



FACTORY AUTOMATION OF CNC MACHINE TOOLS

CLIENT PROFILE

The client is a professionally managed company, established in Denmark. They have an excellent automated production line set up for products manufactured from metals (steel, aluminum, brass, etc.), plastics, rubber parts, electronic parts, batteries, etc. under one roof. Their primary working model is the manufacturing of mechanical fabrication & machining item equipment's, as per drawing & assembly guidelines.

BUSINESS CHALLENGE

CNC machining tools are crucial in processing metal that involves the creation of machines & machinery parts from various raw materials. The client's machine processing workshop receives high-volume and high-variety orders. For every batch order, the parameter settings of relevant machine tools must be configured, which involves factory managers to be physically present at the work station.

The client desired an intelligent remote machining solution setup as an upgrade to the conventional stand-alone panels for more control and freedom—allowing the factory personnel to remotely manipulate the machining process around the clock and from anywhere in the world. The solution is to allow its users to tweak the parameters on their own terms, regardless of their proximity to the actual machine.

SURETEK SOLUTION

In order to obtain flexible configuration of CNC machining process and incorporate seamless integration capabilities, the client teamed up with Suretek Infosoft. The intelligent networking solution by Suretek, when adopted by client's manufacturers was able to grant real-time remote access to CNC functions via the Internet.

Simply put, the networking solution allows the users to operate CNC machine tools and set/configure parameters remotely, from anywhere in the world. Using the Ethernet connectivity, the networking tool gives manufacturers and system integrators direct access to the controller parameters and machine processing information without live/physical involvement at the control panel.

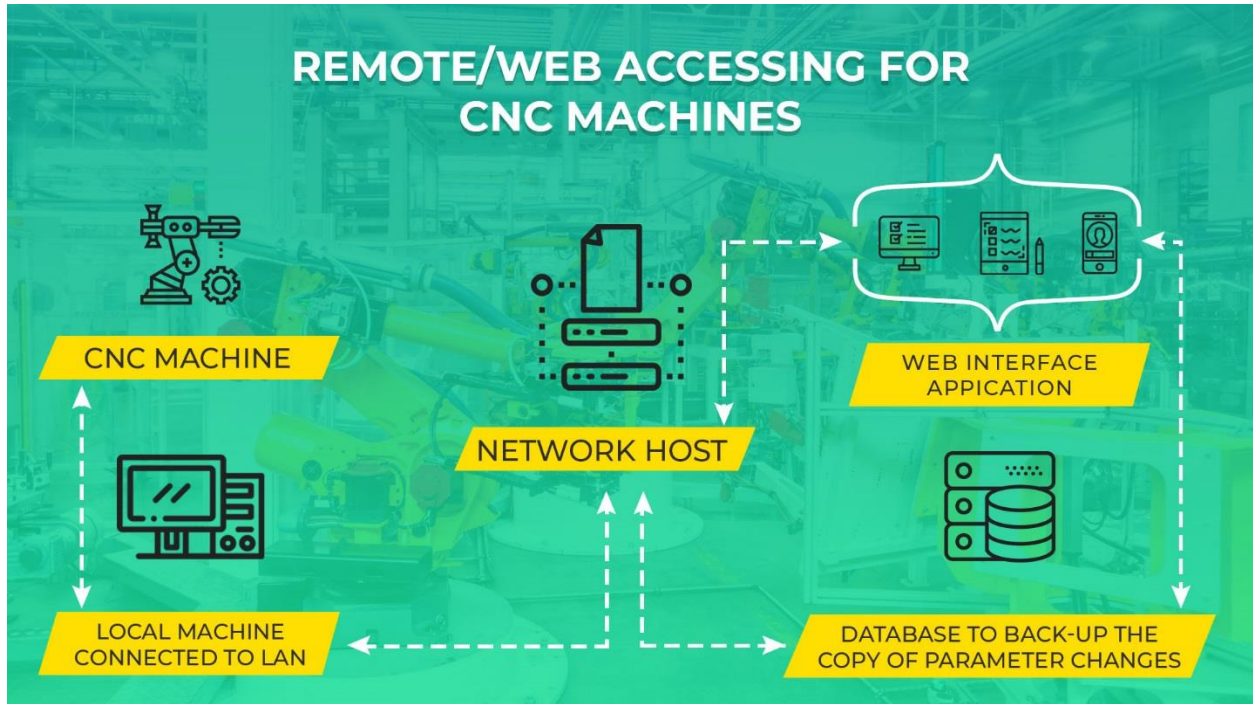


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SURETEK'S CONTRIBUTION AND WORK PROFILE:

- The intelligent networking solution is architected and developed to support manufacturers & machine part builders to reach their machines from a remote location.
- We developed a web interface application to allow remote control and remote access for CNC machines over the Internet/Ethernet. The web interface enables real-time remote/web access and monitoring of CNC machines.
- The networking solution is developed primarily in order to allow the manufacturer to obtain the details of the machine tool and fabricate them from a remote location worldwide.
- We enforced a role-based access control security as an approach to restrict system access to authorized users across the manufacturer's environment, that includes the host machine connected to the LAN, control panel running on windows XP OS and the machining equipment files.
- Established data communication between the CNC machine to be operated remotely other than its control panel. This was made possible by a seamless connection between CNC machine(s) linked to a desktop host with LAN connection--bridging the gap between the CNC machine and the remote operator.
- Deployed a remote networking system to remotely monitor operational status of machine tools for manufacturers to remotely maintain and alter parameters in program files to change the production alignments.
- Provided the system with a capability of backing-up the copy of parameter changes in case of control failure and generate reports of the changes made with time stamps on them.
- The web-based machining automation software is developed with an HTML5 dashboard with cross platform compatibility to enable users to access machines from a multitude of devices.
- The system incorporates data analysis method in order to continuously synchronize and collect the data on machining process, and operation status to give operators a 24/7-like monitoring over the CNC systems.
- The system was initially developed for CNC machines to remotely accept programs in the form of instructions that provide the direction and speed for the tool trajectory. The system can further be scaled up, operated and configured with multiple CNC machines at one go.
- Operators have been given the facility to navigate through multiple web-browsers to monitor and capture real time CNC information and the production status.
- All things considered, the remote web-based CNC access and operations software is a software package that's positioned on top of hardware manufacturing/machining production house to allow machinists to view and configure CNC machine information from a relatively distant location.

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TECHNOLOGIES USED

.NET (C#), ASP.Net MVC, VB.NET, SQL Server 2017, 3rd party API – THINC.