

## SERVICE BRIEF:

# User Centered Field Shelter Design

### The Situation:

In the past, all control was done from field shelters. A control system upgrade has enabled the site to move to a new control facility. The field shelters will still be used by field operators for important functions such as maintenance coordination, issuing work permits, sampling, new employee training, but are poorly designed for these functions. The main controls are transferred to the new control room, but maintenance and backup control view is available in the field shelter and is used for diagnosing, testing, and training. With the removal of the console operator it is important to re-design the room for the field operator functionality. These renovations may include hardening the building.

### The Solution:

UCDS has in-depth experience in designing control rooms and modifying existing field shelters. Our process is compliant with the ISO 11064 Ergonomic Design Standard for Control Buildings. We interview management, supervision and a significant group of the operators to understand functional requirements, what works well in the existing environment, and identification and correction of problems with the existing design.

Some customers prefer to walk away from their existing building and move the field operators into a Modular Blast Resistant Building. Our process helps facilitate this move and provides a detailed design for the Modular Building manufacturer.

We help identify if you can rationalize many field shelters into a smaller number of more centralized field shelters. One site went from 16 field shelters to 3 new field shelters, utilizing modular buildings, located in strategic locations.

The design service includes specifications on the following areas:

- Best locations for new buildings
- Primary and secondary user requirements
- Room types, sizing and functions
- Building and room adjacencies
- Functional adjacencies based on work flow interactions and good communication and collaboration strategies
- Design and work process requirements
- Shared equipment arrangements
- Fatigue countermeasures
- Recommendations in collaboration with your Architect and their design contractors on:
  - Flooring
  - Finishes
  - Lighting
  - HVAC system
  - Noise
  - Use of interior glazing



- Traffic flow
- And many more...

## **The Process:**

The first step in the process is identifying the required number and location of field shelters required. This is accomplished by reviewing process safety information, site plans, and API RP752 reports and then discussing renovation, remodel, or alternative solutions with plant personnel.

Once the number field shelters has been established, we spend time capturing requirements from managers, supervisors, operators along with other secondary users of the building such as maintenance, planners, and laboratory staff. UCDS will ensure rooms are designed for functional requirements and good collaboration and communication, whilst addressing traffic flow through the building and minimizing disturbances. The building will also address issues such as responding to emergency situations and how operators use equipment like respirators and specialized PPE.

We develop design alternatives and solicit feedback from the users. We then integrate this feedback into a final design and generate a  $\pm 30\%$  budget estimate, or  $\pm 10\%$  for modular buildings. To modify an existing building to code and to develop a  $\pm 10\%$  estimate an architect will need to be involved. This  $\pm 10\%$  estimate may require local planning permission, upgrading buildings to today's building codes, and developing construction drawings.

As the Client goes through the iterative process of finalizing the building design, User Centered Design Services will be available for consultation as required.

## **Benefits:**

This process provides for any client a cost effective method to incorporate Best Practices in control room design into their facility. This can be done for new building or retrofits of existing facilities. User Centered Design Services brings state of the art learning's from throughout industry to bear on your facility.

A badly designed project can incur costly changes, re-designs, scope creep, time delays, construction nightmares, and could have implications on the effectiveness of the plant for the next 30 years. A properly designed facility can increase operator performance, reduce work-related stress, reduce human error, improve safety, reduce upsets, slowdowns and shut downs, and contribute significantly to the bottom line of the plant.

## **Related Services:**

User Centered Design Services can also help Clients in selecting an Architect for their project. Our extensive background in these types of projects makes us extremely well qualified to help select the most cost effective Architect while still providing a Best Practice solution. Please see the **Engineering Service** Briefs for more information on this service. This service can also done in conjunction with our **Conceptual and Detailed Control Building Design Services**.