

Remote and Collaborative Virtual Reality (VR) Operator Training

Associate Professor Ben Horan

Director CADET Virtual Reality Lab

Scott McMillan

Melbourne Water

Partnership

- Melbourne Water & Deakin University CADET Virtual Reality (VR) lab
- Snake Bite First Aid Trainer
- Ozone Generator Isolation Trainer
- Future Projects



The Problem

- Ozone Generator
- Remote Locations (Antarctica)
- Complex Machines (Expert Knowledge)
- Remote Isolation Procedure Training



The Solution

- Virtual Reality Ozone Generator Isolation Trainer
- Safe Training Environment
- Collaborative Space
(On Demand Expert Training)
- Low Bandwidth, High Latency



Hardware

- Integrated System
- Transportable
- Easy Setup (Plug and Play)
- Custom Design
 - Cooling
 - Port Access
 - Power Distribution
 - Storage



Modelling – Ozone Generator

- Realistic Ozone Generator
- Ozone Generator CAD Model
- Optimizing Model for Real Time Rendering
 - Remove Unnecessary Components
 - Optimize Mesh if Possible
 - Remodel if Not
 - Texture



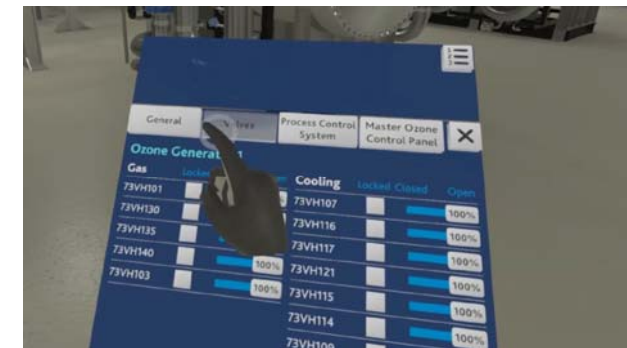
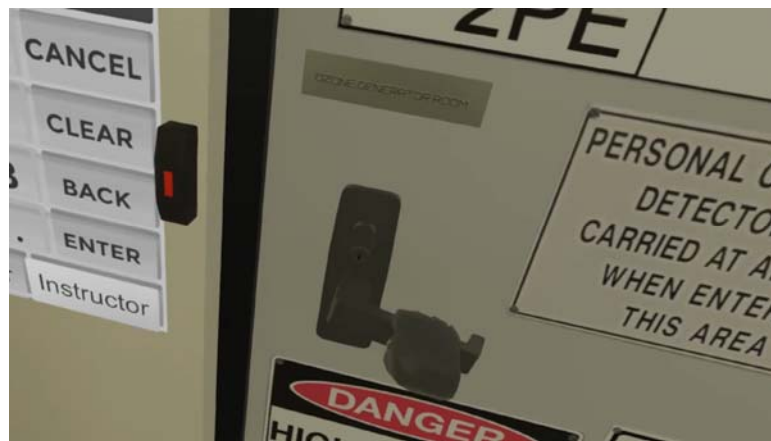
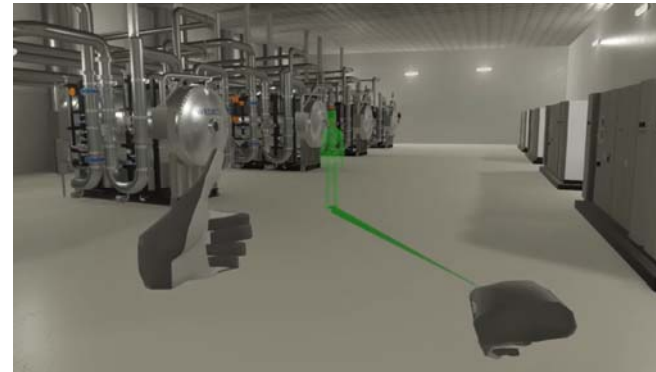
Modelling - Environments

- Classroom
- Hallway
- Generator Room
 - Building
 - Machinery
 - Audio



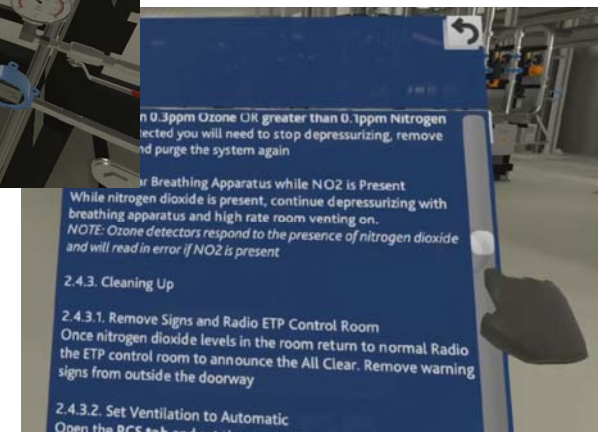
Software – Systems (Part 1)

- Navigation
- Hand Input (Leap Motion)
- Interaction
 - Doors
 - Valves
 - Menu



Software – Systems (Part 2)

- Networking
 - Operator
 - Instructor
- Avatars
- Isolation Procedure



Result

- Single and Remote Multi-User Trainer
- Demonstration at Melbourne Knowledge Week
- Handover at Eastern Treatment Plant
- Future Use by Operators





Next Thinking -

- **What opportunities does this research generate for the water sector? (beyond its immediate uptake)**
- **Collaborative immersive training from distant locations has a wide range of applications**
- **It allows training with experts which would not be otherwise possible**