

Job Safety Management for Air-conditioning and Refrigeration Industry – Pre start checks

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Abstract

An effective pre-start risk assessment process is critical to the air-conditioning and refrigeration industry to assess hazards and mitigate associated risks with appropriate controls. The industry deals with hazards that are typical to other industries such as working at heights, confined space, electricity, hot works and asbestos. The existing job management system our business employs is 'simPRO' which keeps a recorded log of the client's details, job location, name of the technician attending the job and the time and date of the completed pre-start assessment. One of the main problems identified with the pre-start process our business was using is that the 'simPRO' questions to be completed by the technician were too limited to fully assess 'high risk' work. An indicator of high risk work should then prompt the technician to complete a full safe work method statement for that allocated job. Secondly upon a random review of completed jobs it was identified that some pre-start assessments were not completed until after the job had been finished, thereby rendering the risk assessment process ineffective. This paper assesses the current pre-start process and seeks to improve the effectiveness of the pre-start and risk assessment practice for the technicians and the business.

Keywords: pre-start risk assessment, high risk work, simPRO.

1. Background on the industry

The air conditioning and refrigeration industry is a crucial part of the Australian economy and provides vital services to many sectors including health, transport, mining, telecommunications and agriculture.

Modern society has a heavy reliance on air conditioning and refrigeration systems and using these products on a daily basis, there is an expectation that the supermarket will be air conditioned and the food taken of the refrigerated cabinet will be fresh and at the required temperature to meet food safety standards, or the beer at the local pub will be cold.

The Department of Sustainability, Environment, Water, Population and Communities (2013) estimated that approximately 173,000 people are employed across more than 20,000 businesses operating in the air conditioning and refrigeration industry including refrigerated transport operators.

1.1 Hazards

A Technician working in a refrigeration plantroom can face hazards common to many other sectors such as working at heights, manual handling and confined space. Those more specific to the refrigeration industry include substances under pressure with high flammability. Asphyxiation can occur due to a refrigerant displacing the air within a small poorly ventilated area.

- Hazardous Chemicals
 - Possible health hazards from exposure occurring through inhalation, skin contact or ingestion. Health effects can be either acute or chronic including headaches, vomiting, skin corrosion, asthma, nerve damage or cancer.
 - Physiochemical hazards involve substances with chemical properties that pose risks to workers through inappropriate manual handling or use leading to injury and/or damage to property. Examples include refrigerants used in refrigeration and air conditioning systems in Australia which typically have been non-flammable, non-toxic, synthetic greenhouse gases (SGGs) with high global warming potential (GWP). These include chlorofluorocarbons (CFCs), hydro chlorofluorocarbons (HCFCs) and hydrofluorocarbons (HFCs). However, due to the concern over the impact of SGGs in the atmosphere, the use of alternative refrigerants

with low GWP is increasing. These natural alternatives to HFCs such as ammonia, carbon dioxide and hydrocarbons carry associated high toxicity and high flammability hazards. For these reasons the pre start questions needed to reflect the additional licensing requirements and tailored for equipment and systems designed for use with flammable refrigerants which require additional safety features, beyond those normally required when using non-flammable refrigerants.

Other high risk work performed that requires completion of a safe work method statement prompted from answering the pre start question assessment include:

- Working at heights including roof work, mobile scaffold or scissor lift.
- Electrical works including testing.
- Hot works.
- Confined spaces.
- Working around Asbestos containing material. I.e. moving, cutting, drilling or sawing.

2. The Company and the issue being addressed

The refrigeration company operates out of offices in Rockhampton and Gladstone and currently employs 29 full time and 3 part time staff across administrative, trade and engineering roles.

In 2014 a new job management system called 'simPRO' was introduced to manage all job related details from the creation of the customer in the data base and the management of all the details of their site and their equipment. The system could also create and manage quotations, purchase orders and invoicing functions. This system was originally designed for the trade based service industry and is used by Plumbers, Heating Ventilation and Air Conditioning companies as well as Security and Fire.

The system enables jobs to be allocated to the Technicians smart phone so the job details can be viewed and pre start safety check initiated prior to starting the job (simPRO 2014).

Due to the complexity and size of the air conditioning and refrigeration equipment routinely worked on nearly all the work is required to be conducted on the customer's premises. This can create challenges to managing safety as the Technician maybe working at a commercial site that does not have any requirements for inductions and no specific procedures in place for working on their equipment. Alternatively, the Technician may be sent to other industrial sites throughout the day and be required to complete multiple inductions and adhere to a strict permit system prior to commencing work. Additionally, the technician can attend 6 or more sites in any one day which highlights the importance of needing an efficient pre start system in place within the 'simPRO' platform that provides a comprehensive and efficient risk assessment process.

3. Details of the problem

The original project proposal evolved rapidly from the idea of blocking the start of the job on simPRO until a pre start was completed. Consequently this was identified as a potential hazard in itself.

The initial assessment of the pre start process commenced with a review of a randomly selected number of completed jobs to investigate the recorded time of the pre start assessment completed by a technician. This review identified how a pre start assessment could be completed at the end of a job. As all job details are logged and the recorded start and finish time are automatically recorded in the job log entries and it was found that the pre start assessment time was logged just prior to the finish time. It was also noted that the pre start questions set in simPRO did not address all high risk hazards and prompt the completion of a safe work method statement.

3.1 Approach and Options considered

Approaches that were not effective?

- To address the problem of the pre start being completed at the end of the job, the project team investigated the possibility of including fields within the simPRO application to limit certain information regarding the job until the pre start was fully completed. This forces the technician to complete the pre start assessment in order to receive all details of the job. However, this would create another hazard in not providing sufficient information to the technician to assess all hazards associated with the job.
- A trial function in simPRO was initiated to send a notification to the supervisor and office managers' email address each time a technician logged on to start a job. This allowed supervision to quickly see compliance with the pre start process, however, due to the volume of jobs amounting to approximately 82 notifications in one week, it quickly evidenced time inefficiencies. Furthermore, notifications generated after hours would not be actioned.
- Additional investigations were undertaken to limit the simPRO settings for a pre start assessment to be completed only once per job, however should a job continue over multiple days the pre start assessment could only be completed once and not assess new hazards that may arise over the course of a week. This setting was changed to once per day per job.

What approach worked well:

- A review and continued development of the business safety management system to better integrate management commitment, consultation, safe work procedures, training and supervision and monitoring and review of work operations. Additional consultation with the technicians with a proactive approach to the management of the pre start process in tool box talks and the induction process. Including the development of pre start assessment questions, ongoing training and supervision of the technicians in the use of the system.
- The pre start questions were reviewed and a table of additional questions for inclusion into the pre start process were considered.
- The simPRO system enabled additional information to be included in the customer's asset register which lists any equipment that may be necessary for the job and location. This feature allows notes to be included to assist the tradesman in finding and accessing the equipment i.e. if a scissor lift is required or if the unit cannot be accessed safely.
- The simPRO capabilities allows all certifications, inductions and licenses held by each technician to be recorded on the system and flagged prior to expiration. This alerts the technician and nominated office person for renewal requirement.

4. Justification of the approach, how it was arrived at as the best approach

Review of Safety Management System: Simply a set of linked policies and procedures to manage and improve workplace health and safety risks and assist to meet legislative requirements.

Integrated elements include: Management commitment, Consultation, Safe Work Procedures, Training and Supervision, Reporting and Monitoring and Review.

- **Management Commitment:** Communicate responsibilities, allocate time and money, make safety a priority and lead by example.
- **Consultation:** Review regular consultation process such as tool box talks, involve workers in identifying safety issues and finding solutions, value workers points of view.
- **Safe Work Procedures:** Identify hazards and control risks associated with all tasks, develop safe work procedures – step by step methodology, involve workers in developing safe work procedures, ensure procedures are always followed, review safe work procedures.

- **Training and Supervision:** induct all workers, contractors and volunteers; train workers before commencing work; ensure workers understand training; supervise workers to ensure adherence to procedures.
- **Reporting safety:** Review reporting process, act on reported issues and incidents, review safe work procedures and training following incidents.
- **Monitoring and Review:** Make safety everyone's business, involve workers, integrate safety into everyday operations, review audit process and sign off, allocate a budget, continuous improvement and consultation is key.

By continuing to improve the safety management system the business will meet compliance with the *Work Health Safety Act (Qld) 2011*, *Work Health Safety Regulations (Qld) 2011* which provides the framework for the minimum legislated requirements to manage workplace health and safety. Reference to the AS 4801:2001 *Occupational Health and Safety Management System* provides a best practice guideline to adopt when transitioning these improvements.

5. **What were the outcomes and were they a success as measured against your original project proposal.**

The project highlighted the need for a fully integrated safety management system and the benefits of having a set of linked policies and procedures in place to cover all necessary elements (management commitment, consultation, safe work procedures, training and supervision, monitoring and review) to effectively manage work health and safety.

References

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Legislation

Queensland Government, *Work Health and Safety Act 2011*

Queensland Government, *Electrical Safety Regulation 2013*

Code of Practice:

Managing Risks of Hazardous Chemicals in the Workplace Code of Practice 2013

Australian Standards:

4801:2001 *Occupational Health and Safety Management System*