SECURITY CONTROL ROOM DESIGN pdf

1: How To Ensure Safety Via Control Room Design | Oculus Innovations

Control Room Design Standards and Implementation Americon is a leading control room furniture manufacturer and audiovisual systems integrator specializing in control rooms for mission-critical operations.

Control room structure For large plants, control rooms are likely to be situated in separate buildings away from the process plant which they serve. For medium or small plants control rooms may be within the plant building or control panels may be located local to the plant. Whatever the location, control rooms should be designed to ensure that the risks to the occupants of the control room are within acceptable limits and that it is suitable for the purposes of maintaining plant control, should the emergency response plan require it, following any foreseeable, undesirable event within the plant. Events that may affect the control room are: The threat from explosions and pressure bursts should be considered in the structural design of control building. This considers the vulnerability of the building to possible overpressures associated with particular events. Buildings should be designed to withstand an overpressure that will ensure that risks to individuals within the building are below acceptable limits. Particular attention should be given to the provision of windows, the presence of heavy equipment on roofs e. If windows are present, consideration should be given to the use of laminated or polycarbonate glass, to prevent serious injury to occupiers of the control room in the event of an overpressure. ALARP principles should be applied in these considerations and cost benefit used to determine if additional measures should be applied. In consideration of toxic gas releases the control room should provide a safe haven for its occupants. This will include arranging that the building is adequately sealed to prevent ingress of gases to levels of concentration that will affect the health and thereby the ability of the operators to maintain control of the plant. Careful consideration of the building ventilation system is required to ensure that air intakes are situated away from areas that may be affected or to arrange that there is no air intake during an incident, preferably by closure of an automatic valve linked to a gas analyser. Measures for protection from fires should ensure the control room will withstand thermal radiation effects without collapse and that smoke ingress is controlled. Materials of construction should be fire resistant for the duration of any possible fire event. Smoke ingress may be controlled in a similar manner to toxic gas ingress. Each of these methodologies should be applied to control rooms within buildings as well as separate control buildings. Control panels on the plant itself cannot be so easily be protected, therefore diversity and redundancy should be applied to ensure that plant control can be maintained in an emergency. Risk Assessments should be undertaken to demonstrate that primary and secondary domino risks are within acceptable limits. It is vitally important that a control room and its operators are considered as a whole system and not in isolation of each other. For example a well designed control room for use by 4 operators is dangerous when staffed by 3 operators. Similarly, the best-trained operators cannot guarantee high reliability in a poorly designed control room. Factors to be taken in account are included on the following paragraphs. Environmental issues Layout Control room dimensions should take into account the 5th and 95th percentile user. The design of the control room should be derived from an appropriate task analysis method, such as link analysis or hierarchical task analysis. Emergency exits should accommodate egress by the 99th percentile user. Access and egress should be considered for disabled operators. Adequate access should be provided throughout the control room. However, the layout should discourage flow from general circulation areas to ensure that necessary lines of sight are not obscured. If there are a number of control rooms operating on the same system they should adopt similar layouts to ensure consistency. Operational links between control room operators, such as communications and lines of site should be considered during the design stage. The layout should not hinder verbal and non-verbal communication and should facilitate team working. The layout of the control room should reflect the allocation of responsibility and the requirements for supervision. The layout should be effective under high and low staffing levels. Circulation of all personal should be achieved with the minimum of disruption to operators. Where supervisory positions will increase the amount of personnel circulation, it is recommended that these positions are located close to main entrances. As a guide the minimum spacing distance should be between - mm. Maintenance Adequate access should be provided so that inadvertent

operation of equipment during maintenance is not possible. Behind panel equipment should be appropriately coded to reduce the potential for human error. Thermal environment Temperature and airflow should be adjustable. Visual environment Lighting should be such that it does not create veiling reflections on VDUs or other reflective surfaces that require monitoring. The type of lighting should be adequate for the task. There should be no perceptible flicker from strip lighting. It is desirable to provide adjustable lighting for control rooms that are manned 24 hours a day. During night-time operation lighting is often dimmed. Windows in control rooms should not cause veiling reflections on reflective surfaces. Adequate means of blocking out direct sunlight should be provided. Auditory environment The average noise level within the control room shall not exceed 85 dB A during the length of the working day. For office work a noise level below 40 dB A is not desirable as it can cause interference between operators. Prolonged, very low or very high frequency noises should be avoided. Noise levels should not interfere with communications, warning signals, mental performance i. The duration of tasks that have an associated low or high level of mental workload should be limited. Both these extremes will increase the likelihood of human error affecting the system. An interface should provide the operator with the general following information: After initiating an action within a system the operator should be clearly informed of the result of their action. If an action is made in error then it should be possible to reverse such an action where it would not be detrimental to plant safety to do so. The system should inform the operator of any deviations from safe operating levels. Alarms All employees and contractors on site should know what each alarm means and what the required response is, if the cause of the alarm has the potential to affect them. An alarm should reset automatically if the fault that generated it is rectified. Alarm messages should be presented in a standard format, based upon existing conventions. Alarm messages should clearly inform the operator of the reason for the alarm. Following an alarm response required by the operator should be clear. The coding of alarms should not be based purely on colour, as colour blind operators will be unable to recognise what the alarm indicates. Alarm signals should be at least 10 dB A over the background noise of the control room. Alarms should not prevent effective communication within the control room. An alarm log should be provided to for diagnostic purposes. The design of the alarm system should prevent masking and flooding of alarms. Masking is where one alarm noise masks a similar sounding alarm preventing the operator from detecting the signal. Coding techniques Coding should follow international conventions. Arbitrary coding by operators can actually propagate, rather than mitigate, human error if not carried out correctly. Coding should be consistent across plant. Coding should be used appropriately. Example methods of coding are:

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2: CCTV Security Control Room Furniture | Intech Solutions

And even though the background of a control room integrator may be in traditional A/V systems, many have become certified in the types of critical, 24/7 systems used in SOC environments, making them a true part of the security ecosystem.

This equipment is responsible for delivering appropriate information on incidents that can occur and falls into the responsibility of the installer. However, when it comes to developing the control room where everything comes together, it is unusual to find the same kind of focus and enthusiasm. Often the control room is seen as a place where technical equipment is installed rather than a site where people work to bring together all the information and realise the value of the technology. I had a discussion recently with people from a site who were putting in a large CCTV system. My first question was what was wanted from their CCTV system. The purpose of the system should have a fundamental influence on the control room design. For instance, if the primary role of the CCTV system is to generate recorded material for later investigation, then the control room itself could effectively be a review workstation in a room. However, if the role of the system is to detect theft and try and pick up things before they happen through proactive surveillance, the need for large clear monitors, multiple operators, and space for personnel to work in for a prolonged period becomes far more important. Starting out The first defining factor that will influence a control room design and capability is space. Often the control room is found squeezed into space that is difficult to use for any commercial purpose, or buried in unwanted space in the basement. However, where a control room is seen as a central feature of the security strategy, there are a number of criteria to look at. Issues such as how much usable space there is will affect the size, number and positioning of workstations. Pillars in the way can limit design options, as can low ceilings. Windows are good to have for natural light, but they can also have a major impact on reflection and heat, while noise disturbances can make an environment uncomfortable and excessive vibration can cause problems with equipment. Custom-built control rooms where space factors are designed according to what is required from the operation are critical. Things like wiring access and the ability to move or extend wiring are also considerations if the control room has to change or expand in the future. Let there be light Lighting is also an important feature with controlled lighting for each workstation being available. Ideally, reflective or recessed lighting should be used and complemented by natural lighting where possible. One needs to avoid strong backlight where operators are looking at monitors with a strong light source directly behind the monitor. Traditional fluorescent lighting is one of the worst things to have in a control room yet it is typically all too common. I find that in many cases operators prefer to switch off lighting because it is generating too much glare or is uncomfortable, with the result that many control rooms operate in a fairly dark and gloomy atmosphere. Aesthetics Consoles vary in an almost indefinite variety of designs and colour. The move is now away from the traditional wooden consoles with CRT screens to a more modern flat screen design and more spacious desks to work on. LCD and plasma screens have allowed much greater flexibility in the design features of workstations or consoles. However, there are still cases where a whole lot of equipment has been heaped together with no real thought of how it all needs to be coordinated to allow an operator to keep track of what is going on. The layout of screens and controls is still one of the most important factors in control room design. There is also a strong move away from having as many pictures as possible on a set of monitors in front of the operators. Operators can only look at so much information at a time, and the purpose of the surveillance needs to be equated with the nature, size, and positioning of the display monitors. Having 12 camera images on a single 17" monitor at the local supermarket is doing nothing for CCTV detection. Operators should always have a spot monitor and the size of the picture relative to the distance of the operator away from the screen is important. There is an increasing move to large screens eg, 42 inch LCD which is useful as long as the large screen is not just used to fit as many images on as possible. Work can be organised with control programmes and multiple video images in various configurations being displayed on screen. However, one needs to ensure that the resolution of large screens provides what you need to see in terms of activities or identification from your cameras. Line of sight refers to how the eyes are positioned relative to the

monitors that are being viewed. I have seen multiple situations where people literally have to lean back in their seats to see what is displayed on the monitors because they were mounted so high up. These kinds of design problems lead to poor effectiveness and health issues. Similarly, I have seen workstations with three monitors - with one in the middle of the console and two positioned way out on each side. Horseshoe type designs were also popular at one stage yet are largely ineffective. Mountings with flat screens provide an advantage compared to the traditional wooden consoles â€" I have seen a large number of wooden consoles over the years with large holes in them where equipment used to be, and the new equipment does not fit the original designs. Flat screen mountings on racks can be easily moved and tilted. The positioning of monitors, no matter what kind are used, needs to create an easily and consistently viewed area that is comfortable to view and scan. Spaced out Desk space is another factor often ignored. Operators typically have to use keyboards, mice, joysticks and other control equipment along with communications devices, yet often are provided with little space to manipulate all of these. At times, logbooks and documentation must also be completed while all of the other devices are still on the desk ready for use in operating the system. Usable desk space is therefore critical. Similarly, when operators pull their chairs into a desk, the leg space is going to determine whether they are comfortable, or whether they have to sit away from the desks in order to have a comfortable seating position. It also raises health issues in terms of circulation and body posture. Looks vs practicality What is visually impressive is not necessarily the most effective. The best designed control rooms are often those where the most thought has gone into what needs to be accomplished in the control room. A number of recently designed control rooms show that one can not only look good, but can be highly functional as well. The control room at OR Tambo International Airport is a good example of a good-looking control room with strong functional design. Perhaps one of the easiest ways of seeing whether a control room meets requirements is sitting down in front of a console and asking yourself whether you would like to work in that position for 12 hours a day for the next six months. It is what many managers are expecting their operators to do. He is a director of Leaderware, which provides instruments for the selection of CCTV operators, X-ray screeners and other security personnel in major operations around the world. He can be contacted on or craig.

3: Security and CCTV Control Rooms | Solutions

4 Planning and Design of a Control Room Furniture Consoles When determining console placement in the control room, it is important to consider the room's dimensions, number of.

4: Technical Furniture | Command Consoles |Security Control Room

The Control Room. In a security context, a control room (aka operations center, operations control center (OCC), or command center) is a room that serves as a central.

5: CCTV control room design considerations - April - Hi-Tech Security Solutions

Security has been and will forever be integrated into the design of every control room. We continue to project the worst-case scenarios and rethink back doors, windows, first floors, server rooms, and blast resistance during every design decision we make.

6: Control room solutions - Barco

The design of a security control center begins at the central console, a tiered desk that often wraps around the officer in charge. Monitors on the console or wall show video from surveillance cameras trained on key areas of the building.

7: Control Rooms, Security & CCTV Rooms | Oculus Innovations

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security designed detention systems - control room design - architectural corrections of security detention systems. upgrade and retrofit jail locks/locking systems.

8: Control room design

Control Room Design Background. Is it time to invest in your control room design and control buildings, but you're not sure where to begin? Many companies are moving to new, consolidated, centralized control room design, but this can be an expensive, multi-year commitment.

9: Central Control Rooms | Solutions

If the control room is considered as early as possible in the design and construction phase, you can achieve a control room that is fit for purpose, and maximise security and value for money. If you only start thinking about the control room late in the design and construction process, you may find that you end up.

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