

Analisis Proteksi Kebakaran dan Ledakan yang Disebabkan Oleh Listrik Statis Pada Proses Produksi Cat Berbasis Solvet (di PT XYZ)

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Deskripsi Lengkap: <https://lib.fkm.ui.ac.id/detail.jsp?id=132287&lokasi=lokal>

Abstrak

Latar Belakang: Dalam pabrik pembuatan produk coating/ cat berbasis pelarut, terakumulasinya muatan listrik statis tidak dapat dihindari, sedangkan proses pembuatan cat melibatkan bahan-bahan mudah terbakar yang sifatnya volatil dan mudah terbakar. Kasus kebakaran yang terjadi di pabrik cat berbasis solvent PT XYZ paint factory secara global yang disebabkan oleh muatan listrik statis juga tercatat kerap kali terjadi. Tercatat ada 5 insiden kebakaran yang disebabkan oleh listrik statis sejak tahun 2007. Metode: Metode penelitian ini menggunakan identifikasi menggunakan Bow Tie Analysis, dan Risk Assessment dengan standar yang dipakai ASSE Z590. Lokasi penelitian di pabrik pembuatan cat berbasis solvent di PT XYZ berada di Provinsi Jawa Barat merupakan perusahaan multi nasional. Hasil : Dari penelitian ini kami menemukan bahwa di pabrik cat PT XYZ hanya 22% perlindungan yang memadai untuk mencegah electrostatik, 7% threat masih dikategorikan berisiko sangat tinggi, 40% berisiko tinggi, dan 31% risiko sedang. Dari hasil penelitian disimpulkan beberapa rekomendasi yang dapat digunakan untuk meminimalisir risiko listrik statis. Kesimpulan: Dari hasil disimpulkan bahwa proteksi kebakaran di PTXYZ masih belum cukup untuk memberikan perlindungan terhadap bahaya listrik statis

Introduction: Major fire accident involving static electricity still become serious latent problem (1), this similar to PT XYZ which still experience serious fire incident caused by static electric. This study intend to do the analysis of the adequacy of the protection to fire and explosion caused by electric static at hazardous process at paint production. **Method:** This analysis is using bow tie analysis and risk assessment matrix, Bow Tie analysis describe and visualize the correlation between what caused risk, top event, and control that used to anticipate the incident happened and also mitigation barrier that can prevent from further escalation, then risk assessment matrix give semiquantitative risk calculation to reflect the level of risk. From this determination than we decide recommended control base on best practice and standard which is relevant. **Results:** From this study we found that at paint manufacture PT XYZ only 22% of protection is adequate to prevent from electrostatic, than 7% of threat still categorized very high, 40% is high risk, and 31% is moderate risk. Base on best practice and literature study than we recommend some of action that need to be taken to improve the barrier. **Conclusion:** The recommendation basically is to improve the visibility of grounding performance using lam indicator, improve visibility of flammable atmosphere using LEL detection, to reduce electrostatic discharge during process by control the liquid flow, to improve charge relaxation by selecting the tools properly, and to prevent fire during cleaning by inerting and reduce the solvent mist, also to increase the conductivity of non conductive solvent by adding conductivity agent