Illuminating Today’s Airport

Imagining Tomorrow’s Possibilities

Crouse-Hinds
by Eaton
Disruptions cost time, money and reputations when traffic is slowed down, keeping aircraft at the gate and taxing longer than needed. Waiting around because taxiways are closed for maintenance, there is a malfunctioning stop bar or multiple burnt out lamps, is inefficient, wastes fuel and irritates passengers. These things can be avoided with the right solutions in place.

Because reliable airport operations are so critical, our systems are made to be durable and provide uninterrupted monitoring and control of the airfield lighting circuits. With a reliable system, an airport can handle the maximum traffic possible and achieve full productivity.
A Partner for Building Success

An innovative leader in Airfield Lighting Solutions, Eaton’s Crouse-Hinds Airport Lighting Products (CHALP) has over 20 years of experience with our Distributed Computerized Control and Monitoring System, a proprietary Airport Control and Monitoring System (ALCMS).

Eaton’s Crouse-Hinds’ ALCMS is a comprehensive and integrated solution that is customizable to meet a wide range of airfield lighting control and monitoring requirements. Today there are over 100 systems installed worldwide from, Abu Dhabi, Bangkok, Brazil and Indonesia to Los Angeles, New York and San Francisco.

No matter the size of the airfield the ALCMS can control and monitor a variety of interfaces from a basic system with control only to a complete Surface Movement Ground Control System (SMGCS) for low visibility, interfacing with a variety of elements from Land and Hold Short Operations (LAHSO) systems to Constant Current Regulators (CCRs), generators and individual lamps.

Eaton’s goal is to use technology to customize a solution that exceeds expectations and provides the airport with the confidence that, as our partner, your business will always operate as expected. Together we will build a strong airport that runs on time, efficiently and safely.

Compliances and Approvals

- FAA AC 150/5345-56: L-890 (Current Edition)
- ETL CERTIFIED
- ICAO Annex 14, Vol. 1, Para. 8.3
- Transport Canada Aerodrome Standards and Recommended Practices, Volume 1, TP-312E

Consumer-Driven Design

Designing the correct system involves reflecting upon the requirements of everyone involved with controlling airfield traffic. Planning ahead to end up at a solution that is sustainable and adaptable for the future is crucial to ensure that the system has the essential capabilities and capacity to evolve as the airfield and user needs change.

Eaton’s Crouse-Hinds provides a PC-Based Control System which meets L-890 requirements. This system is configurable to small, medium and large airfield applications that require control and monitoring of a wide array of airfield elements. We work with our customers to provide an authentic experience that results in as simple or as intricate a system as desired.

By working with our customers Eaton’s Crouse-Hinds is able to continue to challenge what we do today, expanding and innovating to create consumer driven system designs. Using an open architecture makes the system capable of being adapted and by having customers participate in the process guarantees that the system is configured to appeal to each unique customer airfield.

Example of a PC-Based System
How the ALCMS Can Benefit You

The Heart and Soul of a Control System Is the Interface

The ALCMS system is designed to provide command and monitoring information in real-time, as well as historical information on the status of the airfield lighting. The sophisticated monitoring capabilities indicate when system monitored airfield elements are out of compliance. This results in a high mean time between failures and a system that is easy to maintain and operate.

The ALCMS can provide individual control and monitoring to regulators and general elements. This can be accomplished by installing the Digitrac Interface that was designed to control and monitor CCRs, Selector Switches, and General Elements (Generators, Wind cones, Beacons, Runway Visual Range [RVR]).

Being able to control and monitor multiple types of airfield lighting elements from stop bars, runway guard lights, SMGCS systems, signs and more, offers a complete airfield lighting solution. This allows the control tower to communicate and execute commands in real time while the ALCMS saves all historical information relevant to the CCR.

Communicating in real time prevents airport personnel from being unaware of the status of lights on the airfield, allowing for planning and reacting accordingly without delays.

Monitoring the Circuit

The ALCMS system is usually designed to communicate via powerline carrier, in order to ensure the insulation quality and avoid line degradation, it is recommended to install a Megatrac Unit for every constant current regulator. The Megatrac is a unit that megger tests the lines, allowing the system to automatically or manually run the the test and report the integrity of the airfield lighting circuit.

The Megatrac unit helps minimize the possibility of commands being lost because there is too much noise on the circuit by monitoring the circuit integrity. This allows the customer time to prepare and respond to any powerline circuit consistency problems. Maintenance personnel can access the data through the ALCMS history and monitor the long term integrity of the airfield circuit.

When It’s Necessary to Control Every Single Individual Light

On larger airfields or at busy locations it is critical to know exactly what is happening with each individual light or series of lights in a particular location. Based on user needs and preference, our Lamp Monitoring System (LMS) referred to as the Logitrac, interacts with the ALCMS to control and monitor a series of lights or each individual light to support independent on, off, or blink control at each lamp.

A device installed at each lamp communicates to and receives commands from the ALCMS through an adapter typically located in the airfield electrical vault. The ALCMS then is able to receive an alert message when a burnt out lamp or sensor activation occurs and process the system lamp statuses to determine airfield category capability (CAT I, II, III).
Integrating with Other Interfaces to Exchange Data

With all the planes, shipments, and people coming and going from an airport, it’s not surprising that there are a lot of control systems in place. Often it is required that these systems can interface to exchange data and simplify operations. To help with plane landing and taxiing the ALCMS offers a Surface Movement Ground Control System (SMGCS) visual guidance and routing function.

The capabilities of the system include the control and monitoring of stop bars, guidance lights and runway guard lights. The system can also be used for sign monitoring and other variable segments of taxiway centerline lights.

The SMGCS Communication System sends three messages on multiple frequencies to ensure the message is sent and maintains data integrity. These functions may be operated manually by the air traffic controller or automatically by the system as a result of a field situation.

The failed lamp locator option gives the airport the ability to meet the low visibility requirements for CAT II and CAT III operations making operating in less than ideal situations better and leaving the possibilities for CAT I airports to expand when ready.

Installation and Maintenance

No matter how easy to operate the system, it still has to be installed and maintained; with our experienced technical field service specialists the process is straightforward. We aim to make every installation simple and quick without costing. Using the Eaton Service Solutions Group turnkey installation solutions are available worldwide, if interested please contact your Crouse-Hinds representative.

It’s recommended that the system be installed to communicate on redundant lines which ensure continued operation in the event of a failure. Having a redundant communication structure enables easy installation, maintenance and expansion when needed. The system can also support wireless communication as its redundant line option to help simplify large airport design.

When installing the Lamp Monitoring System (LMS) we offer a range of options to ensure the best fit between the LMS and the ALCMS. Traditionally this is done through Power Line Carrier but there are two additional options which reduce response time; a fiber enhanced power line and fiber optic communication structure. Please refer to Chart 1 for an example all the offered LMS response times. By using the Fiber Logitrac Device and Communicating via dedicated Fiber Optic Line the signal response time becomes less than 0.4 seconds and also doesn’t need any field devices to boost the signal no matter the circuit length. This faster response time is important for airports with routing and multiple aircrafts landing, taxing and departing at once.

Eaton’s Crouse-Hinds conducts a training course once installation is complete to train all essential airport employees to use and maintain the system. We also offer semi-annual maintenance seminars for new technicians or as a refresher course on maintenance and techniques for our entire product offering.

If there is an emergency or just a troubleshooting question we offer 24/7 availability through our help line. With the systems sophisticated diagnostics, a technician can pinpoint the problem using our remote access if the customer gives permission. This allows us to provide immediate help without having to travel to the airfield offers faster assistance.
Recapping the Key System Features

**Innovative Modular Design** makes being a step ahead possible. Allowing for various configurations to suit any size airport, the modular set-up simplifies installation and maintenance. System modifications and upgrades due to technology or expansions are uncomplicated.

**Failsafe Design** allows for secure control of multiple airfield lighting elements. The modular design allows for each controllable element, such as a CCR, Generator, Selector Switch, Beacon, etc., to have their own Digitrac interface to communicate. In the event of a failure, the failsafe system sets all elements to continue to operate at current state if on or activate to a preset stage if off.

**Comprehensive Real-Time Data** provides control tower, operations, sub stations and maintenance personnel with a complete picture of the airfield lighting system. The ALCMS will send an alarm communicating time, location and type of incident as soon as it occurs, reducing the amount of time and preparation required to respond quickly and efficiently. Maintenance is notified of all malfunctions as they occur via station monitor or SMS text.

**User-Friendly Interface** is able to offer customized application software using a standard development platform (MS Windows 7). The application, database & graphic user interface are designed and refined to the specific airport. Graphics match real airport layout from any position desired & color scheme can be based on customer preference. Using a familiar interface design allows users to quickly grasp a new system. Utilizing touch-screen control on flat panel displays, the system can be configured with single or multiple touch screens for control and monitoring at the customer specified locations. The intuitive nature of the touch screen with push button design is familiar to users and confirmation options ensure correct actions are followed. Lock out features can restrict access based on location stations. Operational procedures can define user access and capabilities. Software can also be updated and modified as updates become available or as airport needs require. System can be accessed remotely for diagnostics, trouble shooting and software modifications.

**Historical Information** is protected to allow operations and maintenance to print records, track trends and manage spare parts needs. This allows users to be aware of airport history and needs even if they are new to the airfield.

**Communication Network Redundancy** using two highly reliable independent communication networks for fast, reliable data transmission. The CHALP network can support wired and wireless media; twisted pair, power line, radio frequency, fiber optic and coaxial cable.

Team Up for a Brighter Future

As the business climate continues to change and the world moves faster, partnering with Eaton’s Crouse-Hinds Airport Lighting Products for airport control, monitoring and lighting needs is a good decision. We’ll assist in making sure that your system grows and changes as your needs do. It’s our mission to find a solution to any situation, from building new vaults and upgrading CCRs to new runways, taxiways and the list goes on. Contact an Eaton’s Crouse-Hinds representative today for a consultation and start having your questions answered.
Products for Control and Monitoring Systems

**Digitrac**
The Digitrac Interface is designed to control and monitor multiple types of airfield lighting elements from CCRs, CSSs, Stop Bars, Runway Guard Lights, SMGCS systems, Signs and more, offering a complete lighting field solution.

**Ferroresonant Constant Current Regulators**
The REGF is designed to provide precision control of runway lighting circuits. The equipment can be supplied with a wide range of control and monitoring options.

**Megatrac**
The Megatrac System automatically or manually monitors and reports the operational status of individual airfield lighting circuits insulation quality. The Megatrac System performs insulation resistance tests on the airfield lighting cables.

**Switchgear System Constant Current Regulators**
The SGS utilizes Ferroresonant Transformer technology for the distribution of electrical power and the precision of control of airfield lighting circuits. The equipment meets all FAA standards, integrates enhanced safety features, provides cost effective installation and serviceability, is air cooled and designed for indoor installations.

**Logitrac**
The Lamp Monitoring System (LMS) consists of devices that are installed both in the airfield and in the electrical substation. The LMS works with the ALCMS to receive commands and communicate back to the ALCMS the status of the lights on the airfield.

**Dry Constant Current Regulators**
The REGD is designed to provide precision control of runway lighting circuits. The equipment can be supplied with a wide range of control and monitoring options. These regulators are air cooled and designed for indoor service.

**RC Radio Controller**
The Radio Controller permits the remote activation of the airport lighting system by the pilot.

**Wet Constant Current Regulators**
The REGW is designed to provide precision control of runway lighting circuits. The equipment can be supplied with a wide range of control and monitoring options. These regulators are oil cooled and designed for indoor service.