a controlled manner. The ESD can be activated either manually or automatically under abnormal operating conditions. Some terminals also have a second level of protection that enables rapid disconnection of the loading arms from the ship.



NO	Minimum Requirement for OCIMF
1	Ability for either party to manually activate the other's ESD
2	On activation of own ESD, the other party's ESD is automatically activated
3	Electric classification is appropriate for working environment
4	Use 5-pin connector
5	De-energised during connection
6	Interface electrically with existing ship and terminal ESD system
7	When connected, includes an indication of the system's health
8	Is automatically activated if electrical power is lost or the circuitry is damaged
9	Raised an audible and visual alarm when activated
10	Indicates system re-set status
11	Can be tested, for ship, both at sea and in port
12	Programmable electric equipment should be proven for use in safety applications

6-2. Bunkering Safety Link System (Combined Emergency Shut Down System)

The BSLS (Bunkering Safety Link System) is an equipment that connects the ship and the terminal with Pneumatic/ Electric/ Fiber optic/ wireless link and exchanges ESD signal with each other. The ESD signal is connected to each ESDS (Emergency Shut Down System), and ESD can be generated automatically to promote safety.



BSL SELECTION		Type1	Type2	Type3		Remark
		Pneumatic BSL	5 pin BSL	Fiber Optic BSL	Wireless BSL	
Functionalities	Emergency shutdown signal	V	V	V	V	
	Telephone dedicated bunkering line	X	X	V	V	
	Data exchange	X	X	V	V	
Statutory / Standards Requirements	IGF Code & IGC Cades	NA	NA	NA	NA	Requires
	ISO 20519-2017	V	V	X	X	
SGMF	SGMF TGN06-05 Recommendations	V	V	V [1]	V [1] [2]	

[1] Can be installed in addition to a Type 1 or 2 BSL

[2] This is considered an ad-hoc application see Section 3.6

Low transfer rate ($\leq 150\text{m}^3/\text{h}$)

The linked ESD system for a low transfer rate of less than or equal to $150\text{m}^3/\text{h}$ should consist of:

- a Type 1 BSL, as a minimum
- a passive ERC "dry breakaway", as a minimum

High transfer rate ($> 150\text{m}^3/\text{h}$)

The linked ESD system for a high transfer rate exceeding $150\text{m}^3/\text{h}$ should consist of:

- a Type 2 or Type 3 BSL, as a primary system
- an active controlled ERC