Reliance Petrochemicals,

Reinforces process safety with digital Permit to Work

Need

Reliance Petrochemicals were searching for a system to meet operations, process safety and compliance requirements to provide a company-wide visibility.

Challenges

RPCM needed a digital PTW system to seamlessly interact with each other, eliminate human errors and double capture information.

Benefit

The critical production environment overcame inconsistencies by establishing a digitized conventional process for their already-defined PTW work flow. Routine tasks were automated and the reduced maintenance and support increased reliability.

Rendering a digital platform to increase internal accountability and efficiency for work permits

Reliance Petrochemicals Malaysia (RPCM) is the modern parent of a leading pioneer of Purified Terephthalic Acid (PTA), which discovered PTA in the year 1967. With a current rate production of 610 KMT PTA/ year, RP chemicals has established its niche by solely manufacturing PTA in Malaysia. PTA is widely used as a substitute for cotton fibers and in film packaging, paper, resins, beverage bottles, paints, adhesives and other applications.

Reduce risk probability in the production control system

Petrochemical industry exposes the associated workers to various hazards such as toxic chemical products, obnoxious gas fumes, dust and volatile organic compounds. It is imperative that intrinsic safety of a petrochemical plant is tackled with continuous and systematic, safety management systems which proactively identify hazards and analyze risks.

The primary focus of safety is – prevention; and tools, techniques and programs required to manage safety include managing work permits.

During evaluation, the stakeholders' necessitated computerization of the permit process as it would provide visualization of the processes and prove a valuable time-saving tool. Although, traditional hard-copies are mandate for Permit-to-work, their process from request to execution consumes time. Automated processes make the right plant information readily visible to the plant personnel involved in the course.

Given the substantial OHS importance of this industry, initiatives to automate PTW process made complete sense. After extensive discussions with its personnel, RPCM corresponded with ASK-EHS online and shared its work permits.

PTW software is significantly easier and faster to use, more accurate in compliance with health and safety, and has increased functionalities to manage work and risk. Previously, RPCM invested ample amount of manpower and time for sharing information and seeking approvals.

Solution Guide

- Implementing, testing and configuring the procedures.
- Training the end-users to use the installed assets to the best of their ability.
- Ensuring that permits move along a prescribed process to ensure compliance and reduce risks

Solution

Customized ePTW SOFTWARE

- Area map
- Permit re-validation
- Reports and analysis
- E-mail notifications
- Permit tracking

The manufacturing of PTA comprises of hazard-laden tasks such as working at high temperatures during crystallization process for purification, operating reactors, crystallizers, dryers and compressors at (or operating on) high speeds, handling many chemicals on a frequent basis.

Also, as the end-product (PTA) is highly toxic, and has flammable properties, storage and warehouse needs systematic supervision of all routine activities.

The system needed to be accessible to the users and reduce opportunities for mistakes to be made, resulting in efficient processing of permits.

As on-site health and safety requirements seemed to increase exponentially in RPCM due to challenges in managing work permits, ASK-EHS and its system guided the users step-by-step in an A, B, C fashion from start to end of the permit's life. A mutual agreement on building a prototype of e-PTW facilitated detailed analysis of the software at the user-end.

Attention-to-detail with on-site training

Once the prototype was ready, ASK-EHS professionals planned a 2-day site visit at Reliance Petrochemicals, Malaysia. The newly developed prototype put-forth certain queries and the discussions had numerous manual interventions. These consisted of permit-issuers, permit requesters, departmental heads, and concerned individuals from the control rooms.

After receiving elaborate considerations from more than 30 professionals from Reliance Petrochemicals, ASK-EHS customized the software in-accordance with the agreed prototype and delivered it on the User Acceptance Testing (UAT) server.

The e-PTW software developed to automate the PTW process was validated and qualified by engineers using pre-defined test procedures. Within a month's time, implementation began, and the software was rolled-out to instrumentation department first, and post then, was implemented in others, now running full-fledged in the organization.

RPCM's PTW hierarchy was elaborate and comprehensive, as it consisted many stakeholders in the whole process. Many authorities were responsible in their step-by-step process, to enable complete awareness of the work carried across all the major areas. In addition to full-visibility and 'at a glance' view of the status of the existing permits, the software enabled automatic flagging for Risk assessments, expired permits and permits that were awaiting approvals.

ASK-EHS helped with the setup using the existing Permit to work questions and workflows to allow a seamless transition to a new system. The system streamlined and unified the PTW process and provision of self-help videos (such as How to approve a permit) could facilitate understanding of the dashboard during the permit process. Thus, RPCM, through its customized e-PTW software, could create a repository for all the work permits, which ASK-EHS designed to the highest levels of usability to ensure that all the benefits of accuracy, speed and ease-of-use are obtained.

The feature-rich real-time dashboard prompts to take remedial actions whenever intervention is required. Status of a procedure is indicated by a defined color code. The e-mail notifications fastened the approval process, and the individuals could rely on the software in case of a

pending permit. ASK-EHS has configured the e-PTW software to closely align with RPCM's unique requirements and its flexibility allows the configurations to be improved overtime.

The entire execution process took 14 weeks; where prototype design took 2 weeks, the customization of the software and its delivery on UAT took 12 weeks.

Reaping the dividends of profit, resilience, productivity, and quality through unparalleled development of safety

The clear and systematic approach of RPCM was visible and it approached ASK-EHS with a working committee. The team initiated the discussions pertaining to the technicalities of the product and the validation process. A single-point of contact was established by Reliance Petrochemicals in form of a committee leader - who was responsible for interactions with ASK-EHS.

Adding a top-of-the-line product to an organization which identifies credible methods for smooth functioning differentiates it from its peers and provides it with an edge. In an extremely high-risk environment that is a petrochemical plant, the comprehensive database qualified for traceability, thus locating changes that could impact quality of a product.

The digital transformation accentuates continuous learning vital in upholding an effective safety culture. With e-PTW, data is linked across the operational risk management process in one holistic view to help identify trends, link permits to incidents and assign corrective actions. The intuitive workflow and ease-of-system usability encompasses the company's goals and objectives and suits to several specific risk areas of the business.

PTW software acts as an administrative safeguard to maintain and achieve a safe state of process and simplifies the route of permeating safe behavior through the ranks and instill a strong organization- wide safety culture.

> “The nature of work called for operational excellence and process efficiency in carrying out the daily maintenance tasks. RPCM wished to adopt and implement a user-friendly permit-to-work system to track and manage their work permits consistently.”