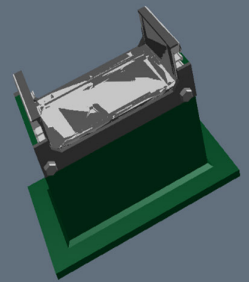


Shop Floor Connect for Teamcenter

Solution brief

Siemens Digital Industries Software



Most machine shops are facing at least one of the following challenges:

- Operators decide which program(s) to run based on word-of-mouth rather than reliable documentation
- There is little or no revision control for numerical control (NC) programs
- Paper-based shop floor documentation, such as setup sheets at machining workstations
- NC programs reside on machine controllers instead of in a centralized location
- Frequent equipment downtime
- Computer-aided manufacturing (CAM) engineers place programs on a USB stick, and then walk to each machine in order to run them
- There is no standard change process from engineering to the shop floor or back to manufacturing engineering
- NC data is mostly stored in an unsecured, unmanaged personal computer (PC) on the shop floor

The answer to these problems is implementing a computer numerical control (CNC) machining environment that includes direct numerical control (DNC). The purpose of a DNC system is to provide a central repository for manufacturing and NC data, and to make that data available to the shop floor.

What is Shop Floor Connect?

Shop Floor Connect is an application for Teamcenter® software that delivers critical production information directly to the shop floor and CNC machine controller. More than just a traditional DNC system, the connection to the centralized Teamcenter database enables users to avoid data duplication and manage revisions to make sure the correct manufacturing data is used during production. It also enables your production staff to access current and released CNC programs, drawings, 3D models and other data sources through a web-based user interface (UI) that runs on any browser-enabled device or controller.

Challenges

- Paper-based shop floor documentation
- Frequent equipment downtime
- Lack of reliable documentation

Solutions

- Shop Floor Connect provides operators with direct access to released Teamcenter data
- Shop Floor Connect, which is a Teamcenter integrated DNC add-on, provides a direct connection to each machine in the shop
- Teamcenter workflows and user rules can be implemented to ensure processes are followed correctly and consistently

Results

- Quicker more flexible information flows
- Lower product rejection rate
- Faster time-to-market

Solution focus

Connecting to Teamcenter

Shop Floor Connect is an application that communicates directly with Teamcenter, Siemens' comprehensive system for managing product lifecycle management (PLM) data and processes from design and engineering through production. Teamcenter provides an environment that you can use to manage product and process definitions, data files and resources. It maintains workflows and roles for users who work in process chains, as well as provides tracking capabilities for monitoring document revisions and release statuses. Unlike traditional DNC systems, Teamcenter eliminates the need for an independent shop floor database; its data remains in a controlled environment until it is sent to the machine tool. Shop floor users can see the source data while it remains in the Teamcenter managed environment. Data files needed for production can be pulled directly to the point of use in a controller or presetter.

Access manufacturing data on Shop Floor Connect

Shop Floor Connect provides shop floor operators with direct access to released Teamcenter data. Using job numbers or work package identifiers, operators can locate the correct data files needed for production, including CNC programs, tool

lists, setup sheets and drawings. The following data can be accessed, depending on what has been stored as part of the manufacturing plan and released for use in production:

- NC programs
- Tooling lists
- Shop documents
- Digital photos
- Operating instructions
- Assembly instructions
- Drawings
- 3D models (the JT™ data format)
- Tooling setup data
- Movie files
- And more

Save and manage shop floor data

When CNC programs are created, modified or optimized by the production team, they can be saved and maintained by Teamcenter as new data or revisions to existing data.

Achieve process consistency

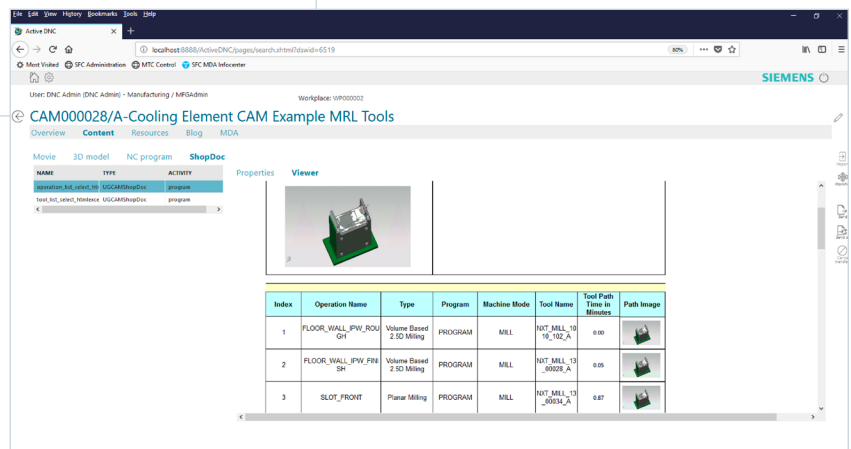
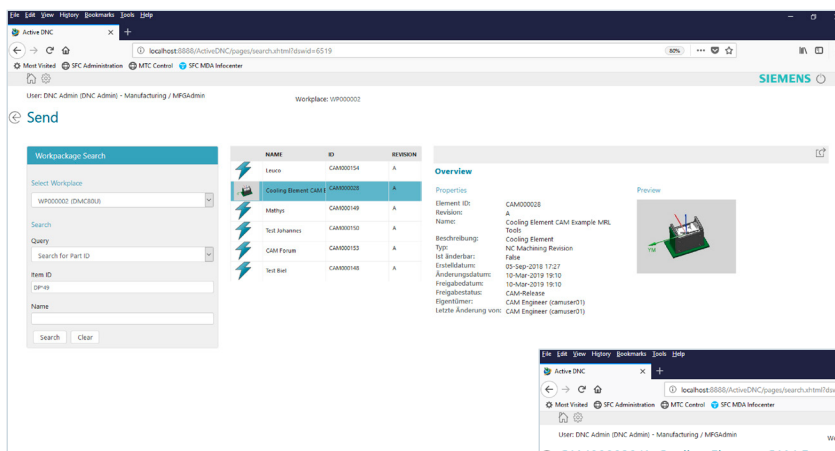
Teamcenter workflows and user rules can be implemented to ensure that processes are followed correctly and consistently.

Maintain transparency

Teamcenter maintains usage logs and generates audit reports, making it easy to understand where and when data is accessed, downloaded or updated, and by whom.

Ensure compliance

Managing data in the Teamcenter secure and controlled environment right up to the point of production helps companies meet applicable regulatory requirements for process accuracy and accountability, detailed traceability and auditing.



Workplace connections

Shop Floor Connect for Teamcenter can provide a direct connection to each machine in the shop. Machines connect via Ethernet or through serial connections (using separately available serial adapters). Most proprietary control systems can be connected (such as Mazak). Tool presetters also connect directly to the Teamcenter database to take advantage of its tooling and resource information. Also, coordinate measuring machines (CMMs) and robots can be integrated with, and connected to, Teamcenter via Shop Floor Connect.

Touchscreen ready

Users appreciate Active Workspace for Teamcenter, especially the look and feel of the interface of Shop Floor Connect for Teamcenter, which make touch screens easy and natural to use. In addition, the browser-based user interface runs on any web browser applications and hardware (PC, industrial personal computer, panel (touch screen) PC, tablet, etc.) that users already understand.

Comparison tool

Users can install third-party file comparison software in the Shop Floor Connect

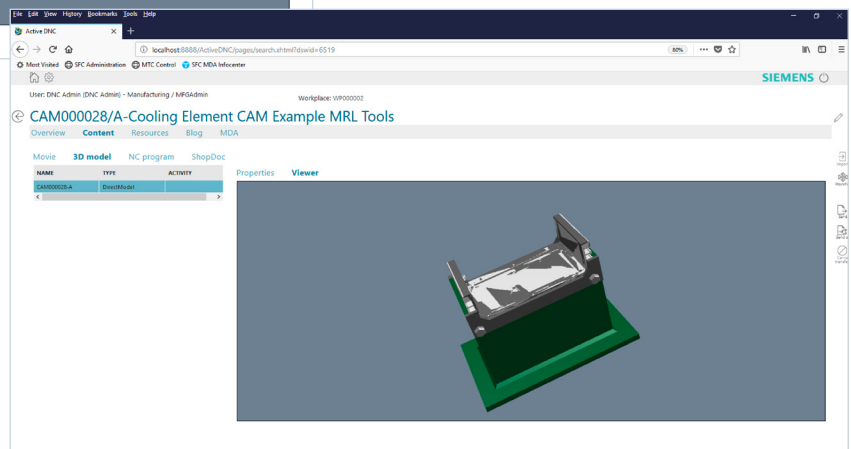
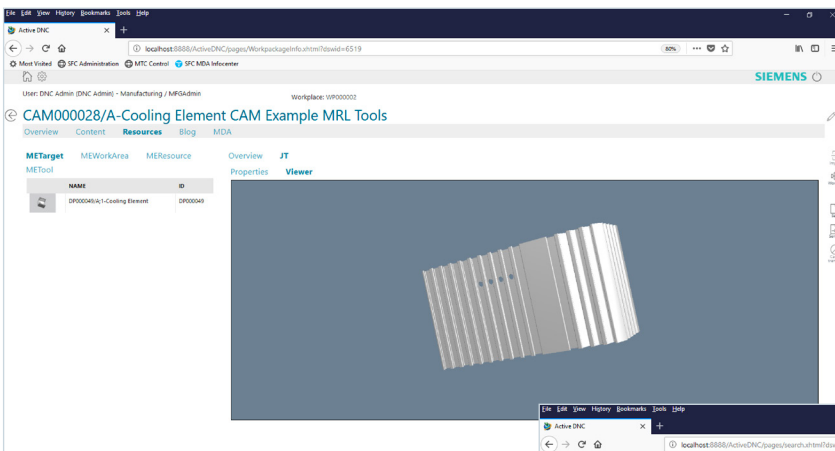
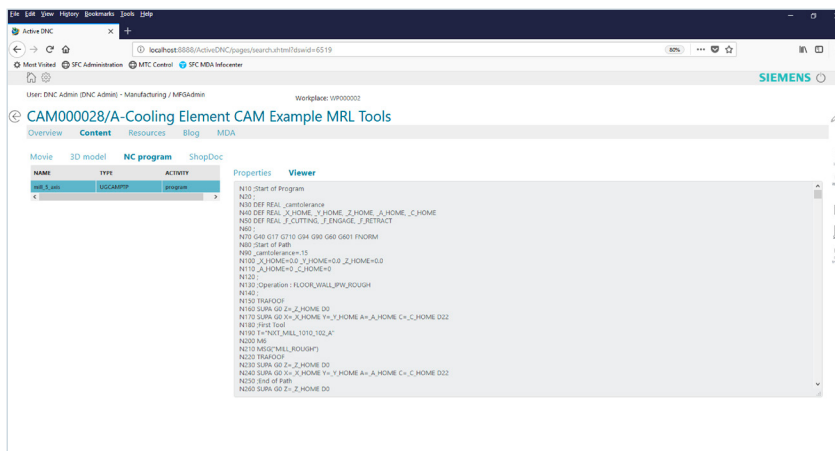
for Teamcenter environment so that they can check and evaluate different versions of their data files.

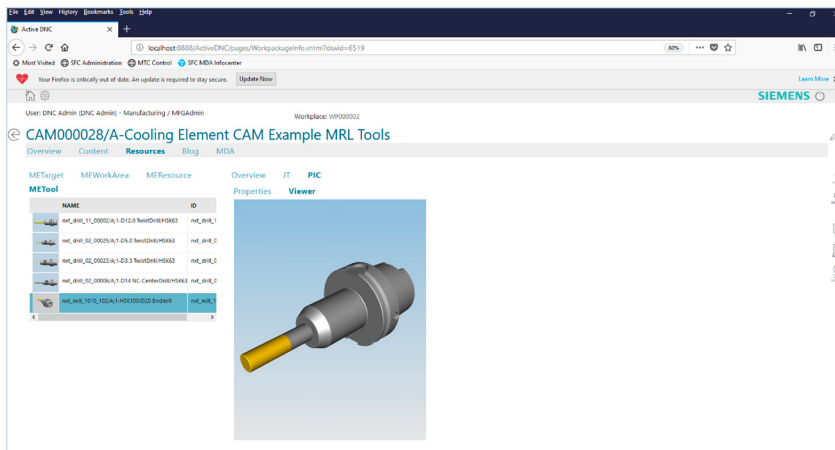
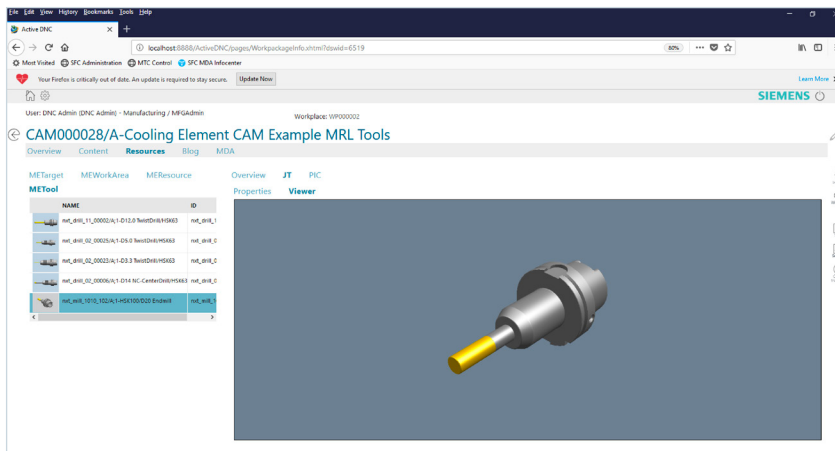
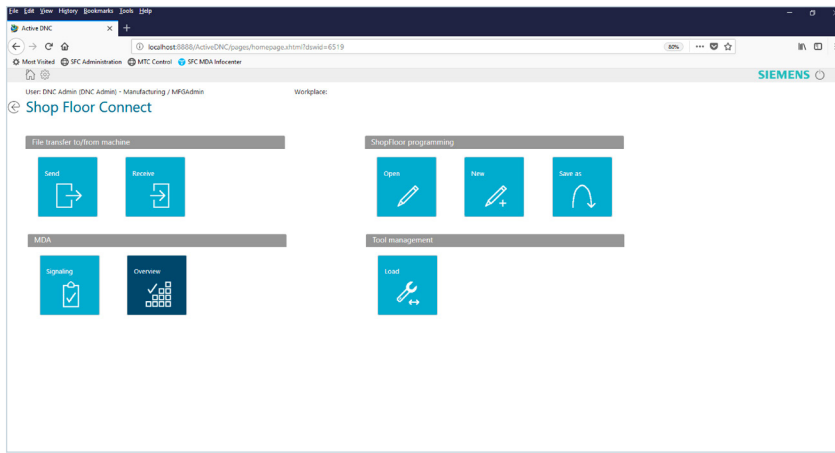
Legacy data import

Users can easily import legacy production data into the Teamcenter database by using automatic options that facilitate the loading of tooling data and NC programs.

Features of Shop Floor Connect

- Download and upload NC data and tool target data to/from NC controllers
- Download and upload CMM or robot data to/from application/controllers
- Upload shop floor-programmed NC programs to Teamcenter
- Upload and administer machine parameters to Teamcenter to ensure security
- Connect to all types of NC controllers and tool presetters
- Connect through a serial (with adapter hardware) or Ethernet interface at the controller
- View all Teamcenter manufacturing information via a browser-based interface





Benefits of Shop Floor Connect

By providing the shop floor with direct access to the source of manufacturing, Shop Floor Connect facilitates many advantages:

- Use correct data in production
- Fewer production errors
- Fewer shop floor delays while data is checked
- Closer connection between engineering, manufacturing engineering and production
- Secure workflow and process flow
- Elimination of local shop floor databases outside of the information technology (IT) infrastructure
- Transparency for all users
- Reduced paperwork
- Quicker, more flexible information flows
- Lower product rejection rate
- Faster time-to-market

Siemens Digital Industries Software
[siemens.com/plm](https://www.siemens.com/plm)

Americas +1 314 264 8499
 Europe +44 (0) 1276 413200
 Asia-Pacific +852 2230 3333

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