



## BENEFITS

- **Reliable record keeping**
- **Secure data storage, backup and replication**
- **Simultaneous multi-user access, per user and per-role access authorization and privileges**
- **Classification and categorization of the variety of operational information handled by shift personnel and other logbook users**
- **Simplified record entry; ability to attach files in various formats to each entry**
- **Event subscription, cellphone text-message, instant message (IM) or email based notification of responsible personnel**
- **Flexible integration with the enterprise resource planning and other company process automation software**
- **Easy past event information retrieval: this turns the logbook archive into a readily accessible storage of past operational experience**
- **Significant record keeping time savings and optimization of shift personnel work process**

## OVERVIEW

Electronic logbook Hedgehog-2 is a time-saving software package designed for control center operators and managers. This solution provides shift personnel with a unique opportunity to automate the routine log-maintenance work and to simplify operational record keeping and analysis.

Hedgehog-2 allows tracking and managing real-time data of various events such as power system state change, equipment outage, relay or special protection scheme operation, communication or computing equipment failure, dispatcher directives, neighboring system personnel inquiries, etc.

The latest version of Hedgehog-2 features a wide range of additional functions and subsystems, including maintenance log and complementary configurable data fields. We have redesigned the software interface and implemented multi-language support, in order to make the interaction with our logbook easier and more user-friendly.

## KEY FEATURES

Electronic logbook Hedgehog-2 includes the following features:

- Simultaneous access to operational data by multiple authorized users
- Simple logging of events using configurable set of templates (keywords)
- Automatic generation of log entry chains with logical (e.g. related to the same event) or technological (e.g. related to the same piece of equipment) interdependencies
- Classification of entries by event categories, event objects, log authors and other criteria
- Shift personnel role distribution, shift scheduling and automation of shift handovers

Entry time	Event time	Entry category	Incident facility / equipment	Contents	Made by...	From/To
01 Nov 2013 9:22	01 Nov 2013 9:02:48	Equipment outage	OESK	UL 330 was properly and completely inspected. Lightning flashover. Repair is not necessary. Information from DD.	Lazarenko A.F.	
01 Nov 2013 8:47	31 Oct 2013 13:17:39	Voltage regulation	Central	At Lazarenko's command RI put in redundancy	Lazarenko A.F.	
31 Oct 2013 14:12	31 Oct 2013 14:12:22	Data	ME	CACHE database restart	Lazarenko A.F.	ME : ME
31 Oct 2013 14:10	31 Oct 2013 14:10:42	Equipment outage	AzE DR	According to standard order, VL Derbentskaya was disconnected. Information from DD	Molchanov V.A.	AzE: Nuriev DZ: Karimov
31-Oct-2013 14:08	31-Oct-2013 13:17:39	Voltage-regulation	Central	At Lazarenko's command RI put in redundancy	Molchanov V.A.	
31 Oct 2013 14:03	31 Oct 2013 14:03:12	Servers restart	PAK	SCADA service restart at CKOIK3. Software update	Molchanov V.A.	UR Operator to: Guseva E.A.
31 Oct 2013	31 Oct 2013	Load	ME	ME	Molchanov V.A.	ME : ME

- Adding log attachments of different formats (procedures, regulatory documents, images or audio recordings of telephone conversations)
- Adding comments in multiple levels
- Adding clearances and authorizations with automatic notification of responsible personnel
- Editing log entry drafts
- Data export to popular file formats
- Sophisticated system of log entry searching and filtering
- Progressive creation of a printed copy of the logbook keeping track of already printed data span and proper sequential page numbering across the whole log
- Automatic notification of responsible personnel on operational events via email or instant messaging. In integration with Event Notifier (a program developed by Monitor Electric), notifications can be automatically sent via SMS and Jabber
- Seamless integration with CK-2007C, MODES-Centre and other software packages by Monitor Electric as well as third party developers

The logbook provides high level of data integrity and security. Once an entry is logged, it cannot be changed, cancelled or deleted without leaving a record about the change. Should the entry be edited, a new overwriting entry is created and linked

to the existing one. The overwritten entry, appropriately marked, remains in the archive.

The logbook has a well-documented API for external system entry creation. Thus, other programs may be configured to automatically create entries in the logbook.

## ELECTRONIC LOGBOOK COMPONENTS

The logbook contains the following major modules:

- Logbook core module
- Logbook configuration and setup
- Facilities, equipment and personnel list editor
- Security log maintenance
- Handover logbook
- Authorization system
- External program access module
- Network, redundancy and backup configuration system
- Data synchronization module

## INFORMATION SECURITY

Sophisticated security system based on modern requirements and corporate security standards ensures a reliable data protection against unauthorized log access, entry deletion, alteration and forgery.

Hedgehog-2 configuration	Target users	Features
Integrated with CK-2007C SCADA/EMS	Utilities, where SCADA CK-2007C is implemented	<p>Can only be installed on computers (client and server), where CK-2007C is installed.</p> <p>Requires close interaction with SCADA CK-2007C, including import of entries from various SCADA subsystems and use of authorization system settings and informational models.</p> <p>Enables simultaneous access to logbook data by multiple users.</p>
Standalone	Companies not using SCADA CK-2007C	<p>Database archive storage on multiple (usually two or three) independent servers providing real-time automatic data synchronization.</p> <p>Enables simultaneous access to logbook data by multiple users with different privileges. Full support of network-based Microsoft Active Directory authorization system.</p>

The logbook assigns a unique digital signature to every entry as well as to the whole log. This way, unauthorized entry manipulation cannot pass undetected. To simplify security control, the logbook security system maintains a specialized audit log – all transactions are recorded in the system.

Hedgehog-2 has a triple-level data access authorization system. Moreover, to ensure information security, the logbook maintains multiple backups as well as on- and off-site replication copies of the entries and other key data. The logbook automatically synchronizes the data between the original and the replicas.

A flexible user management system allows assigning individual access permission to each user within the context of his/her own role and areas of responsibility. User rights can be configured for the following functionality:

- Creating/viewing log entries of certain categories
- Adding/viewing log attachments for certain categories of entries
- Adding/viewing comments on entries of certain categories
- Adding clearances and authorizations
- Managing log chains
- Logging on as shift duty personnel

The access to the logbook may be restricted to the specific computers.

## ■ LICENSING

Besides the main software program Electronic logbook Hedgehog-2, there are three more autonomous subsystems functioning based on Hedgehog-2 platform. These subsystems require separate licensing as follows:

- Hedgehog-2. Log exchange system
- Hedgehog-2. Universal fields and reports
- Hedgehog-2. Maintenance log

General client/server architecture is used in Hedgehog-2 licensing system:

- Hedgehog-2 server is a basic unit of Hedgehog-2 licensing. A typical licensing agreement gives the right for deployment of a single primary and two replica servers to protect logbook data from system failure or hardware malfunction.
- Logbook client software is licensed by the number of workstations providing access to Hedgehog-2 server.

The logbook software is usually delivered to the customer according to the general agreement for software delivery signed between Monitor Electric and the customer.

Electronic logbook Hedgehog-2 can be delivered in two versions, described in the table.

## DEPLOYMENT

Electronic logbook Hedgehog-2 can be deployed in three possible configurations: standalone, network and integrated with SCADA/EMS CK-2007C.

In network multi-user configuration, the client and server parts of the logbook are installed on separate computers. The server part is installed on a dedicated computer, while the client software is set up on the personal workstations. In this case, the logbook authorization system integrates with Microsoft Active Directory and requires appropriate network and software infrastructure for authorization.

In standalone single-user configuration the user authorization is based on local operating system accounts. If the logbook is integrated with CK-2007C, the logbook uses this SCADA's authorization system.

All Hedgehog-2 deployment configurations ensure database storage on multiple redundant servers with automatic data synchronization.

## SYSTEM REQUIREMENTS

Depending on deployment configuration, Hedgehog-2 requires the following operating system and database installations.

Configuration	Client	Server
<b>Standalone Edition</b>		
Standalone network, multiuser	MS Windows XP/7	MS Windows XP/2003/2008 Server; MS SQL Server 2005/2008 /2012 Workgroup/Standard Edition
Standalone for 1 computer, single-user	MS Windows XP/7, MS SQL Server 2005/2008/2012 Express	
<b>Integrated with CK-2007C SCADA/EMS Edition</b>		
Integrated with SCADA/EMS CK-2007C	Client hardware should ensure proper work under the installed operating system	OS and DBMS CK-2007C Server hardware should ensure proper operation of DBMS (considering the number of logbook users) and effective data protection (considering requirements for data storage capacity)

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