

On-site fault finding, health checking and consultancy services

Consultancy services

Verwer Training & Consultancy Ltd offer vendor independent advice and consultancy on modern automation technologies such as fieldbus, intelligent instrumentation and actuation and maintenance strategies, etc. We can provide consultancy on PROFIBUS, PROFINET and AS-i technologies and can provide assistance, advice, fault finding and health checking on a wide range of modern automation and control technologies.

We have extensive experience at providing consultancy services to a wide range of industries including:

- Manufacturing
- Process plant
- Food and beverages
- Pharmaceuticals
- Materials handling/automated storage
- Transportation
- Quarrying and mining, etc.

We can also provide rapid response call-out to help locate and fix problems on your plant. We will use modern analysis and waveform visualisation tools which can highlight network, system, wiring and layout problems. Typically, we can identify the causes of the problems and in many cases fix them during the visit. Finally, we can provide a system health check which verifies the fault free operation of your network.



Fault-finding in the food industry

As a training organisation, we are quite open to using the consultancy visit as a training/learning exercise. However, for safety and accessibility reasons, we will have to limit the number of people observing the fault diagnosis and health checking to a maximum of two.



Fault finding in manufacturing

Health checking for PROFIBUS and AS-i

Modern fieldbus communications is extremely robust and resilient to communications errors. However, this often means that users are blissfully unaware of the existence of network errors.

Disruption of communications can be caused by a wide range of errors including:

- Reflections caused by incorrectly applied termination, poor layout, incorrect or damaged cables etc.
- Interference pickup caused by poor cable routing, earthing problems, poor installation etc.
- Weak signals caused by excessive bus loading, incorrect segmentation, excessive cable length etc.
- Faulty devices, power supplies and wiring causing spurious communications breakdown and other intermittent errors.

The above list is not exhaustive but represents the most common causes of errors. And such errors are indeed surprisingly common. It is rare to find an installation that does not have at least a few such hidden problems.

The main difficulty with these hidden errors is that the user is generally unaware of the problems; that

is until they reach a level at which control system failure occurs! You are never quite sure how close your installation is to failure. Health checking will bring hidden problems to light before they cause failure of the plant control system.

What will we check?

Health checking of control system networks involves:

- Visual inspection of network wiring and layout (where possible).
- Use of a modern high-speed analyser to check for correct communications and highlight problems
- Statistical analysis of network operations highlighting problems due to corruption and distortion of communications
- Visualisation of the transmitted waveform from each device connected to the network, highlighting a wide range of potential problems such as device failure, reflections interference etc.
- Where reflections are found, the location of the cause can often be accurately identified from timing measurements.
- Check of network layout and cable lengths.

The checking is normally best carried out with the plant operational. However, checking can also be done with the plant shut down (as long as the network is operational). Ideally the plant engineer will accompany the consultant and be able to start and stop equipment as required. The exercise quite often provides a valuable learning experience for the plant engineer.

It is important that an accurate schematic of the installed network is available. However, lack of such information will not preclude health checking; it just will take a little longer.

The health check will often show up problems that can be immediately fixed. Sometimes however, problems cannot be corrected until new equipment is installed or the plant is shut down.

Health, Safety and Liability

The client will be responsible for the safety and security of the consultant and any people working with them. Verwer Training & Consultancy Ltd take no responsibility whatsoever for the health, safety

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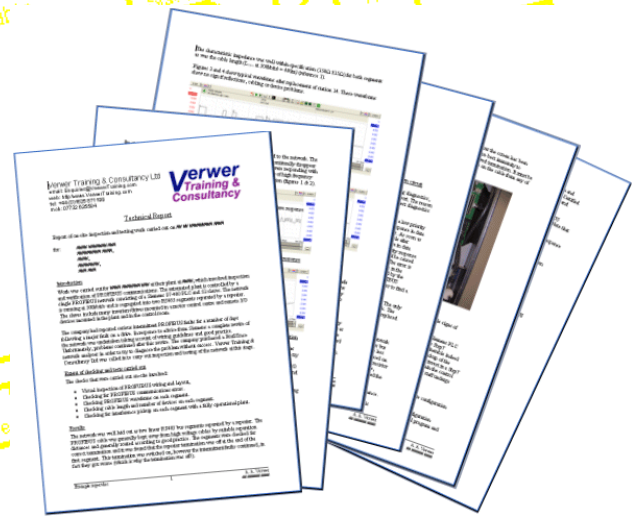
and security of personnel or equipment at or on the client's premises or those of associated contractors.

Where specific dangers or health and safety consideration apply, the client must provide suitable information, instruction or training to the consultant free of charge.

Where the consultant is working with machinery plant or other equipment at the company's or client's premises, the company or client must allocate a trained and responsible person to accompany the consultant at all times.

Report

An optional report can be provided giving details of the findings and health check giving a base line for future health checking and fault finding.



Other services offered

Verwer Training & Consultancy also offers a wide range of other specialist consultancy services including:

- Advice on product development
- Pre-certification device testing
- Advice on system design and layout
- Development of maintenance and fault finding strategies.