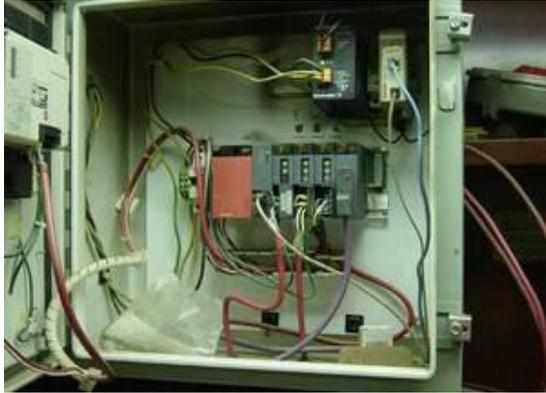# 7 reasons to a consider a non-Ethernet industrial network

Here are seven reasons non-Ethernet networks might be specified for an industrial project, to help determine if an Ethernet, fieldbus, or a device or sensor-level network should be considered.

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Why or when should non-Ethernet protocols be considered for an automation project? Seven reasons follow, showing when non-Ethernet networks might be specified for an industrial project. These can include simplicity, flexibility, familiarity, and consistency, even if logic might suggest otherwise.

1. Simplicity. For some automation engineers, it is the simplicity of fieldbus networks that tips the scale for them to decide to use one of these non- Ethernet-based fieldbus network instead of an Ethernet-based network. These non-Ethernet-based traditional fieldbus networks generally require less hardware and may be much less complex than their Ethernet-based counterparts. For example, fieldbus networks do not require switches to guarantee control system determinism, whereas some Ethernet-based networks require complicated Ethernet switches to guarantee control system determinism.

2. Flexibility. In addition, most fieldbus networks can be laid out in multiple configurations (line, tree, line-tree combination, and ring). Most Ethernet- based networks are much more restrictive in how they are laid out for a project.

3. Familiarity. Another reason non-Ethernet protocols should be considered is a situation when automation engineers and the maintenance staff on the project have used the same non-Ethernet-based network for quite some time, they are comfortable with this technology, it works for their current application, and they do not see the benefit of adopting a new Ethernet-based network for a new application.

Also, perhaps, for this specific project situation, a new Ethernet-based network would not provide them with a significant productivity boost, and the potential cost savings would not justify learning a new Ethernet-based network technology. With all of this information, the project leaders cannot justify adopting a new Ethernet-based network, so they continue to use the same

non-Ethernet-based network on this new project.

4. Consistency for an incremental expansion. In another situation, a company has an application that uses a non-Ethernet-based network. Automation engineers are considering expanding that application to include more automation, and this expansion can usually be completed more cost effectively using the same non-Ethernet-based network by adding more stations to the current non-Ethernet-based network. Expanding an existing application using the same non-Ethernet-based network maintains consistency throughout the application and allows use of the same tools and current products without requiring operators and maintenance staff to learn a new system and how to use new tools.

5. Policy. A company also may declare that all projects shall use a specific non-Ethernet protocol for all automation projects. Automation engineers and the maintenance staff may be comfortable with current technology, but automation engineers may understand that the benefits and potential cost savings would justify learning a new Ethernet-based network technology. Company management, however, has so much invested in the current specific non-Ethernet protocol that they do not want to invest in a new generation Ethernet-based protocol, so they may decide to continue to use the prior protocol.

6. Automation experience. A different situation where non-Ethernet protocols should be considered is when a company is new to automation networking. Using a fieldbus network may be easier to justify because that technology has been around longer and is deemed more reliable; or perhaps the engineers on the plant floor have been requesting some automation for years and have always requested a fieldbus network, because when they initially requested this "new" automation networking, Ethernet networking was not viable or available.

7. Equipment compatibility. In another circumstance, during the investigation phase of the automation project, it was discovered that not all of the necessary equipment would be available to communicate using an Ethernet-based network. Therefore, to maintain and use one network for the automation project, an appropriate non-Ethernet-based network should be considered for direct communications among all necessary equipment.

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