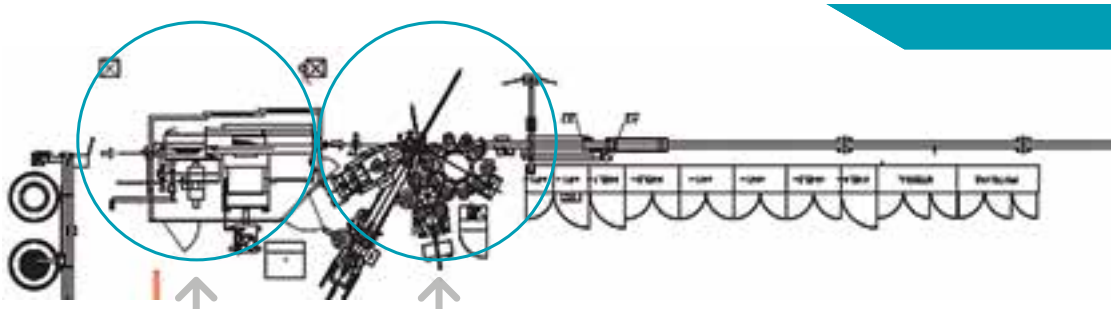
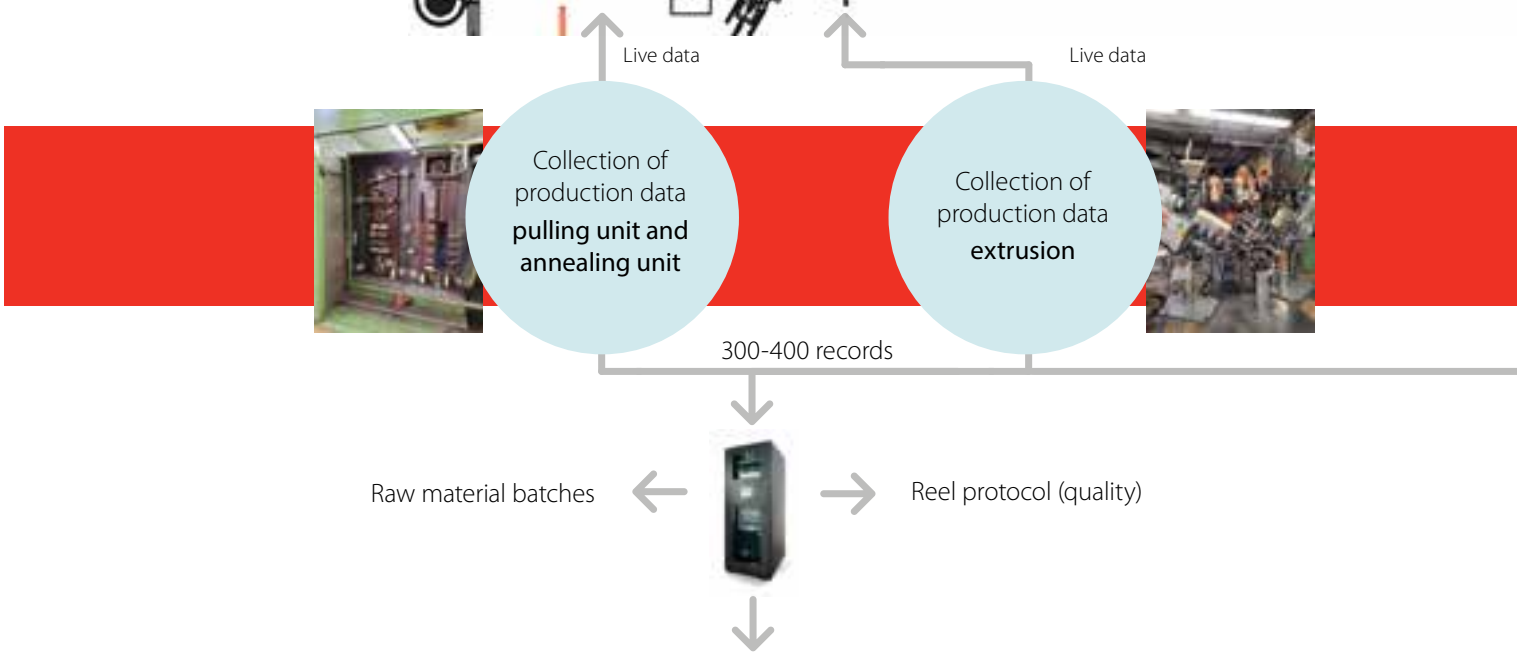




Switzerland:

DIGITISATION LEADS TO GREATER EFFICIENCY

The pace of production digitisation in Datwyler's Swiss factory is accelerating. An update.

With the digitisation of production at Swiss headquarters – covering an area of 70,000 square metres – Datwyler IT Infra is well on track to more transparent and efficient processes, with exciting learning outcomes along the way. From 2022 onwards machine process data like temperature, speed and performance will be transmitted to the in-house data centre in seconds. The recorded data will be used for the future preventative planning of service cycles so as to obtain the greatest possible machine availability.

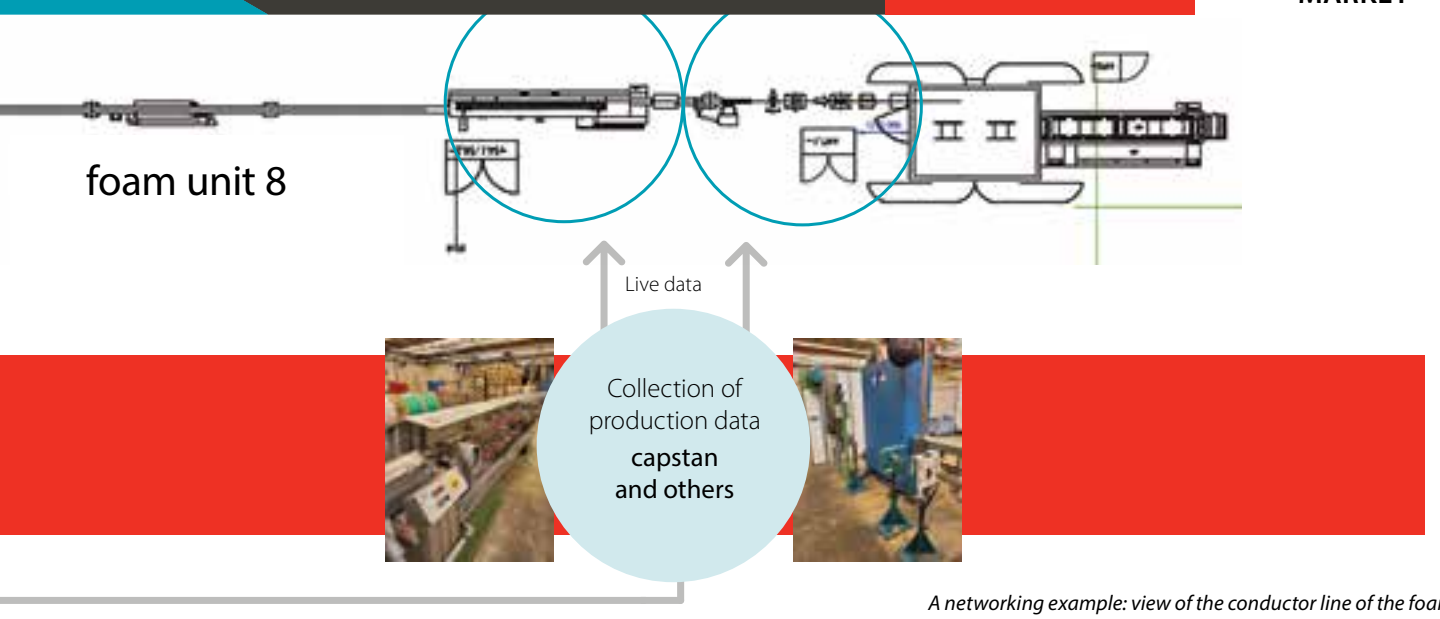
Time-exact conclusions on the quality produced will be just as possible as a high degree of accuracy, since the historic data supply clear comparative figures. The idea of managing and monitoring a day's production from a control centre is little by little becoming a reality.

The paramount goal remains to increase efficiency. In this respect digitisation will make a crucial contribution to the competitiveness of the Altdorf site.

An overview of the individual projects and the current state of affairs is given below.

Plant networking of copper data cable production

All the machinery in copper data cable production together with its sensors are networked using the OPC UA standard. The data is transmitted using a high-performance, shielded Class E_A Ethernet cabling system. The constant streams of data from the machines are collected and recorded.



A networking example: view of the conductor line of the foam unit 8.

The data thus collected are transferred to the next highest plant management level, the Manufacturing Execution System (MES). This generates a digital image of production. The direct connection allows the machine operator to manage, guide and control production using front-end terminals – in this case wireless tablets. This includes classic data acquisition and processing systems such as production and machine data acquisition, which have a real-time effect on the production process.

The Edge Cloud

The data exchange processes from plant level to the MES application are very transaction-intensive. They need a high-performance network. Fast computer systems with very short latency times are crucial for process control.

It is difficult to process such data in an external cloud because of the latencies required. On top of that there would be the requisite network bandwidth to the Cloud and the computing power required, both of which would be very costly (OPEX costs). Not least, the processing of business-critical process data in the external Cloud would always represent a risk due to availability demands and IT security guidelines.

For the above reasons Datwyler decided to operate an Edge Cloud in its own mini data centre in Altdorf. A solution using Hyper-Converged Infrastructures (HCI) and including hardware and software stacks is used for this Edge Cloud. It is supplied by one of the leading HCI specialists providing on-site Cloud solutions for businesses.

The Edge Cloud solution selected gives Datwyler many benefits: it is a turnkey infrastructure comprising integrated server, storage, networking and visualisation resources as well as end-to-end system management and business administration functions. This solution can be supplied quickly and supports numerous different hardware platforms, including three of the four most popular server platforms in the world. The software is run on each node and distributes all the operating functions over the cluster. Not least, it is flexible and has a really high load capacity.

The mini data centre

Datwyler has built a small data centre on site to operate the Edge Cloud hardware. This is a standardised and scaleable Datwyler Mini Data Centre which can not only be supplied quickly but is a fully monitored, low-maintenance and energy-efficient IT infrastructure solution.

It is an autonomous data centre which incorporates central elements such as cooling, power supply, monitoring and security. As it is a closed loop system there is no need to cool the whole space.

The fire extinguishing system integrated in the racks is also very compact. In the event of fire only the racks themselves, not the whole space, will be flooded with extinguishing gas.

The mini data centre is equipped with two redundant cold water air conditioning systems, each with a cooling capacity of 10 kW. As opposed to split air-conditioning units this system is very low-maintenance and extremely climate-friendly, as the cooling circuit operates without chemical refrigerants.

The electrical supply is effected via two different supply paths, one of which is supported by a modular Class 1 online UPS. An external maintenance bypass ensures trouble-free maintenance.

Datwyler's DIMS 300 infrastructure monitoring system is used to monitor the mini data centre. Among other things this remote monitoring software monitors climate parameters, rack doors, the extinguishing system, UPS and intelligent power distribution units (iPDUs). Deviations from the set values are relayed by email or SMS.

Private wireless solution

In parallel to the construction of the Edge Cloud infrastructure Datwyler plans to implement a 5G private wireless network in production. The 5G network will operate autonomously and will only allow access to approved devices. Public 5G users cannot see the network. It is extremely safe in terms of IT security.

Unlike WiFi, the 5G network provides highly available, stable data transmission with a high bandwidth and short latency times. Datwyler is safely able to integrate mobile devices such as scanners and tablets. Once the network is functioning a wealth of possible new applications are available. For example, machinery and sensors can also be integrated using gateways. *(adb, mah)*