# CASE STUDY: BIOPRODUCTION

**Solution:** Gateway solutions
**Country:** France
**Company:** Genzyme
**Summary:** 30 Anybus Communicators allow communication between different industrial devices and Genzyme's central SCADA. Communication is handled over Ethernet or Profibus.

## The effects

- Compatibility with several networks.
- Re-usable for future network connections.
- Lowered costs.

*"Quite apart from the quality of the product, we found that technical support was there whenever we needed it."*

Alexis Ducancel
Automated Systems officer
Genzyme

# Genzyme monitors 50,000 SCADA points with Anybus Communicator

**The company, which is a world leader in biotechnology, is creating a new polyclonal antibody production site. This is an innovative production facility: the process has been automated as far as possible, to reduce human error in the many stages of the process (separation, purification, filtration, ultrafiltration, haemadsorption etc.). This involves being able to interface with a battery of very mixed laboratory equipment, which was not initially designed to communicate with fieldbuses. Genzyme has used about thirty HMS Anybus Communicator gateways, to enable consistent SCADA management across all the devices in use. Benefits are as much in terms of quality as in production costs.**

The Lyon bioproduction site extends over an area of 22,000 m², and produces a selective immunosuppressant which is used to prevent and treat organ rejection during organ transplants (Thymoglobulin®). This drug is also used in haematology in cases where the transplanted cells react against their host in bone marrow transplants. The active agents in this drug are anti-human thymocyte immunoglobulins, obtained from the purification of a serum, which is used as the raw material. The immunogenic base consists of thymocytes (Thymus cells), a natural source of T cells. The development of this site has involved investment worth 115 million euros.

"Genzyme is currently using labour-intensive production methods at the Sanofi Pasteur site, Marcy. With the new site, we're hoping to optimise the process so as to reduce human error to the absolute minimum. This highly sequential batch process involves more than 780 production stages. There are many sources of error. Automating a process such as this has required a lot of close work with the equipment involved when deciding how the system should behave. This has avoided the need to re-think the entire ergonomics of the building and production equipment, whilst still resulting in a true revolution in the way the production process works. To achieve this, we specified more than 4,000 parameters and 13,000 alarms, enabling us to master every stage of production," explains Alexis Ducancel, Genzyme's Automated Systems officer.

### Bioproduction: a series of complex processes

Unlike traditional chemistry, production based on living cells involves many different complex and expensive stages. The production cycle for a recombinant protein requires an industrial

infrastructure which is suited to large-scale production involving several stages staggered over several months. Each stage is subject to numerous quality controls. Tests to ensure the absence of viruses and contaminants are performed throughout the production cycle. At the end of the line, the purity and action of the protein are also checked.

The production of this drug involves many complex stages, punctuated by a succession of technical and quality assurance tests. The production process can be broken down into four main stages:

- The collection of the immunoglobulins, which is done by injecting human tissue into rabbits.
- The purification of the immunoglobulins to remove undesirable proteins (particularly anti-erythrocyte antibodies), by haemadsorption
- The chromatography stage consists of anion exchange through the use of an ion exchange resin.Impurities are captured by the resin, whilst the immunoglobulins, which are not negatively charged, are eluted. This stage is checked using spectrophotometry and electrophoresis.
- The precipitation stage is intended to eliminate the last remaining impurities. The purified immunoglobulins are pasteurised (60°C for 10 hours).This solution is freeze-dried before being sealed into vials.

“In this process we can, for example, program in the settings for the centrifuges (speed, temperature, working time etc.).These values can be changed in the SCADA to take the specific requirements of the current production batch into account. Readings are taken at every stage and sent back to the SCADA.This enables us to put a very precise traceability process in place. In particular, this means that the workload for the quality assurance teams is significantly reduced, which is an advantage in cost terms,” adds Alexis Ducancel.

The Lyon site, like the Marcy site, will receive FDA and AFFAPS approval. “Naturally, we chose HMS, because we felt that no other company has standard solutions available to return data from a very mixed set of equipment which has not necessarily been designed for connection


to fieldbuses. We have 28 centrifuges, pH-meters, balances and so on. The interface protocols vary: serial or ASCII for example. The 30 Anybus Communicators on site send the data back over the Ethernet or Profibus to the central SCADA.”

### Anybus Communicator: the solution for integrating Serial equipment into an industrial communication network

The Anybus Communicator series of gateways for connection to industrial Ethernet/Fieldbus makes it possible to network devices which were developed for use in a serial network. The Anybus Communicator can connect most products with an RS-232/422/485 serial interface to an industrial Ethernet or fieldbus. It performs an intelligent conversion between the serial protocol and destination network. This conversion is configured using the “ABC Config Tool” software. The network configuration, once completed, can be re-used for all networks supported by the Communicator.

“Quite apart from the quality of the product, we found that technical support was there whenever we needed it,” concludes Alexis Ducancel.

Around fifty employees are now in place at the Genzyme production site, where initial production batches are being run to validate the production process. Full production should start in late 2011, once the AFSSAPS certifications have been obtained. The total number of staff should then rise to 270.

## Learn more on www.anybus.com or www.genzyme.fr

### Anybus Communicator Gateways

Anybus Communicator can connect almost any automation device with a serial communication interface to fieldbus and industrial Ethernet networks. The Communicator performs an intelligent conversion between the serial protocol of the automation device and the chosen industrial network.

Anybus® BY HMS NETWORKS

Case study:
# Water valve actuators

| | |
|---|---|
| Solution: | Anybus Communicator |
| Country: | UK |
| Company: | Durapipe |
| Summary: | Anybus Communicator allows Durapipe UK to signal the electric actuator and know that the actuator has responded accordingly. |

## The benefits

- Requires no hardware or software changes to be made to the connected device
- Compatible with all PLCs with PROFIBUS support
- Saves machine builders and device manufacturers having to integrate a PROFIBUS interface

Durapipe UK

““The physical simplicity of the solution appealed to us, saving a lot of potential engineering work,”

**KEVIN WILLIAMS**
Technical support engineer at Durapipe

# HMS protocol converter gateways brings PROFIBUS capability to water industry valve actuators


Leading pipework and ancillary equipment manufacturer Durapipe has expanded its offering for the water and wastewater treatment industry with the capability for electrically actuated valves to be controlled over PROFIBUS. To provide a simple interface from the valve’s standard RS232 protocol to PROFIBUS, Durapipe turned to HMS Networks and the Anybus Communicator AB7000.

Established in 1954 Durapipe was one of the first businesses to exploit the emerging thermoplastic industry, developing a range of pipe systems for a host of different industries. Over the years, it has continued to research different materials to develop innovative pipework products, and has added a host of ancillary items to its portfolio to provide complete flow control systems.

A principal area of business is the water and wastewater treatment industry where the pipework requirements can be complex and diverse – be it for the transfer of potable water, wastewater, reverse osmosis systems, slurries, ultra pure water or effluent treatment. Durapipe meets these requirements with high quality, fully matched plastic systems of pipes, fittings, valves and flow monitoring equipment.

“With such installations typically extending over extremely wide areas, fieldbus networks are common to minimise wiring and we had received increasing numbers of enquiries for electric valve actuators that could be controlled over PROFIBUS,” says Durapipe technical support engineer Kevin Williams. “It wasn’t something we had in

our portfolio, so we started looking around for simple way of integrating our valves onto a PROFIBUS network.

A chance conversation with engineers from HMS Industrial Networks at a trade exhibition highlighted an ideal solution in the form of the Anybus Communicator AB7000. This proven and trusted protocol converter gateway connects non-networked industrial devices and equipment to PROFIBUS, enabling the integration of serial RS-232/422/485 based industrial devices and equipment without the need for any changes to the device. Just connect, configure and you are done.

The Anybus Communicator performs an intelligent protocol conversion and presents the serial data to the Master PLC/ controller as easily processed I/O data. As a simple add-on to existing serial devices, it provides an easy way of integrating equipment into today's fieldbus networks without the engineering headaches of having to embed a PROFIBUS interface within the device itself.

"The physical simplicity of the solution appealed to us, saving a lot of potential engineering work," says Williams. "Also, the configuration was easy: we're not performing complex functions – the valve needs to be either opened or closed. We're not looking at translating 4-20mA signals and monitoring the status of the valve at different positions. That's not what's needed in these particular water applications. We just need to send an 'open' or 'close' signal to the electric actuator, and know that the actuator has responded accordingly."

The Anybus Communicator is housed in a separate enclosure to the valve actuator, so no redesign of the actuator was required. An IP65 or higher environmentally protected enclosure ensures reliable operation in the outdoor locations typical for valves in water and wastewater treatment applications.

Durapipe is excited to be able to add these PROFIBUS-enabled electrically actuated valves to its portfolio, and is already looking at further developments. "At the moment we're just sending simple commands and monitoring that the valve actuator has responded accordingly," says Williams. "But for the future there is the potential to build in diagnostics capabilities which could aid in status monitoring and maintenance, all helping to minimise downtime and boost process productivity."

## Learn more on www.anybus.com - www.durapipe.co.uk

The Anybus Communicator is a proven and trusted protocol converter gateway that connects non-networked industrial devices and equipment to PROFIBUS and other networks. The gateway performs an intelligent protocol conversion and presents the serial data to the Master PLC/Controller as easily processed I/O data. The Anybus Communicator is a slim stand-alone gateway designed for IP20 and DIN-rail mounting, requiring a 24-volt power supply.

Anybus® BY HMS NETWORKS

Case study:

# Packaging machines

Solution: Anybus Communicator / eWON Cosy

Country: Sweden

Company: Österbergs Förpackningsmaskiner AB

## Effects:

- Österbergs can choose any device to include in their machines, regardless of manufacturer.
- Quick implementation, no programming needed.
- Remote access to machines.

*"The Anybus Communicator allows us to choose freely which components to include in our machines."*

**Joakim Chyssler**
Österbergs Förpackningsmaskiner AB

## Well-connected packaging machines

The bakery's brand new bakingÖsterbergs Förpackningsmaskiner AB is a Swedish machine builder, designing packaging machines for their owners Stora Enso and Peterson Packaging. Their machines are used for packaging foodstuffs and preparing them for transport to millions of Scandinavians every day. The state-of-the-art packaging machines use HMS technology to get connected – between different parts inside the machine but also to the Internet for remote access.

Österberg's packaging machines usually don't handle the packaging of the actual food itself, but rather the wrapping needed for transportation. The machines fold and glue the wrapping cardboard and insert milk cartons, boxes, packages or whatever it is that needs packaging before transport.

As with all advanced machines, a lot of communication is needed – both inside the machine but also to other internal and external systems. For this, Österbergs has found several communication solutions from HMS Industrial Networks.

### Enabling communication inside the machine

One very useful communication solution is the Anybus Communicator which allows devices communicating via serial or CAN to be connected to any PLC system. The Communicator enables different parts of the machine to communicate.

"The Anybus Communicator has enabled us to keep well-working equipment that is proven and that we know well," says Joakim Chyssler at Österbergs. "We may change control system several times during our development phase, but still keep machine parts that are proven and tested (for example conveyor belts, sensors, HMIs etc). This is very important for spare parts management which is crucial for us and our customers."

No hardware or software changes are required for the connected devices since all protocol conversion is made to the network from inside the Anybus Communicator.

### Choosing the best devices, regardless of protocol

"The Anybus Communicator allows us to choose freely which devices to include in our machines," says Joakim Chyssler. "We don't have to worry about which


communication standard the devices use, the Communicator will enable them to communicate with our PLC anyway. Furthermore, we can now choose different PLCs to suit a specific packaging machine since the Anybus Communicator handles most network standards on the market."

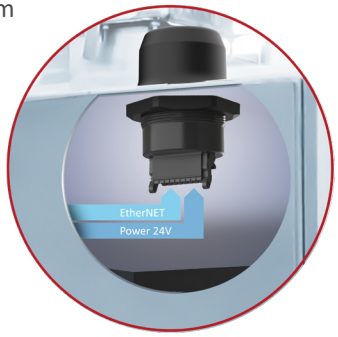
## Remote access with eWON Cosy

But HMS communication solutions also allow Österbergs to connect to their machines remotely, using the eWON Cosy remote router. By connecting a Cosy to the packaging machine, service staff can log in via a cloud-based service called Talk2M. Through this, it is possible to establish a remote connection to do PLC programming, maintenance and debugging, just as if connected on site.


"Remote access is really a must-have for us since we don't have field service technicians of our own," says Joakim Chyssler. "With eWON Cosy we can log on from the office to do maintenance and support on our packaging machines saving us a lot of time and travelling costs."

## Wireless access being evaluated

Another new technology from HMS that Österbergs is currently evaluating is industrial wireless. By attaching an Anybus Wireless Bolt to their machine, it is possible to access it via Bluetooth or WLAN. For example, to use a tablet or smartphone as an HMI to operate the machine.




"This is interesting technology, that can really be useful for us as a machine builder and we are currently looking into this for future machines," says Joakim Chyssler.

## Learn more on www.anybus.com or www.osterbergs.net

### Anybus Communicator Gateways

Anybus Communicator can connect almost any automation device with a serial communication interface to fieldbus and industrial Ethernet networks. The Communicator performs an intelligent conversion between the serial protocol of the automation device and the chosen industrial network.