INFICON

APPLICATION NOTE

Integration of Tool Subcomponents Using FabGuard® Integrated Process Monitor

INTRODUCTION

The demand for connections to alternate data sources and equipment subsystems such as chillers, dry pumps, air handlers, etc. is growing. Factories are beginning to realize the importance of monitoring these subsystems because of the high potential to impact multiple wafers, chambers, and in some cases multiple tools. Because many of these systems are not directly integrated into the equipment communication, 3rd party systems, such as FabGuard, are critical for performing the data collection and analysis.

CONNECTIVITY

Connection to external (non-SECS) equipment is performed through FabGuard via a couple of methods. Primarily, the options for obtaining data are limited to analog/digital data collection via an analog/digital output, custom communication protocol specific to the equipment, or Open Platform Communications (OPC). OPC and analog/digital data collection are typically the easiest methods for obtaining information about the state of the subsystem or equipment.

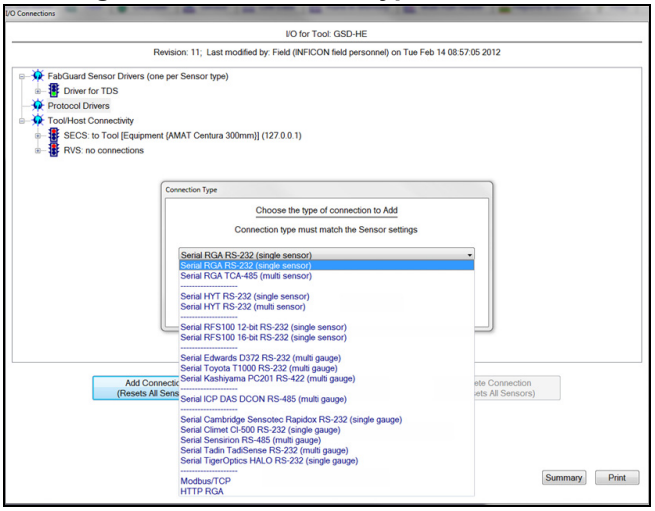
In cases where OPC or analog data collection is not available but a custom communication protocol is, FabGuard is used to connect directly with the equipment and collect data as if the equipment was a standard INFICON sensor. Having this capability within FabGuard makes it possible to obtain critical status and process information from 3rd party sensors, gauges, and equipment just as if they were an INFICON sensor or a SEMI Equipment Communications Standard (SECS) compliant process tool.

SETUP

The simplest method of integrating these components and performing critical analyses is to treat the equipment as if it were a standard INFICON sensor and integrate the data with SECS data collected from process equipment. In some cases, the components being monitored are not connected to a single tool. In other cases, there is a desire to monitor multiple subsystems (i.e. monitor all dry pumps on all diffusion furnaces with just 2-3 FabGuard Integrated Process Monitor (IPMs)). Either way, the setup in FabGuard is similar to configuring analog data collection or setting up a Residual Gas Analyzer (RGA).

Components that have drivers are connected the same way that an RGA or Quantus Gas Analyzer is connected to FabGuard (as shown in Figure 1). Components that are integrated using analog communication are connected the same way that an ADC100 DC Arc Detector or Sion™ RF Detector is connected to FabGuard.

Figure 1 I/O Connections screen in FabGuard showing various connection types



EXAMPLES

The components listed in Table 1 represent a portion of the 3rd party sensors, gauges, and tool subcomponents that have been successfullly integrated using FabGuard.

Table 1 Partial list of subcomponents that have been successfully connected to FabGuard

SENSOR OR SUBCOMPONENT	PURPOSE FOR INTEGRATION	INTEGRATION
Transpector Residual Gas Analyzer	In situ gas analysis and leak detection	Direct Protocol
Quantus SP-OES	In situ gas analysis and leak detection	Direct Protocol
RFS-100 RF Sensor	RF characterization and analysis	Direct Protocol
SION Arc Detector	RF arc detection	National Instruments
ADC-100	DC arc detection	Direct Protocol
HYT Particle Detector	In situ particle detection	Direct Protocol
Tadin TadiSense	Integration of analog signals	Direct Protocol
Sensirion Flow Meter	Monitor photoresist flow	Direct Protocol
Toyota T1000 Dry Pump	Monitor for pump failure	Direct Protocol
Ocean Optics OES	Contamination and leak detection in plasma systems	Direct Protocol
Edwards D372 Pump	Monitor for pump failure	Direct Protocol
Cambridge Sensotec Rapidox	Moisture detection	Direct Protocol
Tiger Optics HALO	Moisture detection	Direct Protocol
Climet CI-500 Particle Counter	In fab ambient particle detection	Direct Protocol
ICP DAQ	Integration of analog signals	Direct Protocol
Kashiyama Dry Pump	Monitor for pump failure	Direct Protocol
Fluidix Liquid Chemical Delivery System	Monitor delivery of process chemicals	OPC