Journal of Maritime Studies and Management
Volume. 1, Number. 1, January 202 5
Page 10-16
Available online at: https://jurnal.poltekpelsulut.ac.id/index.php/jmsm

The Importance of *Pneumatic System* to Support Activity Demolish Load in MV Ship. IRIANA

Kevin Tintingon[1*], Stevian G.A. Rakka[2], Santun Irawan[3]
[1,2,3] Politeknik Pelayaran Sulawesi Utara, Indonesia

Jl. Trans Sulawesi KM. 80 Desa Tawaang Kecamatan Tenga, Kec. Amurang, Kabupaten Minahasa Selatan, Sulawesi Utara 95355
**Corresponding author: kevintintingon73@gmail.com*

Abstract: *Loading and unloading activities on MV ships. IRIANA requires efficiency and reliability to ensure smooth operations and security. Pneumatic systems, which utilize air pressure to move mechanicallycomponents, play a crucial role in this process. This research aiming to explore the importance of PneumaticSystems in increasing the effectiveness of loading and unloading activities on ships. The methodology usedincludes qualitative methods by collecting and processing data through interviews, observation and documentation. The results obtained from this research are that there are several factors that hinder loading and unloading performance, namely limited information on deck crew regarding loading and unloading procedures and limited information regarding loading and unloading maintenance which has caused a decrease in performance in loading and unloading activities. In conclusion, optimal implementation and maintenance of pneumatic systems is very important to increase productivity and safetyin loading and unloading activities on MV vessels. IRIANA.*

Keywords*: Pneumatic System, Loading and Unloading Activities, Maritime Engineering*

1. BACKGROUND BEHIND

Sail For activity business aiming move load between island . AfterArriving at the port , the unloading process is carried out loading involving stevedoring for speed it up (Indra Andrew , 2023). Load boat Can in the form of container , general cargo,load bulk , or liquid . On the MV Iriana , the cargo in the form of bulk cement , namely delivery cement in amount big without packaging , use boat special load rainfall . Process demolish bulk cement loading generally use tool like cranes , conveyor belts, and pneumatic system , which customized with need demolish load .

Pneumatic systems rely on air under pressure For move load rainfall . According to Martopo and Soegiyanto (2004), equipment demolish load is combination from various tools , such as cranes and conveyors, are used in accordance type cargo . In MVIriana , the pneumatic system is used For demolish bulk cement loading , allows load transfer in a way efficient with help air compressed . Components main in system This covers compressor, water dryer, regulator, solenoid valve, And actuator.

Superiority system pneumatic covering response fast , cost economical , And ability Work in various condition environment . However , system This prone to toleakage air , which can reduce efficiency and yield voice noisy . In MV Iriana , a leak in the solenoid valve causes decline performance , resulting in delay demolish load Because target loading rate No achieved .

Received: November 05 , 202 4; Revised: December 10 , 202 4; Accepted: January 24 , 202 5; Published: January 31 , 2025

From observation in MV Iriana , leakage on solenoid valve happen consequence lack of testing tool before arrive in harbor . By Because That , important For guard maintenance system pneumatic in a way periodic , including inspect valve , supply air ,connection electricity , as well as pressure air For guard smoothness operation .

2. STUDY THEORETICAL

System Pneumatic in Demolish Load

Pneumatic system is system that uses air compressed For produce movement or Work mechanical . According to Alamsyah (2023), system This depend on component like compressor , solenoid valve, And actuator For operate its function . Usage system pneumatic in demolish load very general Because its reliability in move material rainfall in a way efficient, especially on ships carrying material like cement rainfall . System This Also superior in matter speed And flexibility operationin various condition weather and the environment .

Component Main System Pneumatic

Component main pneumatic system consists of from a number of element important , like *compressor* , *water dryer* , regulator, solenoid valve, And actuator . Compressorfunctioning For press air from environment around And save it inform air compressed . Solenoid valve, as one of the component key , arrange flow air in accordance order control electric . According to Martopo and Soegiyanto (2004), components This each other related and must guarded so that the system can functioning optimally , especially in the environment that demand like boat demolish load .

Maintenance And Efficiency System Pneumatic

Maintenance periodic very important in guard performance system pneumatic. According to Muhammad Suyo (2023), leakage air Which often happenon the solenoid valve or component other can reduce efficiency system in a way significant . Inaccuracy in maintenance can causedelay operational , as observed in MV Iriana . Therefore That , inspection routine And maintenance preventive need done , including inspectionpressure air , connection valve , as well as cleanliness the air that enter to system .

3. METHOD STUDY

Study This use method descriptive qualitative For analyze mechanism Work as well as constraint Which faced on system pneumatic in processdemolish fit in MV. Iriana . Focus main study is through observation direct regarding the dismantling process load and pneumatic system . The details are as follows the method used is as following :

a. Approach Study

Study This use approach qualitative descriptive For understand and explain the phenomenon that occurs related pneumatic system on MV ship . Iriana . Approach This chosen For dig information in a way deep about obstacles and solutions faced in operational system demolish load in a way direct through observation .

b. Source Data

Data used in study This is primary data obtained through observation field . Observation done For see How systempneumatic Work in a way real in process demolish load , including identificationconstraint technical like leakage on component system .

c. Technique Collection Data

Observation : Observation direct done during the unloading process load on the ship MV. Iriana , with objective see mechanism Work system pneumatic And problem technical that appears . The result of observation This used For analyze and understand obstacles faced as well as evaluate potential solution repair system .

d. Analysis Data

Data from results observation analyzed in a way descriptive For understand effectivenessand constraints on the pneumatic system . The results of the analysis will compared to with relevant theories and literature For get understanding comprehensive about operational system in context demolish load on the ship rainfall .

Method This expected capable give description Which clear about mechanism Work And problem on system pneumatic as well as effortrepair which can done.

4. RESULTS AND DISCUSSIONResults Study

Mechanism Work System Pneumatic

Explanation about mechanism Work system pneumatic in MV. Iriana , Which involving air under pressure For to move component like unloading screwand compressor. System This allow bulk cement cargo dismantled with fast and efficient . Image which is relevant can in the form of:



Picture 1. compressor and unloading screw Which connected with system pneumatic.

Constraint On System Pneumatic

Constraint Which found related leakage on Solenoid Valve caused by seal which is damaged which causes decline pressure air , resulting in the process demolish load obstructed . The image can be used :

Effort Repair and Prevention

Steps repair or prevention that can taken that is testing equipment in a way periodic and maintenance preventive For prevent leaks anddamage components . Images that can used :

Component System Pneumatic

Identification components important like water slide blower, And solenoid valvewho plays a role important in support activity demolish load . Images that can entered :

Procedure Security System Pneumatic

Importance implementation procedure safety , including inspection routine and maintenance on pneumatic systems for prevent accident or damage more Next . Next SOUP When run the system pneumatic:

a. Ask for electric shock panel CCR in *ON* from engine rrom
    1) Switch from position OFF to ON
    2) Move switch h from local to remote
    3) Move the switch to unloading
    4) Move switch to Pneumatic
b. Turn on *there* compressor No.1-2
c. Turn on *water dryer* No.1-2
d. Turn on *bag* filter No.1-2
e. Turn on *jet fuse* No.1-2
f. Spin *switch* to *open* For open *bypass unloading STBD/PORT*
g. Turn on *blow tank control panel* No.1-2
h. *Test valve in blow tank* No.1 *line* AB. No. 2 *line* CD in a way *auto* And manual
i. *Blowing* empty *Cerra tank* in a way *auto* And manual

j. Open *valve cargo hold No*.1-2-3-4 (in accordance need)
k. Turn on *screw* No.1-2 / No.3-4 (in accordance need)
l. Open *flow Gate Screw STBD/PORT* (in accordance need)
m. Turn on *water slide blower* No.1
n. Spin *switch* to *open* For *open unloading* US *play water*
o. Turn on roots blower No.1 And No.2 And Ready used

5. CONCLUSION AND SUGGESTION

Conclusion

Conclusion Results study show that implementation system pneumatic indismantling process fit in MV. Iriana can in a way significant increase efficiency and reliability operational . With choose the right components as well as domaintenance routine , boat No only capable increase productivity demolish loadbut also reduces consumption energy and minimize down time. This is create impact positive to safety crew And protection environment ,as well as increase Power competition boat in industry cruise global.

However , study This Also find that system pneumatic face various the challenge that can hinder its performance , especially consequence condition environment maritime hard . Corrosion and disturbance technical can increase risk damage And accident Work , so that important For do monitoring And evaluation periodic to performance system . Remember matter This , attention more to training crew and implementation monitoring technology is very needed For maximize time operational boat .

Suggestions/ Recommendations

Researcher recommend so that company cruise apply steps proactive For optimize performance system pneumatic. First , election durable components corrosion and capable operate in condition maritime that extreme must become priority . Besides that , care scheduled routine very important For guard condition tool for always in performance best.

Next , in -depth training for crew boat about usage and maintenance pneumatic system is also necessary done . This is will ensure crew can identify and handle problem small before develop become damage serious . Lastly , the implementation protocol tight security during the process demolish load must always obeyed For reduce risk accident , so that safety Work can awake with Good . With steps This , expectedprocess demolish load in MV. Iriana can in progress more efficient and safe .

LIST REFERENCE

Alamsyah, M. R. (2023). *Analysis of pneumatic system for deck maintenance in MV* (Dissertation). Polytechnic Knowledge Cruise Semarang.

Alviyanto, R. (2021). *Report on work practice (KP) on pneumatic systems*. Bengkalis.

Andrew, I. (2024). *Optimization of handling load for rainfall cement in MV* (Diploma thesis). Polytechnic Knowledge Cruise Makassar.

Ferdinand, D. (2016). *Application of sliding mode controller on pneumatic-hydraulic combination control system* (Undergraduate thesis). Institute of Technology Ten November.

Martopo, A., & Soegiyanto, M. (2004). *Handling and arrangement of loads*. PIP Semarang.

Meowing, L. J. (2017). *Qualitative study methodology*. Bandung: Rosdakarya.

Sasono, H. B. (2012). *Management of harbors and realization of export-import*. Yogyakarta: Andi Offset.

Suyono, R. P. (2005). *Shipping: Intermodal transportation for export-import via sea*. Jakarta: PPM.