

## ABSTRACT

Man-machine interaction generates potential mechanical and non-mechanical hazards. Mechanical hazard caused by engine movement and basic human activity. Non-mechanical hazard that may occur is fire. These potential hazards can cause accident so that need technical and administrative controls. The general aim of this study was to evaluate the technical controls (safety cover, presence sensing device, emergency stop, fire safety which involve fire extinguisher and alarm) and administrative controls (safety sign, work instruction, training which involve operator training, fire extinguisher training, and fire simulation) on the tubing machine in PT.X.

This study was an observational study with cross sectional approach, the object of this study was hazard control of tubing machine in PT. X. The data used in this study were primary data obtained from observation, checklist, and interview. The secondary data obtained from company documents of PT. X. The results were analyzed descriptively.

The results showed most of hazard controls were not eligible. The entire safety covers were categorized as enough, the entire presence sensing devices were categorized as good, 63 emergency stops were categorized as enough and 13 as less, 8 fire extinguishers were categorized as good and 1 as less, 5 alarms were categorized as good and 1 as less. 241 signs were categorized as enough and 37 as less, 22 work instructions were categorized good and 3 work instructions as enough. Fire extinguisher training categorized less, operator and fire simulation training had been implemented well.

Suggestions for the company are adding and placing the emergency stops so that more accessible, adding the safety covers and presence sensing devices, adding the work instructions on fire extinguisher, modifying the alarms, adding the heat warning signs, fire extinguisher training and fire simulation for all machine operators, and increase the intensity of checks on the safety covers, signs, and emergency stops.

Keywords: engineering control, administrative control, tubing machine

## ABSTRAK

Interaksi manusia-mesin menimbulkan potensi bahaya mekanik dan non mekanik. Bahaya mekanik disebabkan oleh gerakan mesin dan aktivitas dasar manusia. Bahaya non mekanik yang mungkin terjadi adalah kebakaran. Potensi bahaya ini dapat menimbulkan kecelakaan sehingga perlu dilakukan pengendalian teknis dan administratif. Tujuan umum penelitian ini adalah melakukan evaluasi terhadap pengendalian teknis (safety cover, presence sensing device, emergency stop, pengaman kebakaran yang meliputi APAR dan alarm) dan pengendalian administratif (rambu keselamatan, instruksi kerja, pelatihan yang meliputi pelatihan operator, APAR, dan simulasi kebakaran) pada mesin tubing di PT.X

Penelitian ini adalah penelitian observasional dengan pendekatan cross sectional, objek penelitian adalah pengendalian bahaya mesin tubing di PT.X. Data primer didapat dari observasi, checklist, dan wawancara. Data sekunder didapat dari dokumen perusahaan PT.X. Hasil penelitian dianalisa secara deskriptif.

Hasil penelitian menunjukkan sebagian pengendalian bahaya belum memenuhi persyaratan. Seluruh safety cover dikategorikan cukup, seluruh presence sensing device dikategorikan baik, 63 buah emergency stop dikategorikan cukup dan 13 buah dikategorikan kurang, 8 APAR dikategorikan baik dan 1 APAR dikategorikan kurang, 5 alarm dikategorikan baik dan 1 alarm dikategorikan kurang, 241 rambu dikategorikan cukup dan 37 rambu dikategorikan kurang, 22 instruksi kerja dikategorikan baik dan 3 instruksi kerja dikategorikan kurang. Pelatihan APAR dikategorikan kurang, pelatihan operator dan simulasi kebakaran telah dilaksanakan dengan baik.

Saran untuk perusahaan adalah penambahan dan penempatan emergency stop agar lebih mudah diakses, penambahan safety cover dan presence sensing device, penambahan instruksi kerja pada APAR, modifikasi alarm, penambahan rambu peringatan bahaya panas, pelatihan APAR dan simulasi kebakaran pada seluruh operator mesin, dan meningkatkan intensitas pengecekan pada safety cover, rambu, dan emergency stop.

Kata kunci: pengendalian teknik, pengendalian administratif, mesin tubing