



# John Deere Greeneville Automates with ACP Thin Client Technology

*"We use the thin clients instead of PC's because they are more compact than a normal PC. They are also easy to change out if there is a problem. Basically just replace the old client, power the new one up, and off you go."*

— Jeff Williams, John Deere Power Products, Greeneville Plant

## Solution Overview

### Customer

John Deere Power Products, Greeneville TN plant

### Industry

Lawn Tractor Manufacturer

### Key Benefits

Low Maintenance  
Ease of Replacement  
Decreased Downtime  
Peace of Mind

### Applications Deployed

Microsoft Visual Basic  
SQL Server  
OPC Server

### ACP Solutions

Advantech MBPC-5820-ACP



### About ACP ThinManager®

ACP's ThinManager® is an enhancement to the basic Windows® Terminal Server operating systems such as Windows® 2000 Server and Windows® 2003 Server. The features added by ThinManager® focus on the industrial market, allowing users to replace the PCs they are now using on the factory floor with inexpensive "Windows terminals" that are much easier (and less expensive) to maintain. While any Thin Client will allow multiple instances of existing Windows® software to run on a single PC (the Terminal Server) only ACP Enabled Thin Clients running under ThinManager® provide the functionality, redundancy and I/O required in industrial installations.

While Deere & Company was started in 1837, they didn't purchase their first ACP Enabled Thin Client until 164 years later. But since 2001 they have installed almost 100 clients at their 325,000 square foot plant in Tennessee - the factory that builds the John Deere L100 lawn tractors sold at Home Depot and John Deere retailers. Every forty-five seconds, two tractors roll off the end of the line, ready to be shipped to stores across the country.

### The Challenge: Improve operator access to product specifications

Before the implementation of the ACP solution, John Deere Greeneville created special instructions that had to be tracked on paper. These Operator Method Sheets (OMS) were physical printouts that were kept in a three ring binder. Access to the binder was limited, and, more importantly, updates to assembly data was difficult. John Deere Greeneville needed a way to keep the line running smoothly while allowing for enhanced OMS updates.

### Implementing ACP Technology

One obvious solution was to move to online versions of the Operator Method Sheets. The L100 is produced on two identical lines, both of which run at the same time. While there was room to add a display above the workstations, there was not enough room for a PC, especially when access to the PC would be required for maintenance and software updates. A Thin Client solution solved the space problem by allowing the installation of compact hardware that would not require any access for support.

Visual Basic was chosen to drive the displays, and screens were developed that showed not only the Method Sheets but also production data. 19" displays were added throughout the lines, and 90 ACP Enabled Thin Clients were installed. The small size of the client (less than 7" by 5"), and the fact that it can be mounted in any

orientation made it easy to find space without disrupting the existing production line.

The Thin Clients feed the two lines with a variety of information. The screens are generated with Microsoft Visual Basic, and much of the data comes from the SQL Server Databases. Production points are pulled from the PLCs in real time with an OPC server.

Because of the low overhead of the Visual Basic application, John Deere Greeneville is able to host all of the clients on just two Terminal Servers, with a third server used for the SQL database and to run the ACP ThinManager software. The Thin Clients are in one of two groups (one group per line), and each client is named for the station it supports. Each Thin Client is configured to run an initial program that provides the information needed for that specific location.

The new dynamic display allows John Deere Greeneville to provide the operators with information that was previously unavailable. By simply glancing at the Thin Client screen, an operator can see all of the visual work instructions for his particular station, in a much-improved format than was presented on the old Operator Method Sheets. Additionally, he now has access to a quality index (updated hourly), an up to the second count of the number of units produced, and an indication of the number of units that the line is ahead or behind the production goals. The new displays also show the quantity and model number of the next units that will be run down the line.

### Future Plans

In addition to upgrading their server system to add another SQL server, John Deere Greeneville is also investigating an ACP Enterprise License. This will allow them to deploy an unlimited number of industrial Thin Clients and to take advantage of redundancy and server load sharing.



# ACP®

