SIEMENS

Burr OAK Tool Inc.

Up to 30% reduced engineering development time

TIA Portal Application Awards – 2013
Burr Oak Tool Inc.

Key Business Activities: Burr Oak Tool Inc. provides machines, tools and expertise to the world's heating, refrigeration, and air conditioning industries. Our company produces Fin Lines, Fin Dies, Tube Expanders, Tube Cutoffs, Tube Benders, and Coil Forms. Our experience in creating flexible and productive solutions resulted in designing and fabricating presses, dies, and tube cutoff machines for the automotive, plumbing, appliance, hardware, and electronic industries. For over 65 years Burr Oak Tool Inc. has been building high-quality, rugged machines, which produce consistent and dependable results.

Name of Application: FP-400 Fin Press and Line – the high speed fin production line provides a reliable, cost effective fin making solution. This 400 kN (45 ton) press line allows for the high speed production of quality fins used in heat exchange coils for heating and refrigeration systems.

Description of Application: The FP-400 fin line is a continuously fed machine using a progressive die stamping fins at speeds from 150 to 300 strokes per minute. The supporting line equipment efficiently delivers the fin stock to the press, lubricates the stock, and collects the finished fins for assembly into a coil. The engaging and disengaging timing of multiple tooling stations in the die is controlled by the PLC as the press strokes during production. Accurate and reliable timing is critical to not only produce the fin correctly, but also to protect the intricate tooling from damage.

What challenges led you to look at a new solution?
Burr Oak Tool needed to develop a new series of fin lines for the emerging markets and first-time buyers. The project goals were to develop a low cost press without sacrificing the reliability and speed of the high end presses. The FP-400 press is a low tonnage press to introduce new customers to Burr Oak Tool's quality and dependable machines. To offer a cost-competitive press and speed time to market, the control system needed to leverage the years of software development used in the high end presses. Burr Oak Tool also needed to be more efficient in the development of new functions in the engineering software that controls the press. Delays due to engineering software development affected their business, so they were looking for ways to continue standardizing and reusing code wherever possible. The control system hardware needed to provide the features that Burr Oak required in regards to programming, installation, and commissioning of new machines.

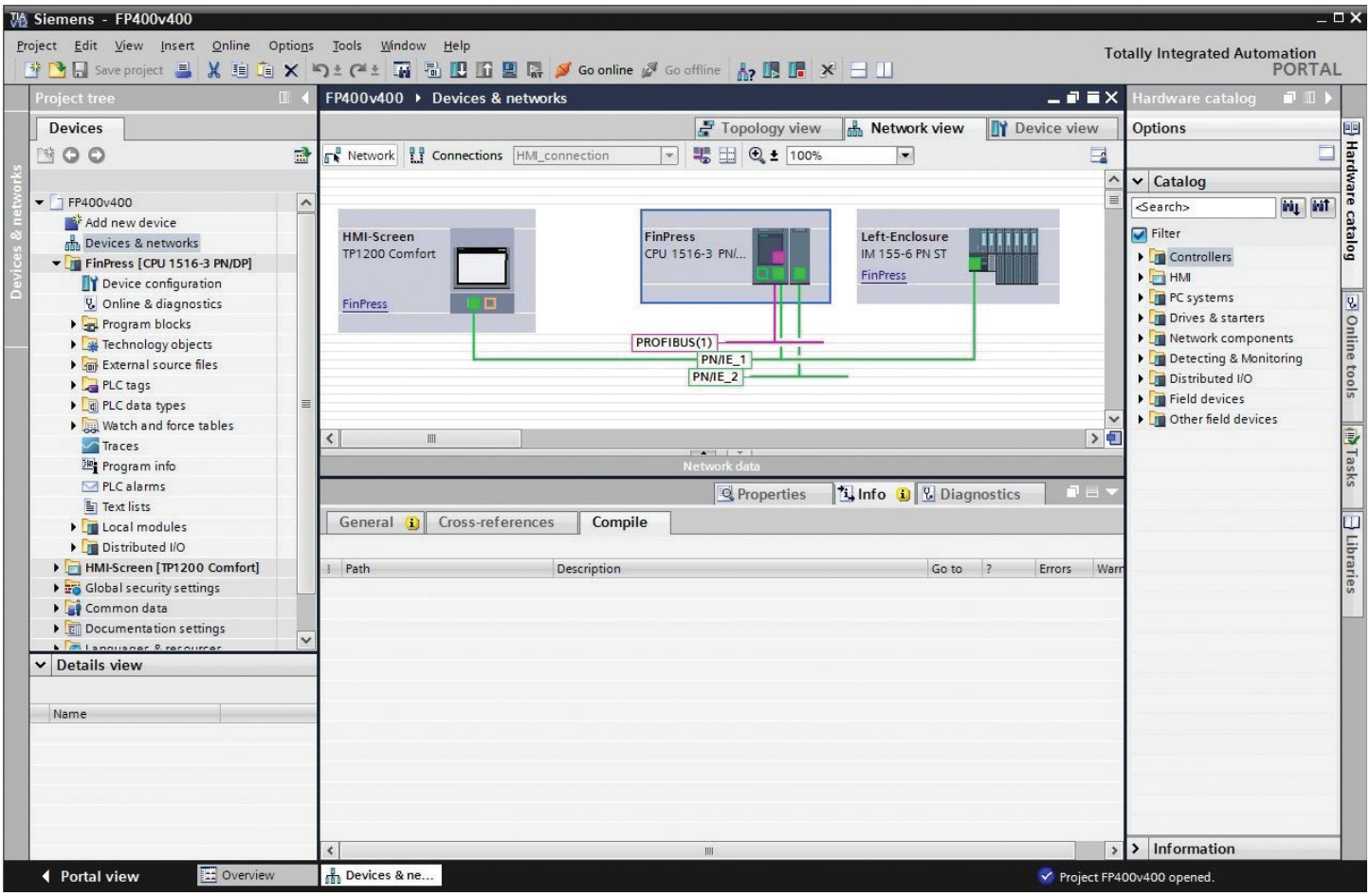
What Siemens automation products were chosen and why?
The redesigned stamping press that Burr Oak developed uses Siemens new S71516 CPU, 12" Comfort Panel HMI, along with ET200SP I/O modules. These products were an excellent fit for the Burr Oak application because of the price and more importantly the feature set that they delivered. These features allow the control system to be installed quickly and for the press to be commissioned by assembly technicians. In addition they can all be configured and programmed with the one engineering software, the TIA Portal V12.

What TIA Portal features addressed your project challenges?
While there were many features in both the TIA Portal V12 software and the S71516 PLC that helped optimize Burr Oaks development time, there were three main items that they highlighted. The first of these was the SCL programming editor inside the TIA Portal software. This high level programming language allowed Burr Oak Tool to create optimized code in controlling the press. In the past they needed to simplify function and file editing, but with the optimized SCL editor, they were able to develop all of their code inside the TIA Portal. The SCL editor provided the programming features they needed, as well as usability highlights such as code folding, code templates, and an intellisence list. The improved online handling of this editor also helped in the debugging of the code, as they could very quickly see what code parts were being called or not.

The second feature they highlighted was the new Trace feature that can be programmed with the S71516 PLC. The ability to trace data from analog and Boolean variables together in one view, along with the ability to create and store multiple offline trace configurations helped Burr Oak to optimize the die tooling station timing with the position of the press. The trace feature is also valuable in troubleshooting any sporadic faults.

The third feature that they highlighted was the S71516 PLC hardware itself, specifically the display, which comes standard with all S71500 PLCs. The display on the S71516 PLC provides plaintext information on each module, as well as automatically generated system diagnostics. In particular for Burr Oak, they trained their technicians to use the fault information provided on the display to verify if the correct I/O modules were connected to the system during the commissioning of the machine. This saved many hours of debug time for engineering, as in the past an engineer needed to connect to the machine with a programming station in order to debug the problem. In additional the ET200M I/O modules of the S71516 PLC also allowed for easy wiring and installation.

How has your business improved?
The use of the TIA Portal and S71516 PLC has allowed Burr Oak Tool to reduce their engineering development times while still delivering a machine that provides the performance, features and flexibility their customers need, and at a price that they can afford. Reduced development times means that Burr Oak Tool can get their stamping presses faster to the market, which in turn helps them be more competitive and grow their business. Burr Oak estimates that the TIA Portal V12 software and the S71516 PLC have allowed them to reduce their engineering development time by up to 30%.


Siemens - FP400v400
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Go online
Go offline
Totally Integrated Automation
PORTAL
Project tree
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Online & diagnostics
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PLC alarms
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