Portable and Programmable ‘Process Safety’ Interactive Training Aid.

School of Applied Computing

Brett Williams ID 2215656

Prifysgol Cymru
Y Drindod Dewi Sant
University of Wales
Trinity Saint David

1- Introduction:

You’re the owner of a multi-billion-pound steel manufacturing plant with 1000’s of employees…

1. Do you know what could go wrong?
2. Do you have the barriers in place to **STOP** this from happening?
3. Are those barriers working effectively?

2- Aims and Objectives

- Create a portable training aid to help develop ‘Process Safety’ awareness.
- Improve unplanned on-site barrier activations and the reporting of these events.
- Develop a safer workplace where everyone goes home at the end of every day.

3- Research and Development:

- A working functional prototype was developed
- The prototype was functionally tested
- Prototype Workshop trialled with stakeholders
- Feedback and learning development
- Redesigned in the form of an automated training Aid.

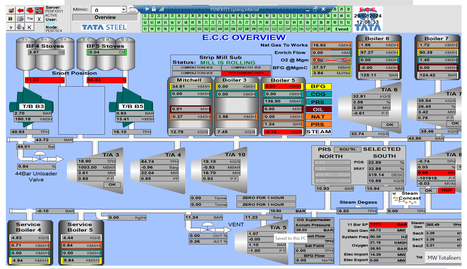
Training Aid Testing

Prototype

4 - By-design

Control Room Operator Process Safety Training

Today

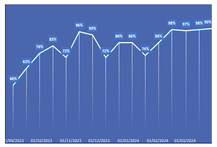


- **Complex and challenging training development**
- **Live plant effected by operator response**
- **Confusing alarm activations**
- **Difficult to tailor learnings**

Tomorrow

- **Simplistic on the job training**
- **Tailored for be-spoke process’s**
- **Fully portable and transferrable**
- **Safe repeatable process events**

5- Analysis



Reported Process Safety Events Data

Improved Process safety awareness reduces barrier activations that can lead to a Major Accident Hazard. The outcome of a MAH can be catastrophic and involve multiple fatalities of on-site and public personnel.

Torpedo explosion (Port Talbot 2019)

6- Conclusion:-

The interactive Portable ‘Process Safety’ Training Aid allows the user to safely test the rational decisions and actions that are required by a control room operator to prevent a minor process upset developing into a Major Accidental Hazard.

The overall project was a success, with all aims and objectives being met.

From the learnings experienced and given the opportunity, I would relish the idea of developing a futuristic training aid around a larger HMI without any external components. Making it totally dynamic to each process.

Having already discussed this with my line manager, it has been positively supported in theory.

Futuristic Training Aid suggestive image

TATA STEEL