Approved

Director of JSC CONCERN TITAN-2

Branch in Cairo

/ signature / A. Burnatseva

\_\_\_ January 2023

**Terms of Reference for installation of access control system**

**at the El-Dabaa NPP construction site**

1. **General information**
   1. **Work description**

Installation of an access control system (ACS) in the administrative facilities.

* 1. **Description of facilities**

Construction facilities are located at the El-Dabaa NPP construction site.

Room schedule will be submitted to concerned parties by email.

1. **Requirements to the access control system**

**2.1 General requirements**

**The access control system must provide the following features:**

* 24/7 operation;
* Implementation in a separate, stand-alone network in order to prevent unauthorized access;
* Opening of a controlled gate (CG) upon reading an identifier that allows access to the given zone (room or area) within a programmed time frame or by a ACS operator’s command;
* Rejection to open the CG upon reading an identifier that does not allow access to the given zone (room or area) within a programmed time frame;
* Authorized change (to add or delete) of identifiers in the control unit (CU) while setting their operation in relation to access zones (rooms) and time frames;
* Protection from unauthorized access to the CU’s software to change (to add or delete) the identifiers;
* Protection of software and hardware from unauthorized access to their controls and to user ID and password databases, as well as from mode selection;
* Saving settings and identifier database in case of power loss;
* Manual, semi-automatic or automatic opening of the CG to provide access in case of emergencies, fire or technical failures in accordance with the effective procedures and fire safety rules (regardless of the state of the ACS control computer);
* Automatic opening of specific doors upon fire alarm (the doors to be selected in accordance with ARE’s fire safety regulations);
* Opening or locking of any doors equipped with the ACS from the system operator’s workstation;
* Automatic closing of the CG after a specific time period if no one passed through it upon reading the authorized identifier;
* Closing of the CG for a specific time period together with activation of alarm if someone is trying to pick the identifiers;
* Display in the operator’s screen, registration and logging of current and emergency events;
* Provisions to view and print the system’s logs (operator’s activities, system events, passages, alarms and emergencies);
* Provisions for local (for a single access point or access zone) and global (for all access points) control over anti-passback. The preferred implementation method is via the ACS’s hardware without relying on the control computer and regardless of its status;
* Offline operation of the CG’s reader in each access point within a given time frame in case of lost connection with the ACS’s server, with logs saved in the CG’s own memory;
* Provisions for backup copying (duplication) of the total user database and event archive;
* Provisions for database archiving and archive viewing in offline mode;
* Provisions for keeping track of staff work hours and its assessment, checking whether an employee is at work, view his/her overtime hours (undertime hours), late arrivals and early leaving from work;
* Provisions for filtering of employees by company division for more convenient work with the system’s database;
* Distribution of users by the type of their passes:

1. Permanent pass (valid while the person is part of the staff);
2. Temporary pass (valid for a specific period and is deleted automatically from the system upon expiry);
3. Guest pass (for single entry);

**2.2 Requirements to operation conditions:**

The equipment and hardware installed outdoors must be resistant to external forces in Egyptian climate).

**2.3 Requirements to operational safety of devices and hardware:**

* The equipment and ACS networks must be safe for users who follow their safety rules;
* The equipment and ACS networks must be safe harmless for health of people who have access to the site;
* The equipment must comply with electrical safety requirements;
* The equipment must comply with fire safety requirements;
* Earthing resistance must be 4 Ohm or less;
* The equipment, its layout and operation conditions must comply with requirements of the “Sanitary rules and standards”.

**2.4 Requirements to duration of continuous operation:**

The ACS’s equipment must be operational around the clock and without interruption at nominal power network voltage of 220 V ±10%, frequency of 50±5 Hz.

**2.5 Requirements to power supply**

The ACS’s equipment must be powered via the existing electrical power network at voltage of 220 V ±10%, frequency of 50±5 Hz, through one switchgear with automatic circuit breakers.

Uninterruptible power supplies (battery powered) must be used a backup power source to ensure that the system remains operational during power outage. Additionally, a backup diesel power generator must be included so that the batteries of the uninterruptible power supplies could be charged by them if needed or in case of a long power outage.

**2.6 Requirements to service and repair:**

Service and maintenance of the ACS can only be performed by authorized personnel with proper qualifications, upon review of the user manuals and successful completion of safety rules tests.

The ACS service must consist of scheduled and preventive operations, inspections of the ACS’s elements for proper operation, assessment of breakdown causes. The scope, due dates and description of such operations must be specified in the design documentation;

**2.7 Requirements to upgradability**

The ACS’s configuration and chosen equipment must allow for expansion of the system in terms of both hardware and software without compromising performance of the entire system, as well as for replacement of equipment with compatible units with similar parameters from other brands.

**2.8 Requirements to reliability:**

The ACS’s operational life must be 7 years or more. Individual failed parts and elements with a shorter service life can be replaced.

**2.9 Requirements to warranty obligations**

The ACS must have a warranty period of 2 years or more since the date when its commissioning certificate is signed.

1. **Contents of the ACS:**

The following items must be included in the ACS, with their quantities to be defined during the design stage:

* Base interface module (statistics + work hours tracking + company structure + report sheet with adjustable parameters + sound) operating under MS Window 10 Enterprise;
* System controller;
* Access hub;
* Battery;
* Reader;
* Button to request exit;
* PROX card;
* Turnstile with a built-in control unit and control panel for indoor use;
* Foldable “antipanic” arms;
* LCD-screens not less than 21”;
* Provisions for integration and good connection with SAP s4 HANA;
* Provisions for link via a 4G router;
* The ACS’s software must provide for full integration with other external devices to allow exchange of data on device status and statistics through a free SDK supplied with the ACS package.
  1. **Requirements to functional structure**

The ACS’s technical features should enable the following functions:

* Reading of identifiers from identification means (electronic passes). For contactless identification means, reading must be reliable within the distance specified in the datasheet;
* Comparison between the submitted identifier and the one stored in memory or the CU database;
* Sending a signal to open the CG when the user is identified;
* Exchange of data with the CU;
* The identifier reader device must be protected from tampering through exhaustion or picking of identifiers.
* If the typed code is incorrect, a temporary input lock must be enforced in order to make code exhaustion impractical. At the same time, the duration of the input lock must not impede the design passage capacity. If a wrong code is typed three types, an alarm must be sent to the main control panel, possibly together with a light or sound alarm.

**3.2 Requirements to actuators**

* Actuators must ensure closing and opening of the lock or the gate upon receiving a control signal from the CG, as well as the design passage capacity;
* The recommended operational voltage is 12 or 24 V. However, for some actuators (gates, heavy doors, boom barrier), it is allowed to use power from 220/380V networks;
* Intentional damage to the external coupling circuit must not cause opening of the CG;
* In case of power outage, the actuators must have provisions for receiving power from a backup source, as well as emergency mechanical opening of the CG. The emergency opening system must have protection from using it for unauthorized intrusion;
* The actuators must be protected from vandalism and potentially damaging external factors (electromagnetic fields, static electricity, unstable power voltage, dust, humidity, temperature etc.);
* When selecting door closers, one must consider the load (weight) of the CG, as well as quantity of open/close cycles. These parameters are specified in the device datasheet.

**3.3 The system must contain the following computer work stations (CWS):**

* CWS of the ACS’s administrator;
* CWS of the ACS’s operator in the room of the Administrative and Maintenance division;
* CWS of the ACS’s operator at the site access gates;

***3.4 CWS of the ACS’s administrator shall provide for:***

* Configuration of access control system and access rights differentiation;
* Maintenance of ACS data base;
* Monitoring of serviceability of ACS technical equipment;
* Fulfillment of informational, analytical and statistical tasks; preparation of ACS reports.

**3.5 CWS of the ACS’s operator at the access gate shall provide for:**

* Display of messages about activation of ACs equipment at the access gate;
* Registration of information (data) from ACS equipment and control commands; confirmation of completion thereof;
* Receipt of urgent information regarding the condition of ASC equipment/

**3.6 CWS in the office of Maintenance and Supply Department (MSD) shall provide for:**

* Access to ACS data base;
* Fulfillment of analytical and statistical tasks; preparation of ACS reports;
* Fulfillment of. Information, analytical and statistical tasks; preparation of ACS reports;

**3.7. Passes preparation system must provide for:**

* The size of the TV screen in the emergency communication center not less than 21”;
* Execution, accounting and monitoring of all types of electronic passes and requests to issue thereof;
* Remote request for passes using available means;
* Prompt preparation of reports regarding the movement of persons, passes and requests;
* Back-up and archive storage of passes data bases;
* Setting of access levels, temporary zones and holidays;
* Preparation of templates for passes and printing thereof from the program;
* Interaction with passes personalization system – uploading of photos, preparation of templates for printing;
* Registration of all operations with passes;
* Interaction with external data sources (import and export of data about the employees);
* Cards numbers must not repeat in the system;
* Printer for plastic cards/

1. **Requirements to the location of equipment**

***4.1. Access Points***

***Access points to the building are:***

* Access to the canteen shall be equipped with in/out card readers to register the date and time when the employees enter and leave;

***4.2 Requirements to the location of power supply and control at the facility;***

* ACS power supply units shall be installed in a separate protected place of the canteen.

***4.3. Requirements to power supply and earthing***

To do power supply from uninterruptable power supply sources after installation of power meters:

* Main input – 220W, 50 Hz from existing power panel;
* Stand-by input – from auto-charging accumulators.

1. ***Requirements to installation***

***5.1. General requirements***

ACS equipment shall be installed in compliance with the requirements of regulatory documents and manuals (passports) for the supplied equipment.

Earthing for all ACS equipment shall be done according to the requirements for computer centers equipment.

Installation shall be done with minimal violations of the interior.

Drafted by: /signature/ E. Demchenko