APPROVED BY

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Terms of Reference for Access Control System Installation at the Construction Facilities of the El-Dabaa Construction Site

1. General Information.

1.1 Work description:

Construction facilities equipment with an access control system.

1.2 Facility description:

Construction facilities are located in the territory of the El-Dabaa NPP construction site.

2. Requirements for the Access Control System.

2.1. General requirements.

Access Control System shall ensure the following:

* continuous operation;
* in order to eliminate unauthorized access, the access control system shall be deployed in a separate dedicated network;
* hardware and software protection from unauthorized access to the controls, mode setting, and to information such as system of passwords and user identification;
* retention of settings and identification database during power outage;
* display current and alarm events at the operator panel, their record and logging;
* ability to view and print the system operation log (operator's actions, system events, client passages, alarms and emergencies);
* ability of local (by single access point, access area) and global (by all access points) antipassback. This function is to be preferably implemented using ACS hardware without involvement of the process computer and independently of its state;
* offline operation of reader with a switching unit in each access point in case of ACS server communication failure within the set time, with the event log being saved in the off-line memory of the switching unit;
* ability of general user database and event log backup (duplication);
* ability of database archiving and offline archive viewing;
* ability to analyse and collect statistics on working hours of employees, analyse the employees’ attendance at the workplace, overtime (undertime) hours, late attendances and early leaves;
* ability to distribute the employees in accordance with the enterprise structure for more comfortable work with the database of the system clients;
* tracking of the system clients according to their pass types:

a) permanent passes (are valid during the entire employment period of the employee);

b) temporary passes (are valid during a certain period and are deleted from the system upon its expiry);

c) visitor passes (for a single passage).

2.2 Requirements for operation conditions:

Equipment and instrumentation being installed at the construction site shall be resistant to environmental effects of the ARE climate. The equipment shall be represented by a box sized approximately 60×80 cm (to be handled within the construction site) protected from rain and sand. 15 pcs of such devices are required.

2.3 Requirements for hardware operation safety:

* The equipment and networks of the access control system being installed shall be safe for the persons who adhere to their operation rules;
* The equipment and networks of the access control system being installed shall cause no harm to the persons having access to the territory of the facility;
* The equipment being installed shall comply with the electrical safety requirements
* The equipment being installed shall comply with the fire safety requirements
* Ground resistance shall not exceed 4 Ohm;
* The equipment being used, its arrangement and operation conditions shall comply with the requirements of *Sanitary Regulations and Standards*.

2.4 Requirements for continuous operation period:

The ACS equipment shall operate 24/7 under normal supply voltage of the 220V ± 10%, 50 ± 5 Hz power grid.

2.5 Requirements for electric power supply:

Power supply of the ACS equipment shall be self-contained (solar cell + uninterruptible power supply unit).

**2.6**Requirements for maintenance and repair:

Only persons having respective qualification, having studied operation manuals and passed occupational safety exams shall be admitted to the ACS maintenance and operation.

ACS maintenance shall include routine and scheduled works, checking operability of the ACS elements, analysis of failure reasons; the scope, terms and description of works shall be provided in the design documentation.

2.7 Upgradeability requirements:

ACS configuration and equipment used shall ensure ability to scale the system by expanding its hardware and software components without disturbance to performance of the installed complex as well as equipment replacement with compatible items having similar parameters produced by other manufacturers.

2.8 Reliability requirements:

ACS service life shall be at least 7 years. Replacement of separate units and elements with a service life less than the above is allowable.

2.9 Requirements for warranty obligations:

The access control system shall have a warranty period of at least one year since the day its commissioning certificate has been signed.

3. Structure of the Access Control System:

The Access Control System shall consist of the following:

* Base interface module (statistics + working time tracking + enterprise structure + programmable sorting report sheet + sound) under MS Windows 10 Enterprise;
* System controller;
* Access concentrator;
* Battery;
* Reader unit;
* Exit call button;
* PROX card;
* AWS for the system operation
* The system shall be integrable and have two-way communication with SAP s4 HANA.
* The ACS software shall function under the following operating systems: Windows 7, Windows 8, Windows 10 (both 32 and 64-bit versions);
* The ACS software shall provide ability of full integration with other external systems with regard to communication of information on the state of devices, reports, statistics, etc. using free SDK within the ACS software;
* The ACS software shall provide ability of the system further expansion (number of controllers, users of the system, number of remote work stations) without the need to acquire additional hardware (controllers) and software (remote work stations) licenses, etc.
* 4G connection (router).

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| Parameter | Description |
| Identification time | ≤0.5 s |
| Identification method | Facial identification, fingerprint, RFID cards |
| Number of users | 15,000 |
| Number of records stored: | 1,000,000 |
| Number of reader units | 15, including 10 2-terminal units (one for entry and one for exit), 5 4-terminal units (two for entry and two for exit) |

3.1 Requirements for functional organization.

The Access Control System hardware shall ensure the following:

* identification data reading from identifiers (security badges). For proximity identifiers – reliable reading within the reading distance specified in the product data sheet;
* comparison of the entered identification data with those stored in the memory or database of the control device;
* generation of switching unit opening signal after user identification;
* information exchange with the control device;
* Identification data input device shall be protected from tampering by enumeration or picking of identification data;
* Upon entry of an incorrect code, the entry shall be blocked for a time sufficient to make direct enumeration of the code impractical. At the same time, blocking time shall be selected in a way to provide the set capacity. After the incorrect code has been entered three times, an alarm shall be sent to the central station with an ability to be duplicated with a sound/visual annunciator;

3.2 Requirements for control devices:

* Control devices shall be protected from effects of harmful environmental factors (such as electromagnetic fields, static electricity, unstable supply voltage, dust, moisture, temperature, etc.) and vandalism.

3.3 The system shall contain the following automated workstations (AWS):

* ACS administrator AWS (Safety Director);
* ACS operator AWS in the room (Safety Directorate).

3.4 ACS administrator AWS shall provide the following:

* configuring the ACS system and assignment of access rights;
* keeping the ACS database;
* operability control of the ACS hardware;
* handling information, analytical and statistical issues and preparation of ACS reports.

3.5 ACS operator AWS in the Safety Directorate room shall provide the following:

* display ACS units’ actuation data at the construction facilities;
* logging information (data) from the ACS units and devices as well as control commands, their receipt and execution;
* gaining the latest information on the state of the ACS hardware;
* viewing the ACS database;
* handling analytical and statistical issues and preparation of ACS reports.
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3.6 The pass preparation system shall provide the following:

* the TV-display screen shall be at least 21";
* plastic card printer;
* execution, accounting and management of all types of electronic passes and applications for them;
* remote ordering of passes via available communication channels;
* preparation of report forms on movement of persons, passes and applications;
* backup and archive storage of pass databases;
* setting access levels, time zones and holidays;
* preparation of pass layouts and printing on the access cards directly from the program;
* interaction with the card personalization system – insertion of photos and preparation of pass templates for printing;
* using a table-type reader to automate operations with passes;
* logging all operations with passes;
* interaction with external data sources (import and export of the employee data);
* There shall be no several access cards with the same number in the system.

4. Requirements for the equipment supply.

4.1 Access points.

Access points to the construction facilities are as follows:

* Arrangement of portable readers in the territory of the El-Dabaa construction site by instructions from the management (if required).

4.2 Requirements for electric power supply.

Power supply shall be self-contained (solar cell + uninterruptible power supply unit).

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