



**LIBERTY**  
**Liberty Galați**

**AUTOMATION, DIGITALIZATION**  
**DEPARTMENT**

## **GENERAL IT REQUIREMENTS FOR NEW AUTOMATION SYSTEMS**

**Ver. 02**  
**11 Iunie 2020**

### **AUTOMATION, DIGITALIZATION DEPARTMENT**

#### **GENERAL IT AUTOMATION REQUIREMENTS FOR NEW AUTOMATION SYSTEMS**

##### **1. GENERAL requirements**

- SUPPLIER should deliver state of the art hardware and software (must be approved by Liberty Galati-DAD)
- For critical equipment's at least one spare part should be provided for each component
- Time synchronization for computers and PLCs
- All HMI must be provided both in English and Romanian with online switching
- HMI screens for quick visual detection of non-functional automation equipment's and power supply status
- All computers (clients and servers) will be mounted in 19" racks (SUPPLIER scope of supply) and a Keyboard Mouse KVM Console with appropriate monitor resolution should be provided for local management. All racks will be installed in environmental and security-controlled rooms, separated by the operators room
- Redundancy must be implemented both for Level 1 and Level 2 servers (allowing the availability of at least one server at a moment in time). A spare server must be provided for each level (L1 and L2).
- Level 1 and Level 2 server functionalities must not share the same physical machines
- Level 1 must be capable of controlling and monitoring the process without the optimization features of Level 2. In the case of complete failure of Level 2 computers, Level 1 must remain functional
- 

##### **2. SOFTWARE, DEVELOPMENT AND LICENSES requirements**

- Any single piece of software delivered by the SUPPLIER under this contract must be accompanied by all necessary licenses.
- If there are licenses that there are non-perpetual LIBERTY GALATI must be informed and the annual fee for using them must be clearly specified
- The SUPPLIER must provide what is necessary (development stations, software, licenses, training, (not protected by passwords) source code /projects) as LIBERTY GALATI specialists to continue development of Level 1 and Level 2 software.



**LIBERTY  
Liberty Galați**

**AUTOMATION, DIGITALIZATION  
DEPARTMENT**

## **GENERAL IT REQUIREMENTS FOR NEW AUTOMATION SYSTEMS**

**Ver. 02  
11 Iunie 2020**

- Full documented source codes of the software should be provided. For the following types of software this rule will not be imposed: standard software (not SUPPLIER proprietary software e.g. Operating System), Level 2 models and not PROJECT specific SUPPLIER proprietary software (e.g. Libraries of functions)
- For a DB server, only the Microsoft SQL Server is acceptable. Oracle, My SQL, etc. are NOT an option. The SUPPLIER will provide maintenance (local daily backups, purging old data, etc.) tasks for DB. The physical storage of server will assure that data can be stored for the period required by LIBERTY GALATI.
- Windows operating systems (last current versions) are required for all computers. If Windows 10 is used for clients, the edition Pro/Enterprise are required
- In the case of virtualization solutions only the Microsoft Hyper-V or VMware vSphere are acceptable. A computer (server type) for maintenance of virtualization infrastructure will be provided
- A Backup and Restore system will be provided for whole automation
- Space will be made available local or on a separate SAN/NAS to store the backups for the period required by LIBERTY GALATI.

### **3. CYBER SECURITY related requirements**

- Local Networks provided by Supplier will be integrated in the LIBERTY GALATI process network.
- Computers must be included in process LIBERTY GALATI domain (sip. Local), in order to apply group policies and patch management
- LIBERTY GALATI compatible antivirus (ESET NOD 32) will be installed on each computer
- The antivirus will get updates from the antivirus update server
- The SUPPLIER applications must run from an account that is NOT the "Administrator".
- The "Administrator" account must be deactivated from security reasons. Of course, this implies that the SUPPLIER software should not be installed from the "Administrator" account
- Personal UserIDs (e.g. Ion.Popescu) are recommended to be used, not generic (e.g. operator,dispecer) accounts.
- Shared UserIDs are tolerated only in special approved situations for people working in shifts, using limited privileges.



LIBERTY  
Liberty Galați

AUTOMATION, DIGITALIZATION  
DEPARTMENT

## GENERAL IT REQUIREMENTS FOR NEW AUTOMATION SYSTEMS

Ver. 02  
11 Iunie 2020

- Different levels of security are necessary to be implemented by design on all installed software (system software, application software)
- The "autorun" functionality have to be disabled for removable equipment/media such as CD, DVD, USB keys, external disks
- For non-administrator users, a password of minimum 8 characters must be enforced.
- For users with administration rights, a password of minimum 10 characters must be enforced.
- Default passwords (for operating systems, databases, network equipment and other applications, platforms, or devices) must be suppressed and replaced by new robust passwords.

#### 4. HARDWARE AND SYSTEM related requirements

##### 4.1 Requirements for PLCs and Converters

- Accepted brands: Siemens-*favorite*, Rockwell/Allen Bradley, Schneider
- Must be equipped with Ethernet communication card

##### 4.2 Requirements for all SERVER type (e.g. L1, L2, IBA, DB, CCTV, etc.) computers

- Only HPE brand is accepted
- minimum Proliant DL380 Gen10 hardware is accepted
- minimum Intel Xeon-Silver 4114 processor(2.2GHz/10-core/85W)
- minimum 128 GB RAM
- HDD configuration: 2 x SSD (min 200 GB) in RAID 1 for the SYSTEM and at least 5 x HDD 2TB in RAID 6 for APPLICATION/STORAGE.
- 19 "type, rack mounted
- KVM extension
- Windows Server 2016 Server license (**all processor cores** must be licensed)
- Windows Server 2016 **CALs** for all the clients that access the server
- Maximum 50% CPU load
- HPE ILO advanced feature (allows remote control) is mandatory
- Disk Imaging software license **for servers**
- Microsoft SQL Server license (only for DB servers)
- Microsoft SQL Server CALS for all the clients that access the DB server (only for DB servers)



**LIBERTY**  
**Liberty Galați**

**AUTOMATION, DIGITALIZATION**  
**DEPARTMENT**

## **GENERAL IT REQUIREMENTS FOR NEW AUTOMATION SYSTEMS**

**Ver. 02**  
**11 Iunie 2020**

- Microsoft Office license (only if is needed by applications)
- Computer names and IP addresses will be delivered by LIBERTY GALATI
- runtime licenses for Level 1 or Level 2 software
- one server spare part must be provided for each Level.

### **4.3 Requirements for all CLIENT type computers**

- 19 “rack type industrial PC, rack mounted
- Thin clients are not an option
- Minimum 8 GB RAM
- HDD configuration: 2 x HDD (min 300 GB) in RAID 1
- connected at 2 x 24” monitors mounted on 2 levels
- KVM extension
- Windows 10 Professional x64 license
- Maximum 50% CPU load
- Disk Imaging software license
- Computer names and IP addresses will be delivered by LIBERTY GALATI
- runtime licenses for Level 1 or Level 2 software
- one client spare part must be provided for L1 and one for L2

### **4.4 Requirements for ENGINEERING STATIONS**

- Minimum 16 GB RAM
- HDD configuration: 2 x HDD (min 200 GB) in RAID 1
- 19 “rack type industrial PC, rack mounted (mobile devices not acceptable)
- KVM extension
- Industrial keyboard and mouse
- Windows 10 Professional x64 license
- Maximum 50% CPU load
- Disk Imaging software license
- Microsoft Office license
- DVD/CD R/W drive



**LIBERTY**  
**Liberty Galați**

**AUTOMATION, DIGITALIZATION**  
**DEPARTMENT**

## **GENERAL IT REQUIREMENTS FOR NEW AUTOMATION SYSTEMS**

**Ver. 02**  
**11 Iunie 2020**

- Computer names and IP addresses will be delivered by LIBERTY GALATI
- runtime and development licenses for Level 1 (WinCC, STEP/PCS7) or Level 2 software (depending on ES role)

### **4.5 Requirements for Network**

- Allowed switches: at least CISCO Catalyst (with ports of at least 1Gb), industrial Siemens (at least Scalance X300 series) or HIRSCHMANN (MS20 or RS20) for the network switches
- All switches will be of administrable type.
- will be programmed together with LIBERTY GALATI for integration in LIBERTY GALATI networks
- rack mounted
- administration rights for LIBERTY GALATI
- all IP addresses will be delivered by LIBERTY GALATI
- the cost of interconnecting with existing LIBERTY GALATI network infrastructure must be considered.
- one switch spare part (for each type) must be provided

### **4.6 Requirements for CCTV system**

- Allowed switches: CISCO Catalyst with 1Gb ports
- Allowed cameras: Axis, fixed or mobile, according to the needs
- All switches will be of administrable type.
- will be programmed together with LIBERTY GALATI for integration in LIBERTY GALATI networks
- rack mounted
- administration rights for cameras and switches will be given to LIBERTY GALATI
- all IP addresses will be delivered by LIBERTY GALATI
- the cost of interconnecting with existing LIBERTY GALATI network infrastructure must be considered.
- cameras will be integrated in existing HRC Milestone VMS
- SUPPLIER must deliver the proper type and number of Milestone licenses
- one camera spare part (for each type) must be provided



**LIBERTY**  
**Liberty Galați**

**AUTOMATION, DIGITALIZATION**  
**DEPARTMENT**

## **GENERAL IT REQUIREMENTS FOR NEW AUTOMATION SYSTEMS**

**Ver. 02**  
**11 Iunie 2020**

### **5. DATA EXCHANGE and DATA STORAGE related requirements**

- The data exchanged will be defined by LIBERTY GALATI specialists in an Annex and the exchanging mechanisms will be mutual agreed (the simplest way, could be passing data using CSV or XML files). For the initial case of lack of connection with LIBERTY GALATI systems the SUPPLIER must create HMI screens that allow manually introduction of data in his system.
- In the case that the SUPPLIER must deliver a DB Server (only Microsoft SQL Server is acceptable), the data (measured values, detected events, consumption, L2 models inputs and outputs, planed and realized production) from all the SUPPLIER's automation systems (Level 1 PLCs, Level 1 special packages, Level 2 packages), must be collected in real-time using SUPPLIER's software in PLC and DB server. Must be possible for LIBERTY GALATI to extend later the number of data (e.g. with new PLC's inputs) stored in DB using the delivered SUPPLIER's tools. This DB must be possible to be queried by LIBERTY GALATI without restrictions.  
All data will be stored only in relation with the corresponding key (plate ID/number, slab ID, material ID) not only with the time of acquisition.
- The SUPPLIER must agree for the integration in all delivered PLCs, of LIBERTY GALATI software functions for communicating with LIBERTY GALATI PDC system (an IBA like system). The LIBERTY GALATI will do the actual commissioning of this specific function, not SUPPLIER.

### **6. Level 2 related requirements**

- Level 2 applications must be developed in modern, future-oriented environments (.NET languages) using industry-proven communication standards, like web services, and database services like Microsoft SQL.
- In case of using personal data the level 2 applications will be compliant with GDPR regulation.
- The Level 2 specialists shall join the project team for design, implementation, and supervision purposes.
- The application software shall be through high level language-based software modules. The software shall be user friendly and provided with help functions etc. Only one type of programming language shall be used if possible, for the complete system. Only debugged and tested software shall be provided.
- The software solutions architecture must be Client – Server.



**LIBERTY**  
**Liberty Galați**

**AUTOMATION, DIGITALIZATION**  
**DEPARTMENT**

## **GENERAL IT REQUIREMENTS FOR NEW AUTOMATION SYSTEMS**

**Ver. 02**  
**11 Iunie 2020**

- The PROVIDER must supply logging mechanism: e.g. trace logs, error logs.
- The software applications must implement an authentication system based on local (admin specified) users and domain users.
- The PROVIDER must supply a mechanism for database space optimization and archive system.

### **7. MODELS related requirements**

- SUPPLIER should deliver the test environment or methods for off-line simulation and description of full test conditions for model simulation
- SUPPLIER should deliver the bloc diagram of the model (the model integration schema in the process, Process Data Input, Process Data Output)
- Models applications must be developed in modern, future-oriented environments using industry-proven communication standards, like web services and database services like Microsoft SQL
- SUPPLIER should provide full description of variable and/or variable for control, used in the model, specifying the data source of them
- The SIMOP Section from Automation, Digitalization department, should be present in the project team in all phases of the project: design, implementation, and supervision of the model.
- The application software shall be through high level language-based software modules. The software shall be user friendly and provided with help functions. Only one type of programming language shall be used if possible, for the complete system.
- SUPPLIER should deliver the full documentation for the functionalities of the mathematical models, including process control model, optimization model, chemical-physics model and so on, depending of the application
- SUPPLIER should deliver the necessary documentation for management of the model and maintenance of the model.
- **Mathematical equation and/or variable used in the model**
  - SUPPLIER should deliver the description of the system / process being modelled
  - The algorithm (BEA – Basic Engineering Algorithm and DEA – Detailed Engineering Algorithm) of the model should be deliver for a better understanding of the model functionality and the impact on the process line (risk assessment)
  - The parameters and variables consist of the mathematical, physics, chemical equation included in the model should be provided with the documentation need for the better



**LIBERTY**  
**Liberty Galați**

**AUTOMATION, DIGITALIZATION**  
**DEPARTMENT**

## **GENERAL IT REQUIREMENTS FOR NEW AUTOMATION SYSTEMS**

**Ver. 02**  
**11 Iunie 2020**

follow up of the process engineers

- Level of precision for model output
- Range of values for model output in order to be valid
- Range of values for variables and/or data input, used in the model

### **8. DOCUMENTATION related requirements**

- Electronic documentation or Manuals of every piece of equipment or software used in Automation
- Detailed Hardware specifications, Network IPs, Name/Version of the Software installed on each and Licenses for software, for all IT related device (computers, VM, network switches, etc.).
- Documentation for installation/configuring of software (from bare metal to fully functional APP) for all computers
- Documentation for maintenance of APP and infrastructure
- Software documentation for developers
- Network diagram with all IP addresses (including iLO) for every communicating device
- Administrators and user passwords
- Manual for operating Backup and Restore system used
- Detailed databases description (document)
- Level 2 models configuring documentation
- Language of documentation: English or Romanian

### **9. TRAINING related requirements**

- Training for understanding software structure
- Training for understanding and using Level 2 software and models
- Training for software installation and maintenance
- Training for model maintenance
- Training for software changing/improvements
- Training for understanding CCTV system structure





**LIBERTY**  
**Liberty Galați**

**AUTOMATION, DIGITALIZATION**  
**DEPARTMENT**

## **GENERAL IT REQUIREMENTS FOR NEW AUTOMATION SYSTEMS**

**Ver. 02**  
**11 Iunie 2020**

### **10. Final deliveries requirements**

- All installation kits / iso of every piece of software (including operating systems, third party and SUPPLIER homemade software) used with exactly the version installed by SUPPLIER.
- The documentations specified at point 8.
- Final back-up images for all the computers (including final applications)
- Final version of the source code
- All documents that prove that the proper number of licenses (for all the software used in the projects) was legally bought
- All the above must be delivered on external storage devices (external HDD)