Aerospace | Health & Safety System
Assembly process
monitoring

aertec ▶
SOLUTIONS

Aerospace & Aviation

Test Systems Engineering

Health & Safety System

On-board system testing
**Aviation system engineering (2003-ongoing)**

The process of assembling an aircraft takes place in a large hangar, which is split into different work areas. Work-related accidents can occur due to collisions with the platforms or aircraft's moving parts.

AERTEC Solutions has developed its H&S System to help prevent this, and also to provide visual and acoustic support for the performance of production tasks and to improve safety practices and procedures.

This solution means that the processes can be monitored through video images captured by strategically-placed cameras and that visual and audible alerts can be emitted via monitors and speakers, according to the tests being conducted.

It also records, catalogues and indexes the completed tests for subsequent reference, if necessary.
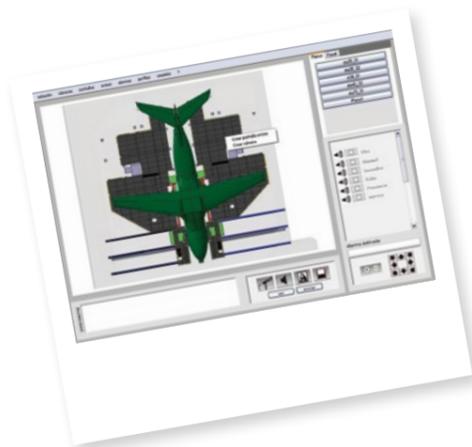
Architecture

The H&S System is designed with a core functionality and a modular architecture that allows each customer to adapt the solution to its needs. The technological core is mainly composed of a real-time IP video system and a software interface console.

A set of industrial cameras equipped with an incorporated web server (IP cameras) and an Ethernet connection is deployed to capture video from the selected work area and an application is installed on operator's computers to manage the performance of the system.

¬ Interface requires authentication (username, password) to access the management console.

¬ Expansion of the camera system is both simple and economic.

¬ Easily integrated with other systems such as Ground Test Systems.

The IP cameras and allocated positions are automatically selected by the operator from the software and it is possible to set up different monitoring scenarios depending on customer preferences.

The images can be configured as a tiled display or as individual displays for different cameras.

With the appropriate permission, any camera can be selected in real time and repositioned using the directional controls on the operator interface.

Modularity

According to each customer's production needs, some specific modules could be added to the H&S system, configuring an industrial bespoke solution.

Audio module

The purpose of the module is to send audio warnings to the personnel that are working in an unsafe area. It consists of a digital audio processor, amplifiers and strategically-placed speakers that are deployed throughout the work area that broadcast acoustic warning signals and/ or audio messages (MP3 or WAV files).

The audio messages can be recorded in different languages and can be associated to pre-determined video cameras in different locations. All this can be configured on the management console.

Warning module

This is based on a set of TFT monitors and strategically-placed plasma/LCD screens. The appropriate visual and audio information is configured and sent to each monitor using the management console and, with the preview option enabled, warnings are displayed on the operator's console so that it can be checked before it is sent to the corresponding monitor.

This system allows the user to create text and image messages to be displayed, according to the following process:

¬ Preset warnings can be previously saved for each work area, so the operator can send complete messages with audio, text and images with just a single click of a button.

¬ Messages can be edited and sent in real time, so the operator can specify any relevant unforeseen circumstances.

¬ The H&S System can be integrated with other external signals so that the warning messages can be activated automatically for example from an emergency button.

¬ With the appropriate permission, all types of message (animated, text, web, video, MP3 or WAV audio, etc.) can be sent to one monitor, several monitors, all of the area monitors or to the entire system.

¬ The H&S System provides an exact preview of the message as it will be displayed before it is sent to the

Safety fixing-points detection module

This module ensures that moving platforms are located in the correct position and in safe mode, to guarantee personnel safety before starting a dangerous task.

The module retrieves data from more mechanical end-stop switches that are gathered in digital I/O interfaces and interconnected to the management console. This real-time information updates a synoptic with a simple color code (green: safe / red: unsafe) that can be displayed on TFT screens throughout the work area to warn the platform staff.

Zone signaling module

This module associates the ground lighting of a specific zone to one or more of the messages that are sent to the screens by the Warning module with the aim of visually alerting the personnel that, for example, a work platform or a part of the aircraft is going to move.

Industrial LED strips (low power) are set into the floor of selected work areas to delimit the dangerous zones according to the customer's requirements.

The management of associations between messages and light zones is made from the software interface by a qualified profile.