Preconditions for Installation
of the ARBURG Host Computer System (ALS 7.3)
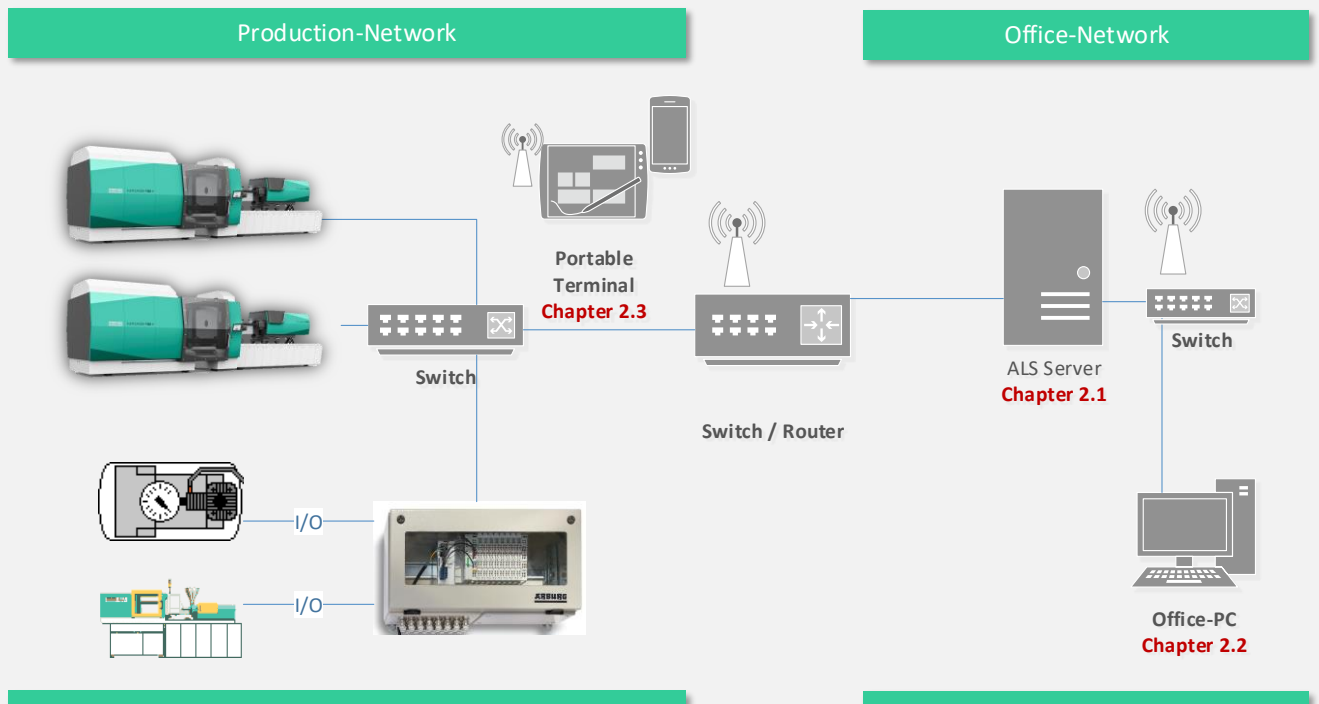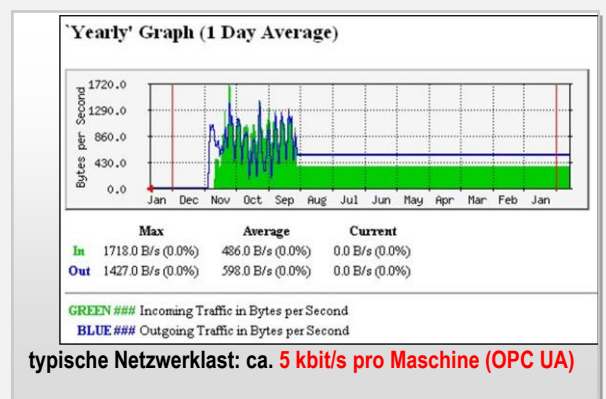
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1. Maschine - Network Layout

The plan illustrates the required wiring between the injection moulding machines (IMM) and the ALS Server. The wiring is to be carried out by a local IT department / company and to be adjusted to the local requirements. For the network, standard Ethernet components [100/1000BaseT(X)] are required. Configuration of injection moulding machines (IMM) is done in consultation with ARBURG.

1.1 Network

- The cables must at least correspond to Cat.5 and be doubled shielded (in pairs and in total, i.e. **Cat.5 S-STP** with RJ45 connector)
- The cable between switch and machine (Patch cable) must not be longer than 100 meter.
- Network Switch: 100/1000Mbps
- A maximum bus load not exceeding 30% is recommended (including broadcast telegrams).
- For remote locations a permanent network connection is required (with a minimum of 5kbit/s per machine)

typische Netzwerklast: ca. **5 kbit/s pro Maschine (OPC UA)**

1.2 Remote Access

The customer has to provide ARBURG with a remote access to the ALS server. The remote access is used for installation and support of the ALS system. The connection has to be tested together with ARBURG before setting into operation. The following products are supported:

- Go2Assist (no additional installation necessary)
- TeamViewer version 13 (no additional installation necessary)

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Hints:

- The ALS system can be expanded at any time with a connection for further machines.

- A conclusion of a software service contract (regular system updates and hotline support) is mandatory within the first year after purchase / installation. Before end of the first year, the contract can either be extended for another year or terminated. The corresponding software fee has to be paid for one year in advance.

- New functions or new ALS modules are offered at the respective sales price of the module

2. System Requirements

2.1 (Virtual) ALS–Server:

Operating System:	*Dedicated* Windows Server 2012 R2, 2016 or 2019 with at least 4 CPUs (Server language: German or English)
Hard Disk:	RAID-5 or separate hard disks for Windows OS, ALS and database **Recommendation**: at least 3 x 200 GB
Memory (RAM):	At least 12 GB free memory **Recommendation:** 16 GB
Database :	IBM DB2 Version 11.x

Express-C version of the database is recommended to connect of up to 70 Injection-Moulding machines. This Express-C version is delivered for free by ARBURG.
For more than 70 Injection-Moulding machines a „Workgroup Edition" is remommended. Therefore the customer has to provide ARBURG with an additional license.

User:	**ALS_001** as a local administrator for ALS installation and support **db2admin (*)** as a local administrator for database administration (users can also be domain users with local administrative rights)
Third Party Software:	ADOBE Acrobat Reader (current version)
Password Guidelines:	For users and passwords the following letters and special characters can be used: [A…Z], [a…z], [0..9], [#], [$], [@], [.],[_]

Usernames with [.] (Dot) included have to be fully written in CAPITAL letters!

(*) <u>Remark:</u>

DB2 instance user account

The user account must belong to the *<u>Administrators</u>* group on the computer where the installation will be performed.

A local or domain user account is required for the DB2 instance because the instance is run as a Windows service and the service will be executing in the security context of the user account.

<u>The following privileges must be granted:</u>
c:> whoami /priv

SeTcbPrivilege
SeDebugPrivilege
SeCreateTokenPrivilege
SeIncreaseQuotaPrivilege
SeLockMemoryPrivilege
SeAssignPrimaryTokenPrivilege
SeIncreaseQuotaPrivilege

ALS generates a cyclic backup of the database to a predefined directory on a local hard disk every night (i.e. 11pm / backup directory: \ALSBCKUP). Saving the corresponding directories lies in responsibility of the customer.

The directory of the ALS application (\als50) and the database directory must be excluded from cyclic backups and anti-virus checks.

2.2 ALS-Client

- WINDOWS 10, 8 or 7 (incl. latest service updates)
- At least 2 GB <u>free</u> memory (after complete software boot)
- Network connection (TCP/IP) to ALS-Server (Ports >> refer to chapter 2.4)
- Adobe ACROBAT Reader, recommended: MS-Excel (for data export)
- Write and delete permission to the local installation directory (e.g. \als50) is needed for the corresponding Windows-User to perform automatic updates of the ALS client

2.3 Portable terminals / web-based Clients

To access web-based ALS applications, like

- ALS Mobile Monitoring / Reporting

- ALS Mobile Production

- ALS Mobile Maintenance

- Info terminal

a current web browser with Websocket-Support is recommended. The web browser must be allowed to access the ALS server via network.

While using ALS mobile applications cookies must be allowed within the web browser. Using web based mobile ALS applications are subject to the safety regulations of your company (e.g. in accessing the network and servers by use of WLAN or VPC connections)

2.4 Firewall

between ALS Server and Client:	
• from ALS client to ALS server (incoming)	4000 – 4100 (TCP)
• from ALS server to ALS client (outgoing)	4110 – 4200 (TCP and UDP)
between ALS server and ARBURG-ALLROUNDER:	
• for injection mouding machines with VE 437/03 (serial interface)	4000 – 4200 (TCP and UDP) 5000 – 5005 (TCP) and 5004 (UDP) 8001 (UDP) Ping / Telnet(23/TCP) / FTP(20-21/TCP)
• for injection moulding machines with VE 437/10 (OPC-UA interface)	4880 (TCP)
between ALS server and mobile clients (ALS mobile)	
• from mobile device to ALS server	80 (TCP) – can be configured
between ALS server und ARBURG I/O modules	
• both directions for TCP-Modbus	502 (TCP)

2.5 Maschine Connectivity

The following requirements have to be fulfilled to connect competitor injection moulding machines. Retrofit and machine hardware delivery is handled by the corresponding machine manufacturer.

Manufacturer / Control	Retrofit	Connectivity / Data Exchange
ARBURG • DIALOGICA • MULTRONICA • SELOGICA • GESTICA	• VE 437/03 (serial) • VE 450/30 (OPC-UA)	• Serial = Communication node [*1] • OPC-UA = IP configuration (SELOGICA)
ENGEL • CC100 • LC200 • CC200 • CC300	• EUROMAP 63 / 77 • Special option (CC100/CC200/CC300) Art.-No. 91998-1015 [*5] • ID 0002657: CC300: Access to PD-Parameters by use of virtual additional parameters. • XFI-Version > v6.33.11 • CC300: Maschine-Software: 4.12.04 or higher	• eFactory Software via network share path [*2]
FERROMATIK • MOSAIC • IQT (Prot.2)	• EUROMAP 63 (Mosaic) • Protocol 2	• Network Share Path (for EUROMAP 63) • Communication node [*3] (for Protocol 2)
BATTENFELD • B4 • B6 • B8	• EUROMAP 63	• Network Share Path (for B4 only Windows Server 2008 R2 is supported)
NETSTAL • DSP3 • DSP4 • DSP5	• EUROMAP 15	• Direct IP communication
DEMAG • NC4 [*4] • NC5 • NC5 Systec • NC6	• EUROMAP 63 • Option ZE 471 [*4]	• FTP-Server (provided by the customer IT)

KRAUSS-MAFFEI ▪ MC4 ▪ MC5 ▪ MC6	▪ EUROMAP 63 ▪ Additional option for E63 / special programming 5843114 (MC4 / MC5)	▪ FTP-Server (provided by the customer IT)
STORK ▪ SX	▪ EUROMAP 63	▪ FTP-Server (provided by the customer IT)
NEGRI BOSSI ▪ NB2001 ▪ ORION	▪ EUROMAP 63	▪ PC-Software of machine manufacturer [2]
TOYO ▪ TOYO	▪ EUROMAP 63	▪ Network Share Path
FANUC ▪ ROBOSHOT ▪ S2000iA ▪ S2000iB	▪ EUROMAP 63	▪ PC-Software „Factolink" of machine manufacturer [2]

Changes and Errors excepted. There is no entitlement to completeness. Last update: 03/2019

[1] = Delivery with option VE 437/03 „SELOGICA host computer interface". Retrofit is perfomed by ARBURG Service.

[2] = Installation and configuration perfomed by machine manufacturer.

[3] = Delivery of the communication node performed by ARBURG. VE 611/01 necessary for each machine.

[4] = Option ZE 471 is an essential requirement for machines with NC4 control.

[5] = Allows machine program handling (DNC) with host computer system (OPT112346).