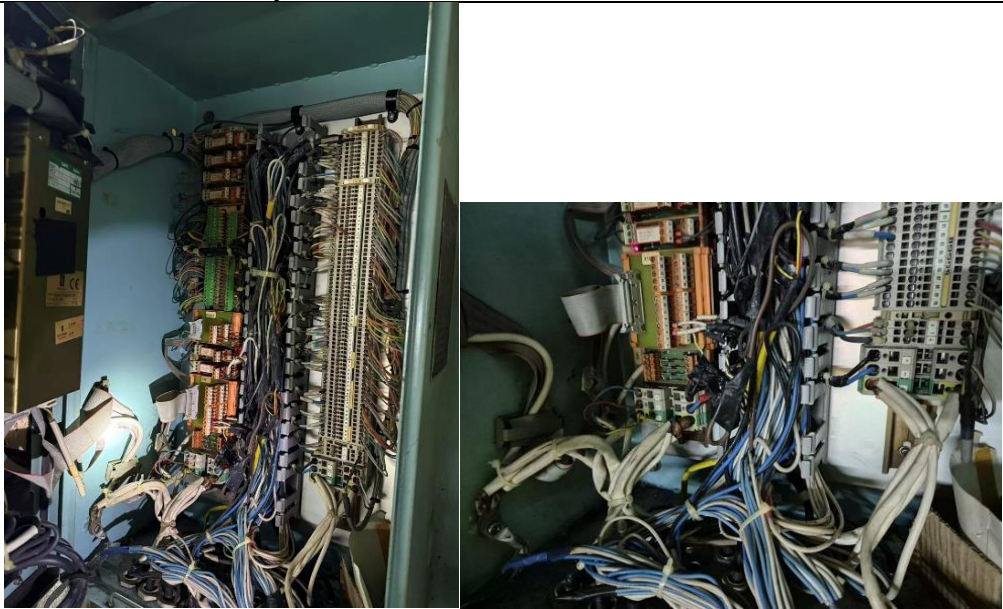
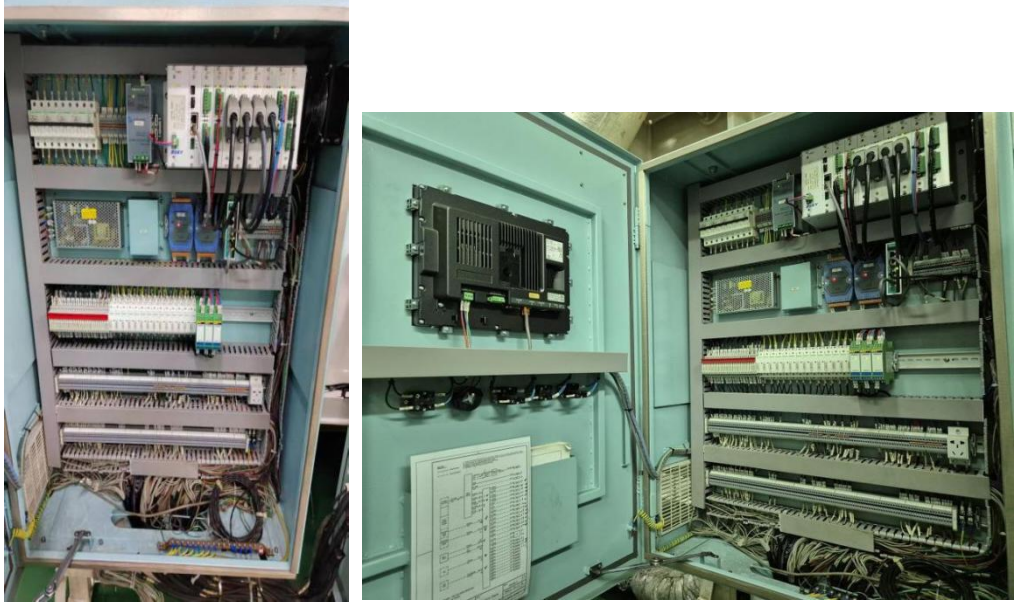




## NOTICE ABOUT SURVEYS ON THE AGED VESSELS WITH HIGH PSC DETENTION RISKS DUE TO ELECTRICAL EQUIPMENT FAILURE



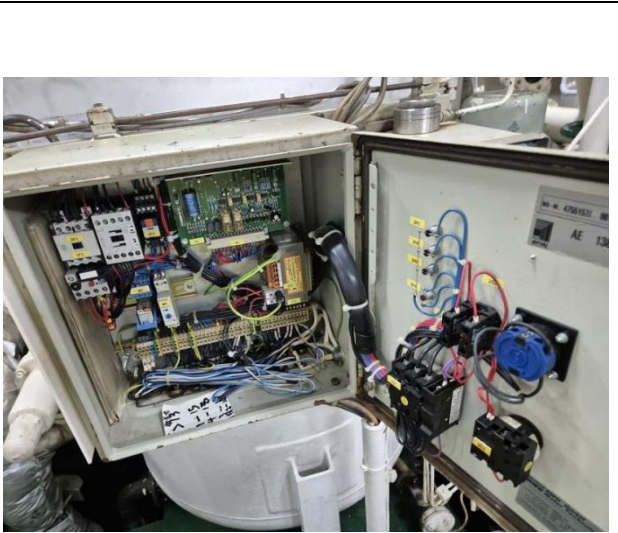

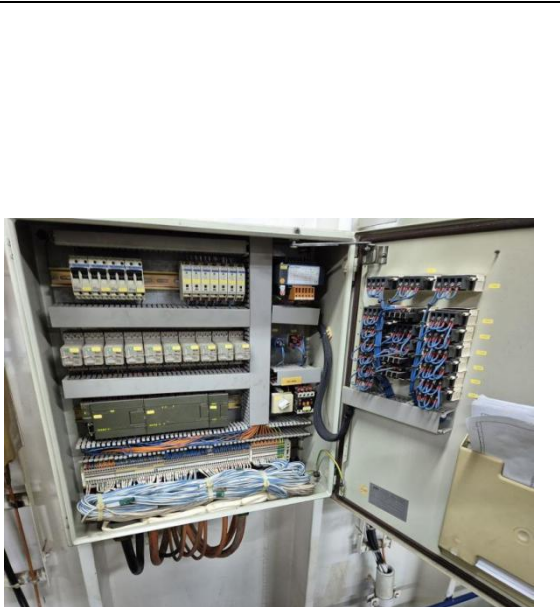
A 21-year-old international sea-going multi-purpose vessel was detained during a Port State Control (PSC) inspection in Cuxhaven, Germany in September 2025. Six of the 17 deficiencies were related to electrical control boxes, distribution panels, and main switchboards, i.e., disabled control functions, which caused potential risks, whilst the improper wiring connections, short circuits, found in 4 control boxes, were deemed by the Port State Control Officers (PSCOs) to affect the safety and were regarded as the grounds for detention.

This issue is not an individual case. In this August, another CCS-classed vessel was detained at the same port, where seven of the forty deficiencies identified were similar. This indicates high risks in electrical system maintenance in certain shipping companies. The typical deficiencies and photos are shown below:

No.1	In the emergency operating box of the main engine, many cables are disconnected and bridged. An automation display is broken and completely out of order. The repair must be carried out by a specialist company. The entire emergency control box of the main engine must be inspected by an authorized company. A report from the company and the classification society must be sent to PSC-GERMANY.DE. <b>(Ground for Detention)</b>
	
No.2	Several disconnected cables and bridges were found in the engine room inside the control box (ballast water management system). The system has been manipulated. <b>(Ground for Detention)</b>

	
<p>No.3</p>	<ul style="list-style-type: none"> <li>-Found in main switchboard,in Panel 6 and 15 (megaohm test) unsafe cable connections and bridges.</li> <li>-Found in switchbox (main air compressor 2) unsafe cable connections and flying cables.</li> <li>-Found the cable connection of one ME lub oil pump not watertight and unsafe.</li> <li>-Found HT Calorifier leaking.</li> <li>-Found cable of remote control engine room crane stripped and damaged.</li> </ul>
	
	

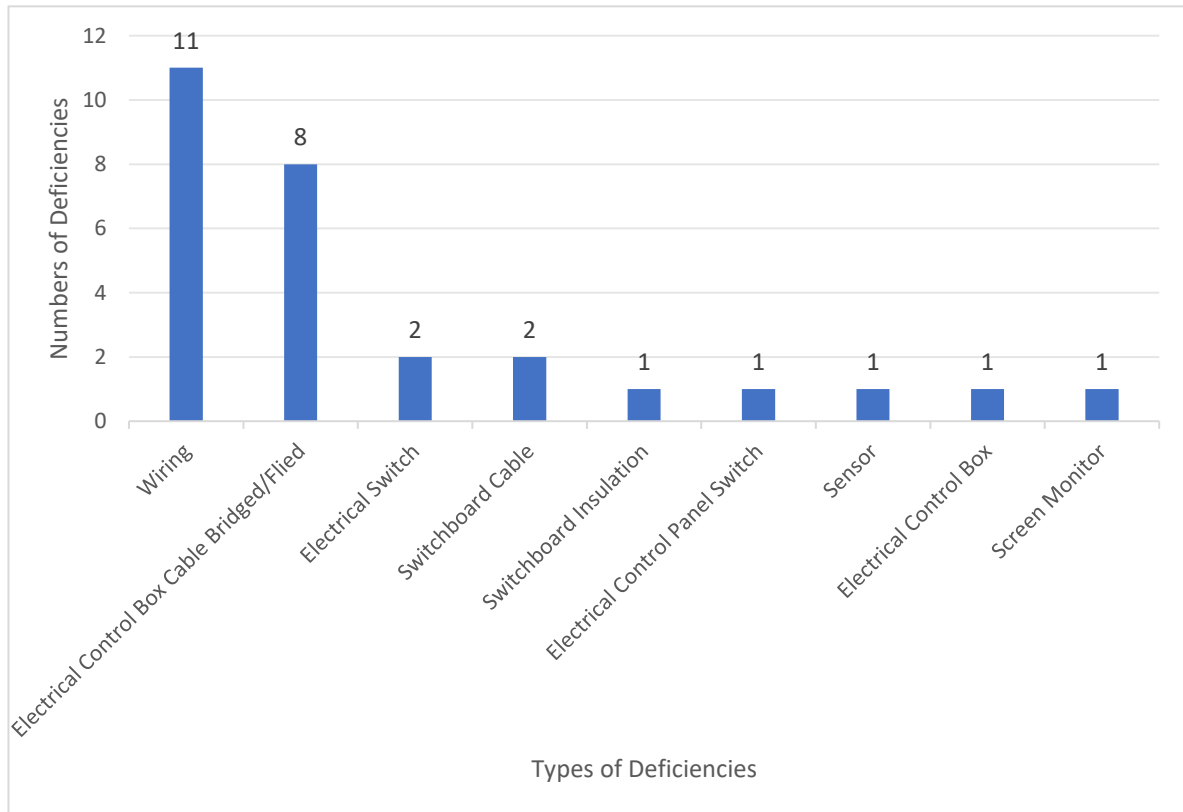


		
No.4	Found an manipulation (flying additional relay) in the RWO WATER TECHNOLOGY switch box.	
		
No.5	Found in steering gear (contactor cabinet warning box) a flying relay. <b>(Ground for Detention)</b>	
		

As a core member state of the Paris MoU, Germany conducts frequent PSC inspections were conducted at

German ports. Since 2024, the PSC detention rate has been showing an upward trend, and defects related to hull structure and electrical systems are among the key focus areas. The detention of the two vessels indicates that some port states are paying more attention to the daily maintenance of ship electrical systems and the quality requirements for compliant repairs. Temporary or alternative measures taken by crew to keep equipment operational, and even informal temporary repairs arranged by companies, are increasingly being regarded as unacceptable major safety hazards.

Based on inspections conducted on CCS classed vessels at this port since the beginning of this year, the main deficiencies were concentrated in areas such as cable bridging, temporary wiring, and unsafe connections, totaling items, accounting 75% of all electrical defects.



Further analysis shows the 3 main reasons for wire bridging or temporary wiring inside control boxes:

- Aging of equipment control components, making it difficult to purchase corresponding parts.
- Upgrade and replacement of equipment control systems, resulting in the unavailability of old spare parts.
- Temporary emergency fixes implemented due to equipment control system failures.

Control system aging, difficulties in procuring spare parts, or upgrades to equipment control systems, along with wiring connections or short circuits within the control system, can cause the original safety functions of the control system to fail. This may result in equipment malfunction or even intermittent ship power supply, potentially creating safety hazards for the vessel and threatening the personal safety of crew members. These issues necessitate enhanced safety management system controls by the company to prevent risks.

Vessels over 20 years old commonly experience aging and brittleness in their cable insulation, particularly severe in high-temperature, high-vibration environments like Engine Room. Deteriorating insulation material performance, component fatigue, and reduced design margins significantly increase the incidence of electrical failures. To address frequent malfunctions and reduce maintenance costs, crew members or even superintendents may resort to numerous non-standard temporary fixes during long-term operations for emergency response or convenience. These practices create serious safety hazards.

Traditional PSC inspections may place greater emphasis on firefighting, lifesaving, and pollution prevention systems. However, in recent years, with the frequent occurrence of fires and power loss incidents caused by electrical systems, PSCOs in certain regions have begun to focus more on the details and substantive safety of electrical systems. The prevalence of electrical system deficiencies stems from the combined effects of two factors: a common underlying issue and the specific professional background of individual PSCOs. On one hand, aging electrical systems in older vessels, non-standard repairs and modifications, and inadequate crew maintenance form the root causes of these widespread deficiencies. On the other hand, PSCOs with electrical engineering or chief engineer backgrounds no longer settle for routine inspections. They prefer to open covers, remove panels, and conduct thorough examinations of equipment's actual condition. Beyond functional tests, they instinctively scrutinize: whether cable routing is orderly, fixings are secure, and if there are signs of unauthorized connections. Upon opening switchboards, they examine terminal colors for overheating signs, assess dust accumulation levels, and detect unusual odors. Their extensive experience enables them to swiftly identify non-compliant modifications like unauthorized "bridging" or "flying".

Two detention incidents demonstrate that aging/improperly maintained electrical equipment is prone to revealing deficiencies. Electrical wiring issues previously classified as "general defects" (Code 17) are now comprehensively assessed as posing direct threats to the vessel, crew, and environment. Even redundant UMS equipment that lacks proper maintenance is identified as a deficiency and categorized under major deficiency groups such as MLC, firefighting, main/auxiliary machinery, and alarm systems. These deficiencies are further deemed as ISM failures. PSC inspections are shifting focus from merely verifying "large equipment availability" to examining "the maintenance condition and internal safety details of the equipment itself." Whether physical deficiency like "cable bridging/flying", "unsafe connections", or "seal failures" or performance issues such as "insulation tests failing to meet standards" these can be identified through visual inspections and routine insulation testing without specialized equipment. They constitute standard mandatory inspection items in the PSC inspection manual. The PSCO has sufficient grounds to consider such situations as violations of safety standards and working environment provisions under SOLAS and MLC 2006, thereby identifying them as detention deficiency.

### INSPECTION TIPS FOR SURVEYORS

Surveyors shall thoroughly understand the specific technical risks posed by informal repairs such as cable "flying" and "bridging", accurately assess their severity during surveys, and heighten sensitivity toward electrical systems in aged vessels. When conducting annual, intermediate, or special surveys on vessels over 15 years old, especially those exceeding 20 years, surveyors should not merely verify equipment functionality but must intensify visual inspections of electrical systems. Proactive inspections should include verifying cable installation compliance, assessing junction box integrity, conducting random checks of wiring in switchboards and control panels, and maintaining high vigilance against crew-initiated temporary repairs. It is crucial to recognize that aged vessels exhibit a higher likelihood of unauthorized repairs and modifications, leading to more severe accumulated safety hazards.

Upon finding any serious deficiencies during survey, surveyors shall immediately communicate with the Master and C/E to explain the risks and consequences of the deficiency, particularly the extremely high detention risk under the current PSC inspection. The shipowner shall be required to immediately develop and implement corrective measures. The root cause leading to crew members taking temporary measures (such as equipment failure or improper selection) must be identified and rectified. For systemic wiring disorder issues, it is recommended that the shipping company conduct thorough reorganization and standardized retrofitting.

### RECOMMENDATIONS FROM CHINA CLASSIFICATION SOCIETY

To address increasingly stringent PSC inspections and fundamentally enhance vessel safety standards, shipowners and management companies are advised to:

1. Immediately conduct a targeted inspection:

All fleets, especially older vessels, must undergo a comprehensive electrical safety inspection. For any

deficiencies identified, a formal repair plan must be developed. This involves contacting the original manufacturer or sourcing alternative equipment, using compliant spare parts and materials, and ensuring repairs are performed by qualified personnel. Temporary or non-standard repairs are strictly prohibited.

### 2 Enhance Crew Awareness and Capabilities:

Conduct specialized electrical safety training for crew members, emphasizing the extreme dangers of unauthorized cross-connections and haphazard wiring. Ensure personnel responsible for electrical equipment possess the requisite qualifications and competencies.

### 3 Develop Long-Term Plans:

For vessels with significant service history, incorporate systematic upgrades and retrofits of electrical systems into budgets and planning. Gradually replace aging distribution panels and control boxes while reinstalling cables according to standardized practices.

## CONTACT DETAILS

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