

## Ultra Low Serial-to-Ethernet Latency in Semiconductor Processing Equipment

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**Location / Country :**Asia/ Japan

### **Product Solutions:**

[NPort 6600 Series](#)

8, 16, and 32-port RS-232/422/485 rackmount terminal servers

### **Introduction**

Project Introduction

The fabrication of semiconductor wafers is a high precision process that requires over 300 individual steps categorized into various major process groups such as photo-resist, thinfilm, etch, and CMP. Within a typical thinfilm or etch device, there are many built-in serial devices such as vacuum turbo pumps, RF generators, and RF matches, all controlled by an internal PC. A Japanese company that produces thinfilm and etch process equipment was looking to develop a new-generation device communication solution. This solution will enable the serial devices to be controlled by a remote PC located in the control island of the semiconductor factory and will result in better control of the serial devices for finer precision. With this new solution, semiconductor makers can easily retrieve the running parameters of the devices and remotely place process recipes to the process equipment. Currently, a majority of semiconductor fabrication factories use Ethernet communication as one part of their backbone network, and for this reason the company opted for a serial-to-Ethernet solution with:

- WinCE driver for managing devices on a WinCE platform
- Ultra low latency for retrieving running parameters and placing process recipes, which are extremely time critical (the time is calculated in milliseconds).
- High MTBF since even a small pause in device connections can cause huge losses.

### Moxa Solution

Moxa's NPort® 6650-8 terminal servers were chosen since they meet all of the company's requirements. Each piece of thinfilm and etch process equipment is equipped with two chambers that run the process individually. Each chamber is equipped with a vacuum turbo pump, RF generator, and RF match, all of which use RS-232 communication. Inside the process equipment you will find a pair of NPort® 6650-8 device servers that connect the serial devices to Ethernet, allowing the devices to be controlled and monitored by the remote PC. The company uses Moxa's WinCE Real COM driver on the NPort® 6650-8 to connect the devices to the remote PC.

## Why Moxa

- With Moxa's ready-to-use Real COM mode for WinCE, the company spent just a fraction of the usual time to establish a robust connection between the serial devices and the remote PC.
- With the lowest latency on the market, the NPort® 6650-8 ensures that parameters and process recipes are placed in precisely on time to minimize process faults.
- With the highest MTBF on the market, the company used the NPort® 6650-8 to minimize downtime, and as a result maximize the array yield rate.

