

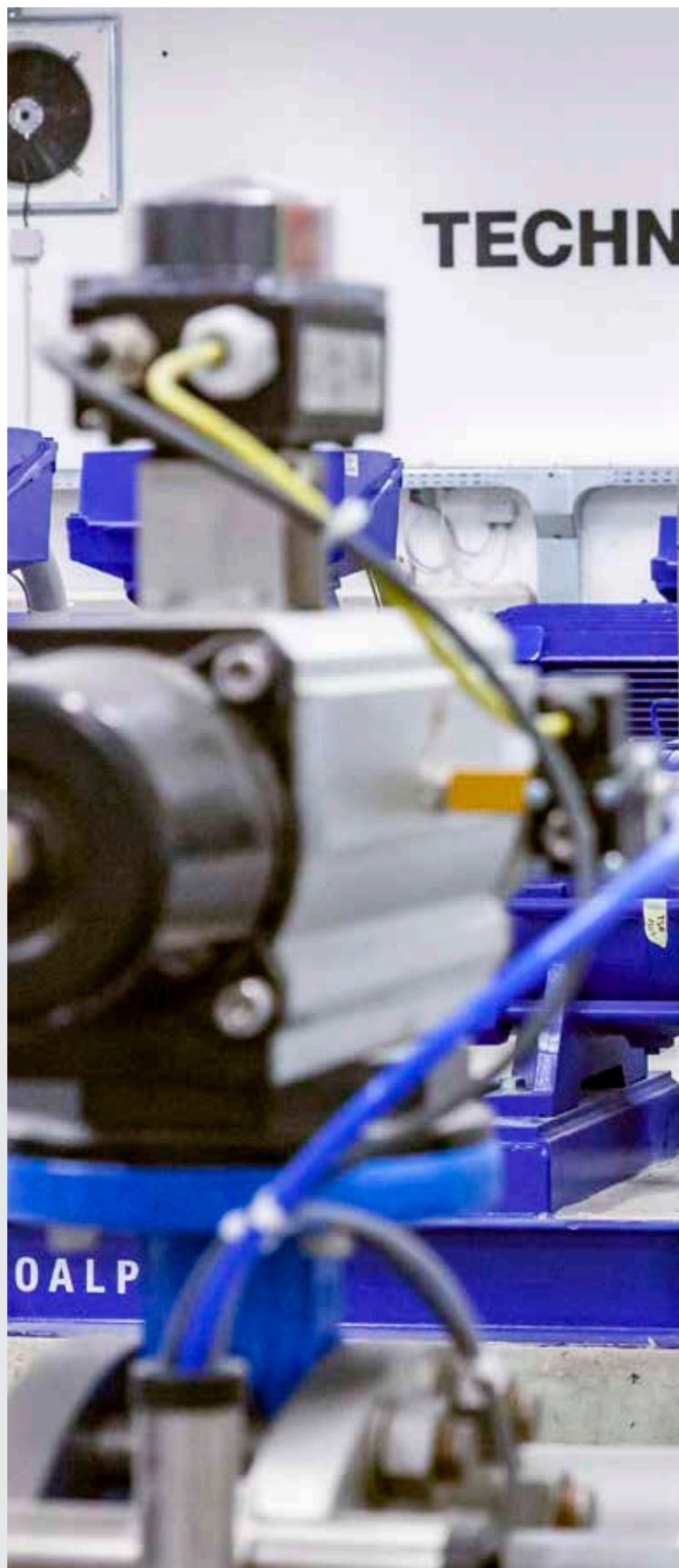
# MACHINE ROOM

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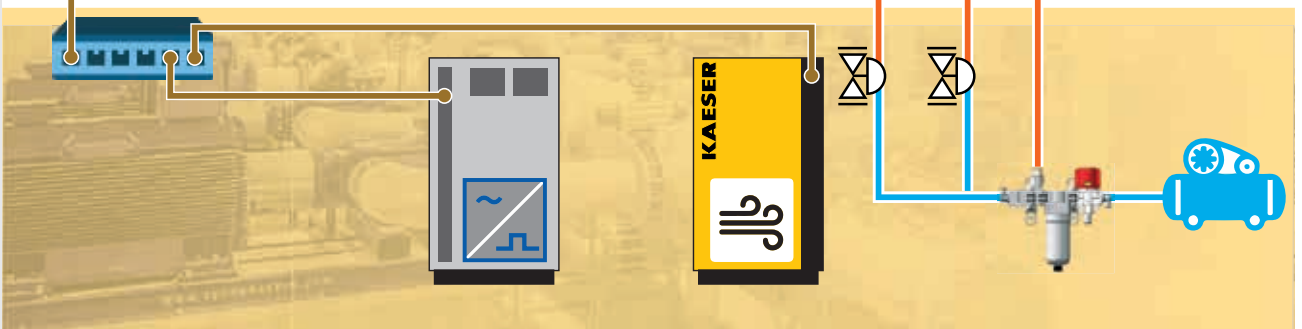
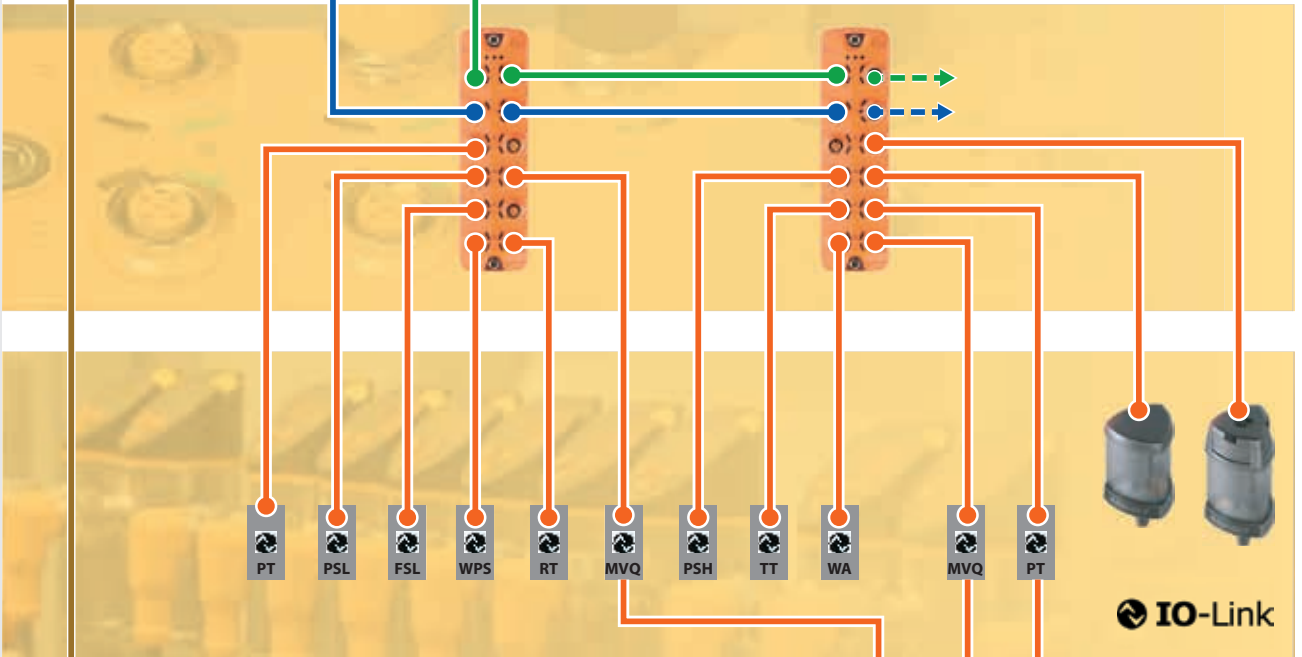
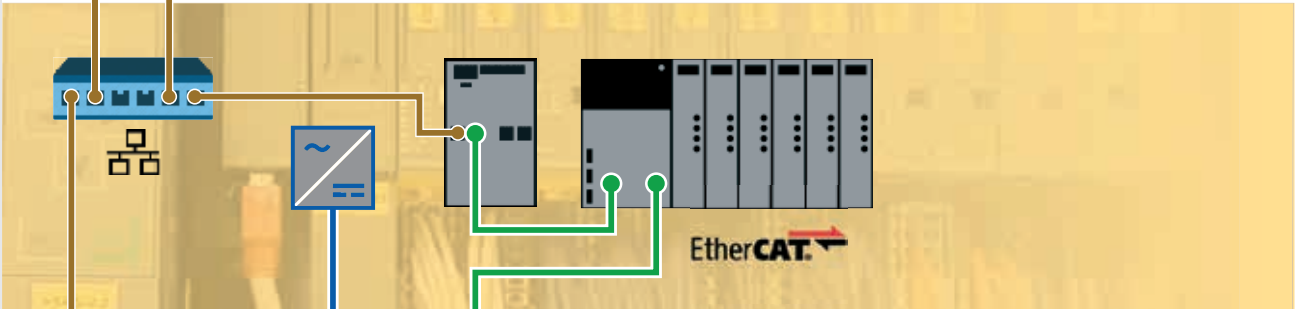
## MACHINE ROOM 4.0

Pumping stations are the heart of every snowmaking system. There is no snow production without a water supply. To make the system operation as simple and safe as possible, TechnoAlpin uses high-quality components and state-of-the-art digital technologies.

## THE SMART MACHINE ROOM – WITH IO-LINK

TechnoAlpin has been using the IO-Link communication system to digitally transmit all readings since 2019. Sensors and actuators (drive units) are integrated into an automatic communication system and relay information to the IO-Link master. The IO-Link master processes the information and is the interface to the higher-level PLC control system.

Readings are transmitted digitally. Incorrect transmissions or analogue signal conversions are eliminated. The digitally transmitted readings can therefore be directly displayed and processed.





## THE INTELLIGENT MACHINE ROOM – WITH MODBUS TCP/IP

Data transmission, control of compressors, frequency converters as well as control valves are achieved via Modbus TCP/IP. As a result, all components are optimally networked. Maintenance information, status messages and error messages are communicated in detail. Unlike analog systems, this not only indicates that there is an error, but the precise error is also shown. This way, snowmaking crews know what's going on before they even get to the machine room. In addition, software updates can be run over the network, and the configuration process is greatly simplified due to the simple wiring.

## DIGITAL SENSORS: INTELLIGENT MULTI-TALENTS

In the past, sensors were mostly limited to analog data. Today, smart sensor data provide the foundations for machine room 4.0.

Unlike analog sensors, IO-Link sensors can determine and transmit more than just one process value. A single digital sensor can also function as a flow sensor, volume counter and temperature probe, digitally transmitting accurate data. This generates maximum information while requiring fewer sensors. Project planning and installation times are reduced along with operating and maintenance costs.

The IO-Link master stores all the parameters for the connected sensors. After a replacement, the saved settings are automatically transferred to the new sensor. There is no need to look up for the settings required for the sensor, downtimes are avoided.





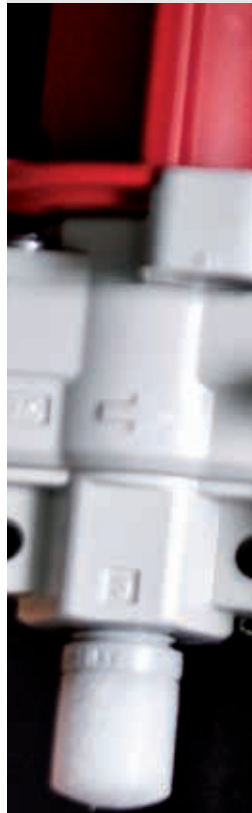
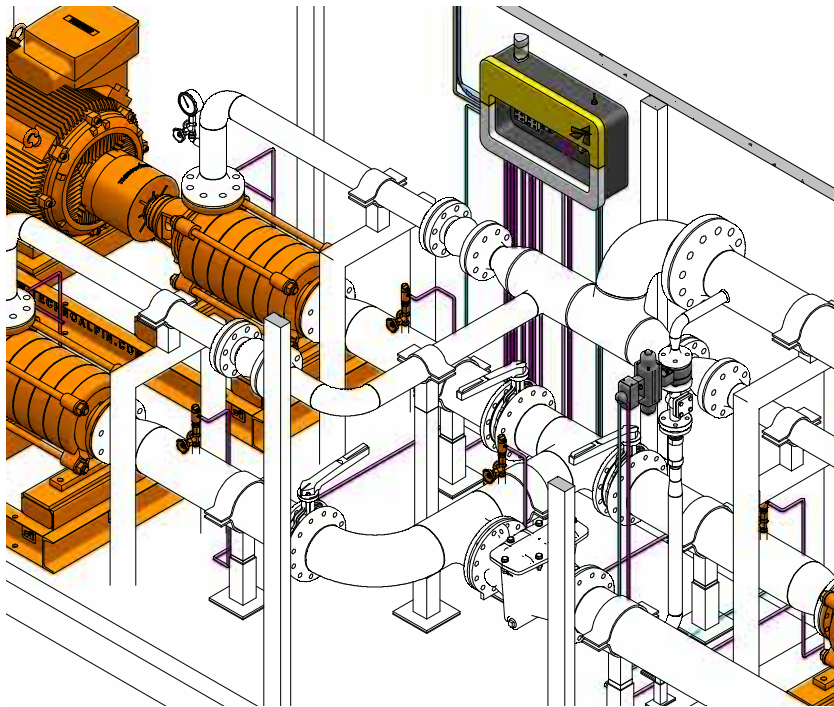
## STRAIGHTFORWARD INSTALLATION

Machine room 4.0 components are standardized and pre-assembled. Installation is virtually error-free in terms of the cable material and the sensors, as the smart system recognizes the components and assigns them correctly. This increases efficiency in the programming process as well as in the installation work on site, allowing ski areas to save time and money. The standardized system also simplifies the procurement of the required sensors and any spare parts.



## SIMPLE WIRING

The wiring for the system is pre-assembled with the correct lengths and marked accordingly on the installation plan. Precise bills of materials ensure that only the wires actually needed are used. This optimal planning and installation preparation prevents errors and significantly reduces wasted wires. The digital machine room is therefore more sustainable.





## MORE INFORMATION – MORE SUPPORT

The digital machine room also delivers far more information than analog systems and at a faster pace. The IO-Link master does not just read out information; it also evaluates the data. It therefore provides a comprehensive overview of the actual status of the system and immediately notifies the snowmaking operations team of any malfunctions. The components relay instant information about the type of fault. The warning light indicates the system status with different colors. This makes the maintenance process easier for ski areas and now also enables remote support, whether from the ski area, from the ski slopes or from home.

## INCREASED SAFETY

Data transmission is based on a 24V signal, which is particularly safe against external interference. There is no need for shielded wires or grounding. The parameters can still be read even when the operating keys on the device are locked. Accidentally generated incorrect settings are therefore avoided. IO-Link capable sensors have a unique identifier, and the use of unsuitable components is therefore ruled out.



# THE ADVANTAGES OF MACHINE ROOM 4.0 IN A NUTSHELL:

## **NO LOSS OF READINGS**

Readings are transmitted digitally, replacing error-prone transmission and conversion of analog signals. The digitally transmitted readings can be displayed directly in the system.

## **IMMEDIATE DIAGNOSIS**

There is a simultaneous transmission of process data and service data with IO-Link. Broken wires or short circuits are immediately detected by the system. Diagnostic data can also be retrieved during the operating process.

## **SIMPLE SENSOR REPLACEMENT**

The IO-Link system stores all the parameters of the sensors connected. After a sensor replacement, the previous parameters are automatically written to the new sensor. Parameter setting processes are therefore no longer necessary and errors are avoided.

## **NO EXTERNAL INFLUENCE ON THE SIGNAL**

The IO-Link data transmission process is based on a 24V signal and is therefore highly immune to external influences. IO-Link sensors are connected with standard M12 connectors. There is no need for shielded wires or the associated grounding.

## **TAMPER-PROOF**

Control keys on the device can be locked using the standard device settings. It is therefore no longer possible for operating personnel to enter incorrect settings. The parameters can be read at any time.

## **IDENTIFICATION**

There is a clear device identification process with IO-Link. IO-Link-capable sensors have a unique vendor and device ID. This ensures that no incorrect or unsuitable components are used.



## EVERYONE CAN BENEFIT FROM THESE ADVANTAGES

Existing machine rooms can also be upgraded to the latest technology, as IO-Link can be integrated into current systems. So everyone can benefit from the advantages of state-of-the-art smart technology. Upgrading will also enhance operational safety and cut costs.



## REMOTE MAINTENANCE WITH INSIGHT

A digital machine room provides more information and enables remote maintenance. This saves time and money and, above all, increases operating safety. Often, however, simply looking at data is not enough; insight is needed. For this purpose, TechnoAlpin offers the integration of a webcam in the machine room. The highest quality live image is displayed in the ATASSpro software, and so no other program is needed. This gives the snow team an overview of the current situation at all times. Nightly control runs can be reduced to a minimum.



# CERTIFICATE

The certification body of TÜV AUSTRIA SERVICES GMBH certifies that

**TechnoAlpin AG**  
P. Agostini-Straße 2  
39100 Bozen (BZ), Italy

has met all necessary quality requirements for welding according to

**EN ISO 3834-2**

Date of audit:

09.02.2022

This certificate is valid for the following products or service ranges:  
**Plant and Pipe engineering**

Date of expiry:

06.02.2025

Certificate No.: **HZ-00334-22-THP**

Failure to meet all these necessary requirements as defined in the annex to this certificate will spoil this document!  
The certificate keeps valid, if the TÜV AUSTRIA SERVICES GMBH performs the annual surveillance.

ZERTIFIKAT | CERTIFICATE | CERTIFICAT | CERTIFICADO | СЕРТИФИКАТ | شهادة | 證書 | 인증서

Leonding

PLACE

14.02.2022

DATE

*Maslnak Alexander*  
Maslnak Alexander  
Dipl. Ing.  
CERTIFICATION BODY

TÜV AUSTRIA  
SERVICES GMBH  
Deutschstraße 10  
A-1230 Wien



835649-20-1

## HIGHEST QUALITY ALSO FOR THE HARDWARE

TechnoAlpin does not just have high quality standards for sensors and software. The hydraulic hardware is also built according to the highest quality standards. TechnoAlpin is certified according to ISO 3834-2 which specifies the quality of the welding process for metallic materials. Quality must be built into the welding process. Therefore, TechnoAlpin welders stick closely to the specifications for standard-compliant material preparation for welding work. The angling of the contact points and adherence to the welding sequence are essential for our technicians.



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