Production of a Bowling-Pin

Pin

"Strike – all the pins with one bowl" – you could also achieve a direct hit with a cup in the form of a bowling pin.

The pin is made up of two parts. The pin is a turned part on the pedestal, which is milled. The workpiece is suitable not only as a decorative cup, but also as encouragement to produce your own bowling game.

All the information, tool data, drawings and ShopTurn machining plans required for a reproduction are contained in the following.

www.siemens.com/cnc4you

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1. Safety note

Working with machines is always associated with numerous hazards. It is therefore imperative that the legal and company safety regulations are also observed during the production of the pin.

2. Preliminary remark

The following description is intended for persons acquainted with CNC machines and who have experience with or knowledge of SINUMERIK CNCs with ShopTurn oder ShopMill. All the technical data listed here corresponds to the machines, tools, materials, machining plans and drawings used to produce the prototype. Because of the very varying conditions in other workshops, this data is only of exemplary character for a reproduction. Nevertheless, a problem-free reproduction should be possible in most cases.

ShopTurn enables the pin to be turned in one clamping. The program was processed on a lathe with collet adapter. The program can also be adapted for other machine equipment through small changes to the program.


The pin is turned in one clamping. The contour and the thread are turned first. The part is then cut off, which completes the turning.

The pedestal is milled in two clampings. The contour and the threaded hole are machined first. After reclamping, a pocket is milled on the side. This could contain a special engraving, for example.

You can download all the CAD drawings, programs and machining descriptions for the workpieces free of charge in the registered Internet area "My SINUMERIK" at **www.siemens.com/cnc4you**. The following files and formats are available there:
SAT, STP, IGS und Jobshop files / Drawing as PDF

3. Workpiece blanks

- Pin
  One piece of round stock, AlCuMgPb material, material no. 3.1645;
  diameter 65 mm, cut length approximately 300 mm
- Socket
  One piece aluminium plate, AlCuMgPb material, material no. 3.1645;
  118x118x29 mm, all sides milled.

4. Lathe/miller and machining plans

- Lathe Gildemeister CTX 510 equipped with SINUMERIK 810D / ShopTurn 6.4
- Lathe Gildemeister CTX 410 equipped with SINUMERIK 810D / ShopTurn 6.4
- Milling machine Deckel-Maho DMC 63 equipped with SINUMERIK 810D / ShopMill 5.3
- Machining plan PINV4.MPF for turning the Pin
- Machining plan SIE_SOCKEL_SP102.MPF for milling the contour.
- Machining plan SIE_SOCKEL_SP103.MPF for milling the pocket on the side wall


5. Used Tools

Turning tools

Designation	Tool name in the machining plan
NC spotting drill	ZENTRRRR
External turning tool	EX-CC-08
External turning tool	VC 11 08
External turning tool	EX VC 16 04
Indexable lathe tool	V-Kop-lks-0.2
Threading tool P1.5 (M24)	GEW EX 1.5 HB
Cut-off tool	STECH ISCAR 3

Milling tools

Designation	Tool name in the machining plan
Cutter head ∅ 63	MESSERKOPF 63 ALU
Drill ∅19,75	BOHRER 19.75
End mill ∅ 16	FRAESER 16 HM
Milling tool chamfer 90 degree	FASE 8-2
Thread cutter P=1.5 (M24)	GEWFRAESER 1.5
Milling tool chamfer 90 degree	FRAESER 8-4 HM2
End mill ∅ 6	FRAESER 6 HM

6. Turning the Pin

The sawn blank is securely clamped (collet recommended).

Machining steps on the lathe

1. Home the machine
2. Load the PINV4.MPF machining plan
3. Enter the measured tools in the tool list
4. Insert the tools in the magazine
5. Set tool zero by scratching
6. Perform simulation
7. Start production, execute machining plan

7. Milling the socket

The blank is securely clamped.

Work steps on the milling machine

1. Home the machine
2. Load the SIE_SOCKEL_SP102.MPF machining plan
3. Enter the measured tools in the tool list
4. Insert the tools in the magazine
5. Set tool zero by scratching
6. Perform simulation
7. Start production, execute machining plan
8. Clamp the workpiece, to mill the side wall
9. Load the SIE_SOCKEL_SP103.MPF machining plan
10. Repeat steps 3. to 7.

8. Information in the Internet

Design of the parts, creation of the drawings, development of the machining plans for the machining

Firma W. Andreas Pfeiffer Maschinen- und Apparatebau,
Buchackerstraße 4 in 90513 Zirndorf,
im Internet: www.wapfeiffer.de

Details of the tool machine to be used

Gildemeister Aktiengesellschaft,
Gildemeisterstraße 60,
33689 Bielefeld,
Im Internet: www.gildemeister.com

Manuals and information from the Siemens AG

Manuals and detailed information about our products can be found at www.siemens.de/sinumerik -> Index or search: DOConWEB -> SINUMERIK

- "Simple Turning with ShopTurn" Training Documents
  -> Info/Training -> "Simple Turning with ShopTurn" Training Documents
- ShopTurn Product Brief
  -> 840D/840Di/810D Users -> ShopTurn Product Brief 840D/810D
- ShopTurn Operation/Programming
  840D/840Di/810D Users -> ShopTurn Operation and Programming
- "Simple milling with ShopMill" training document
  -> Info/Training -> "Simple milling with ShopMill" training document
- ShopMill product brief
  -> 840D/840Di/810D users -> ShopMill 840D/810D product brief
- ShopMill operating/programming
  -> 840D/840Di/810D users -> ShopMill operating and programming

Tips when searching in DOConWEB

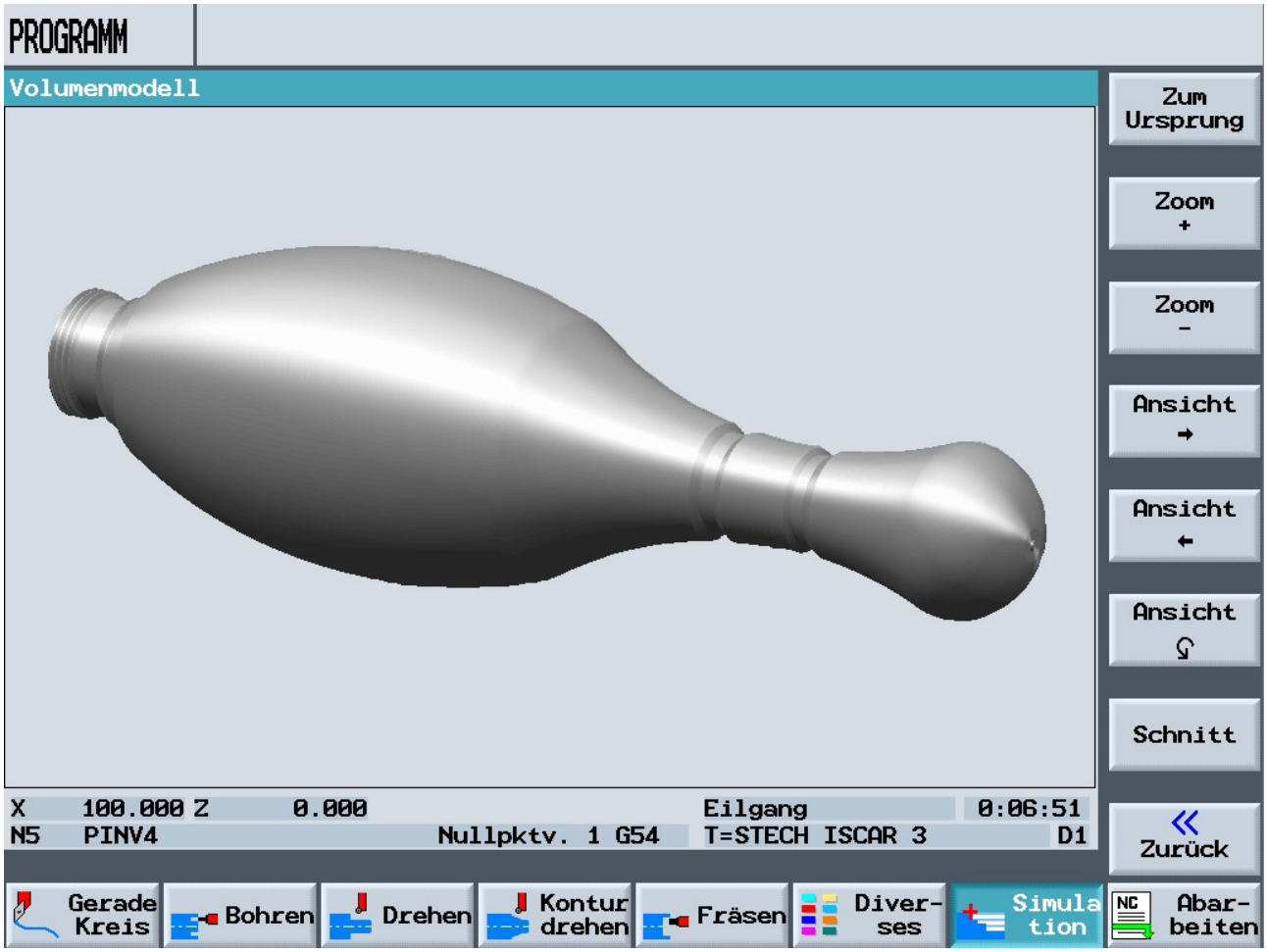
DOConWEB enables individual pages to be called up quickly from documents without having to load the entire file.

- You can restrict the search by clicking "A-Z"
  (-> a search is now only performed below this point in the index)
- Or click the zoom
  (-> a full text search is now performed below this point)

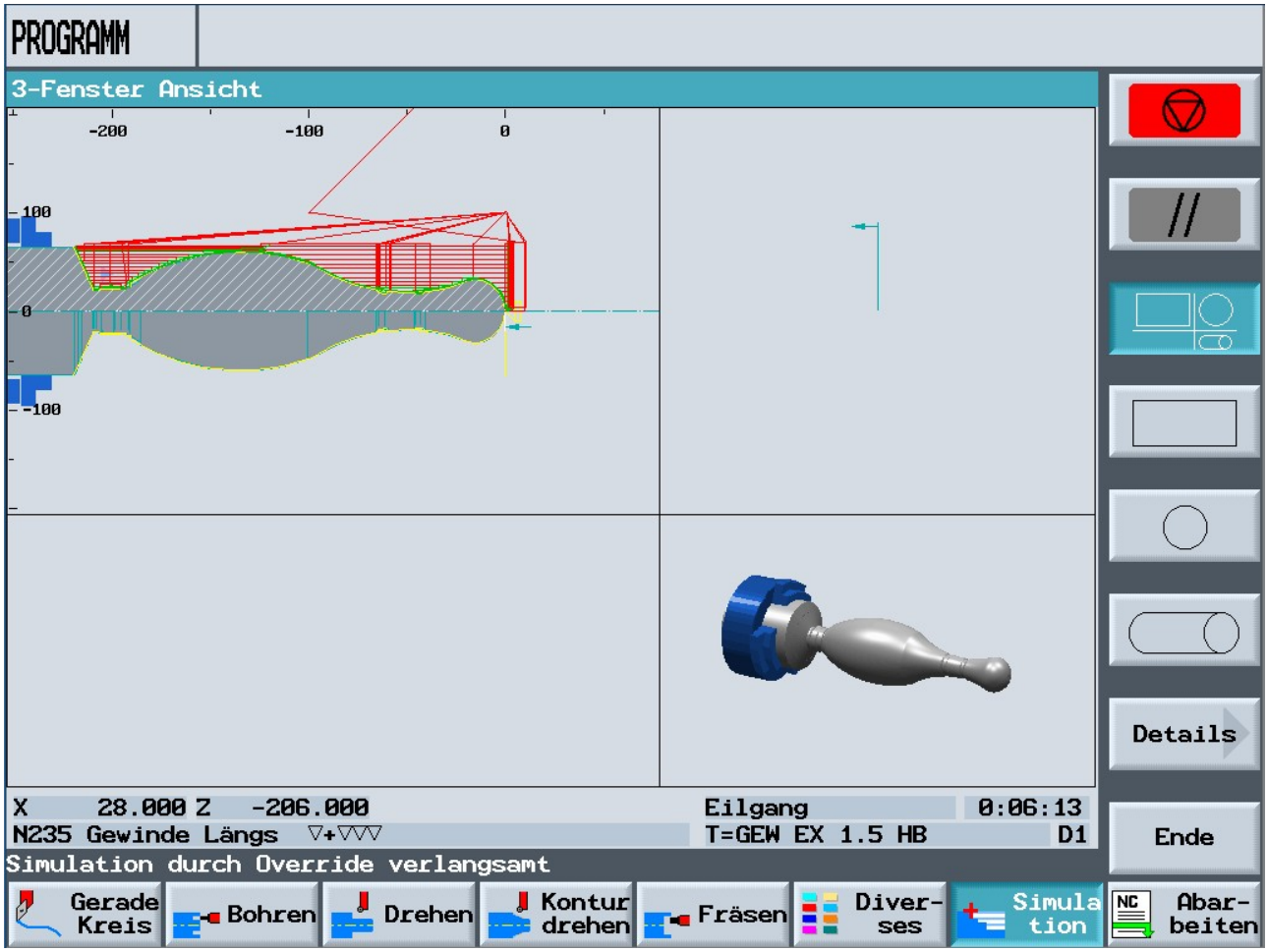

9. Figures

Pin

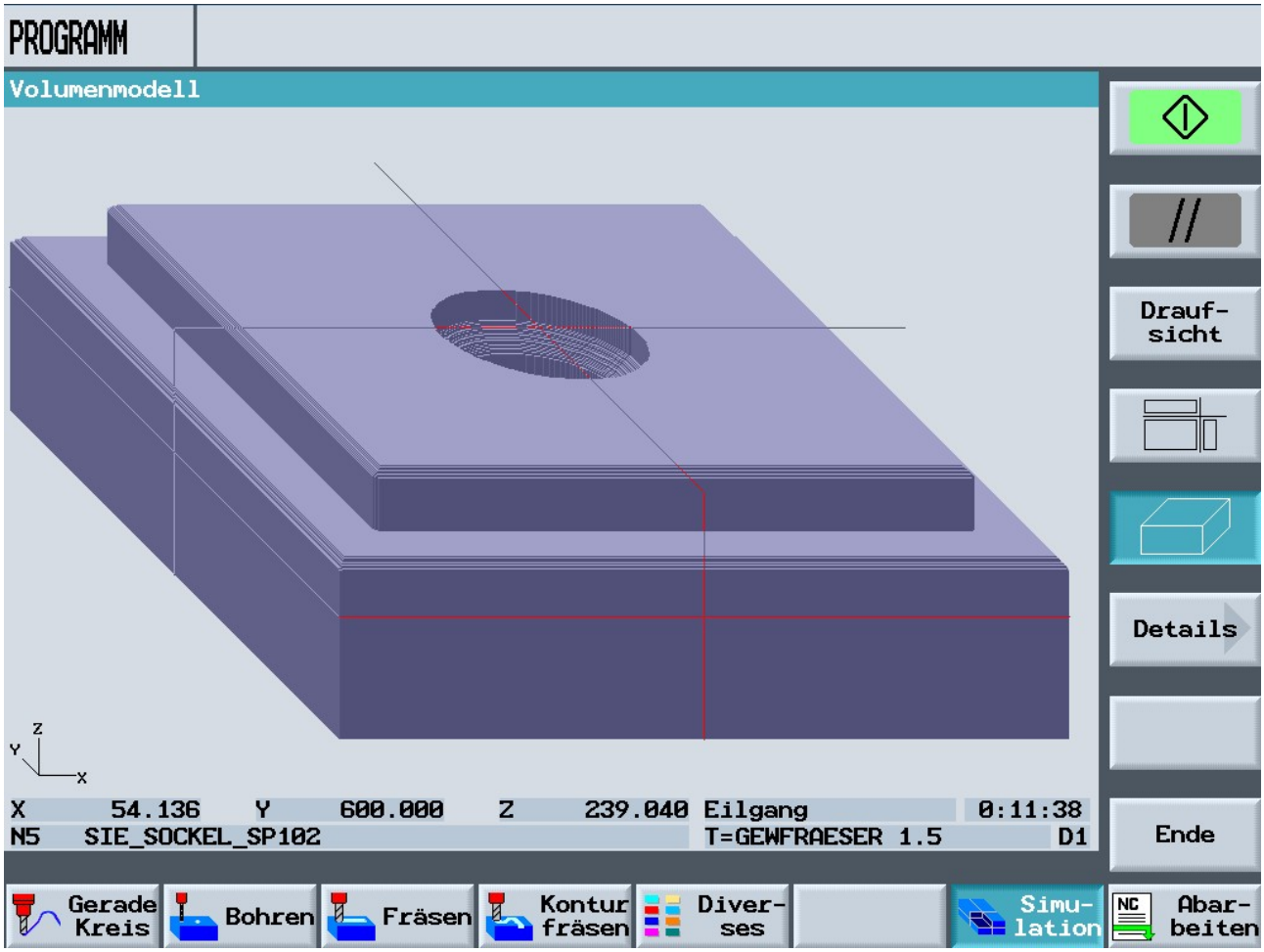
3D-Simulation Pin



Simulation Pin



3D-Simulation socket



Simulation socket