

Manufacturing of a hood ornament



Original hood ornament

Customize your car! This hood ornament will make your car unmistakably yours and will grab people's attention at every corner. It also makes an attractive objet d'art for your cabinet or desk.

All the necessary post-manufacturing information, drawings, tool data and ShopTurn work plans are summarized below.

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1. Safety Instructions

Use of machines can be dangerous. Mandatory and general company safety regulations must be adhered to when manufacturing the hood ornament.

2. Preliminary Note

The following description is intended for CNC lathe professionals who have experience with and understand how to use the SINUMERIK CNC control with ShopTurn. All the technical data listed here refers to the machines, tool, materials, work plans and drawings used in manufacturing the hood ornament at the EMO 2007 in Hanover. For post-manufacturing, the diverse range of circumstances in other workshops means that these data should only be used as a guide. However, troublefree post-manufacturing should be possible in most cases.

ShopTurn enables the hood ornament to be turned in just two clamping operations using the counter-spindle. In the first clamping operation the front of the hood ornament is made. The front side is face turned and longitudinally turned. The contour of the lady's silhouette is then milled with a power tool to a depth of 7 mm using ShopTurn's pocket milling cycle. After completion, the contour is then automatically chamfered in the milling cycle.

The rear side can now be machined using the counter-spindle. If the machine does not have a counter-spindle, the workpiece can be reclamped by hand, though you must remember to align the silhouette correctly as this still has to be chamfered. Finally, the rear side is face milled to 7 mm and the contour chamfered.

You can give your imagination free rein for the ornament base according to the type of end use.

To be on the safe side, we recommend simulating the work plans before starting. This will allow any possible program errors to be recognized and avoided. All CAD drawings and manufacturing descriptions of the workpieces can be downloaded free of charge from the "My SINUMERIK" registered internet zone at www.siemens.de/cnc4you. This zone contains the following files and formats: PDF file of the model with dimensions / Jobshop file / STEP and IDW file

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3. List of Drawings

Drawing of turned part for hood ornament, List of drawings, Sheets 1-9

4. Workpiece Blank

1 round stock, material AlCuMgPb, material no.:3.1645; diameter 90mm, cut length approx. 12mm

5. Lathe and Turning Program

Weiler DZ 45 CNC lathe with counter-spindle and SINUMERIK 840 D

Turning program ShopTurn V6.4 (counter-spindle)

Work plan SIE_ORNAMENT.MPF for turning and milling

6. Tools Used

A Tools for turning and milling the front

Name	Tool name in work plan
Spider, clamping unit KM32 with insert (machining of main spindle)	FINISH_KENNA
VHM slot drill □6	MILLING_6
VHM slot-milling tool □3	MILLING_2
VHM NC spot drill □5	MILL_CH_5x90

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B Tools for turning and milling the rear side

Name	Tool name in work plan
Spider, clamping unit KM32 with insert (counter-spindle machining)	ROUGHING_KENNA
Spider, clamping unit KM32 with insert (counter-spindle machining)	FINISH_KENNA_CS
VHM NC spot drill □5	MILL_CH_5x90_2
Spider, clamping unit KM32 with insert (counter-spindle machining)	ROUGHING_KENNA
Spider, clamping unit KM32 with insert (counter-spindle machining)	FINISH_KENNA_CS

7. Manufacturing Operations

A Turning and milling the front side (main spindle)

- The front side is machined on the main spindle in one work cycle.
- Lathe operations:
- Move to the machine's reference position
- Read in the SIE_ORNAMENT.MPF work plan
- Add gaged tools to tool list
- Put tools into tool magazine
- Clamp round stock, unclamped length approx. 7mm
- Scratch on workpiece zero point
- Carry out simulation run
- Start manufacturing, work through work plan

B Turning and milling the rear side (counter-spindle)

The front side was machined on the main spindle. The counter-spindle takes up the workpiece and the rear side is now machined. The various stages of the work plan are worked through.

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Lathe operations:

- The counter-spindle automatically takes up the workpiece
- The various stages of the work plan are worked through

8. Online Information

Design of the parts, creation of drawings, development of machining work plans.

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

Measurements and performance data for tools used

Hoffmann – Gruppe,
Werkzeughersteller Hoffmann GmbH Qualitätswerkzeuge,
Haberlandstraße 55, D-81241 Munich,
Internet: www.hoffmann-group.com

Details of the machine tools used

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

Handbooks and information from Siemens AG

Handbooks and detailed information about our products can be found by visiting
www.siemens.de/sinumerik > Index or search for DOConWEB > SINUMERIK

- Training document "Easy turning with ShopTurn"
-> Info/Training -> Training document "Easy milling with ShopTurn"
- ShopTurn Quick Reference
-> 840D/840Di/810D Users -> ShopTurn Quick Reference 840D/810D
- Operating and programming ShopTurn
840D/840Di/810D Users -> Operating and programming ShopTurn

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Tips for searching using DOConWEB

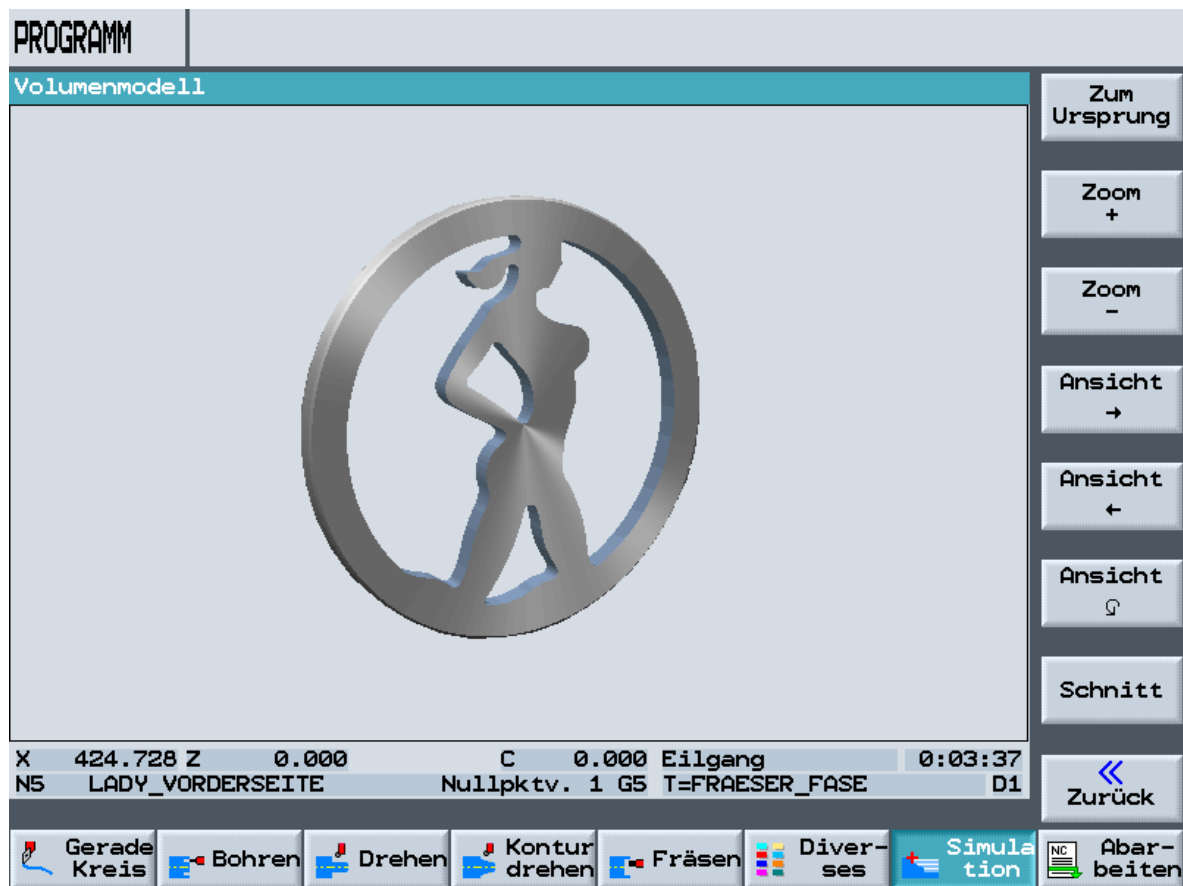
Tips for searching using DOConWEB

DOConWEB allows quick access to individual pages of documents without having to load the entire file.

- You can restrict your search by clicking on "A-Z"
(-> only index items starting with the relevant letter will be returned),
- or by clicking on the magnifier
(-> a full text search is then performed).

9. Program screenshots

Solid model of the front side machining to be done with ShopTurn

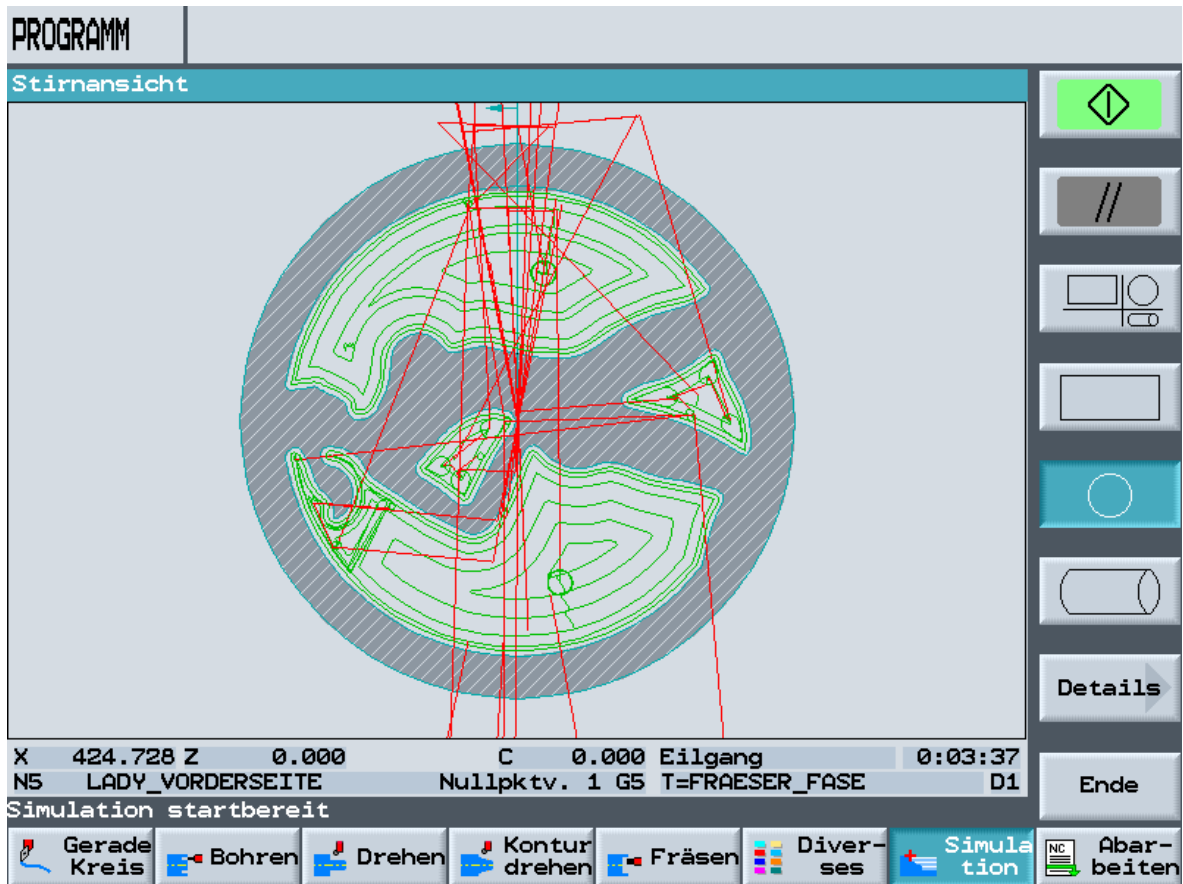


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Simulation of the X-Y machining levels with ShopTurn

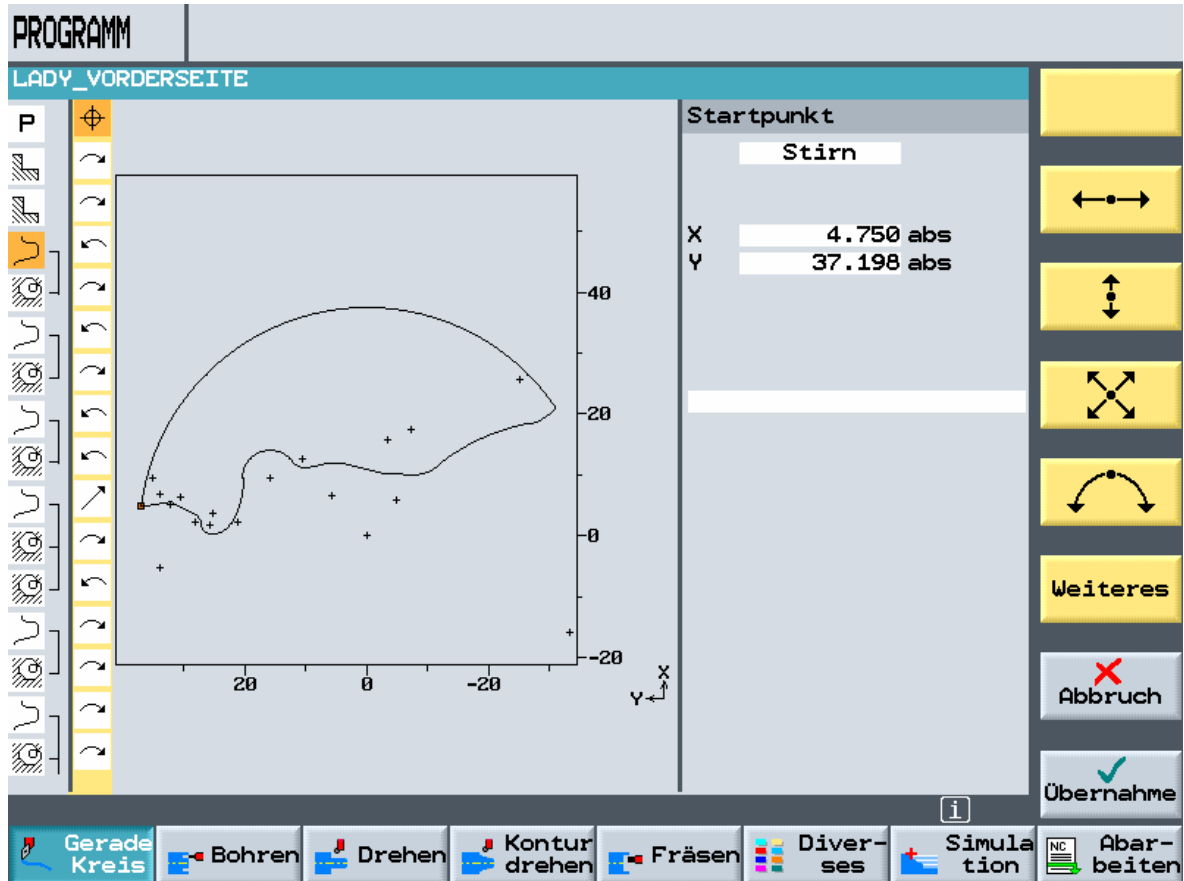


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Representation of the upper contour pocket in Contour Editor



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10. Illustrations

Hood ornament after turning and milling



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Completed hood ornament



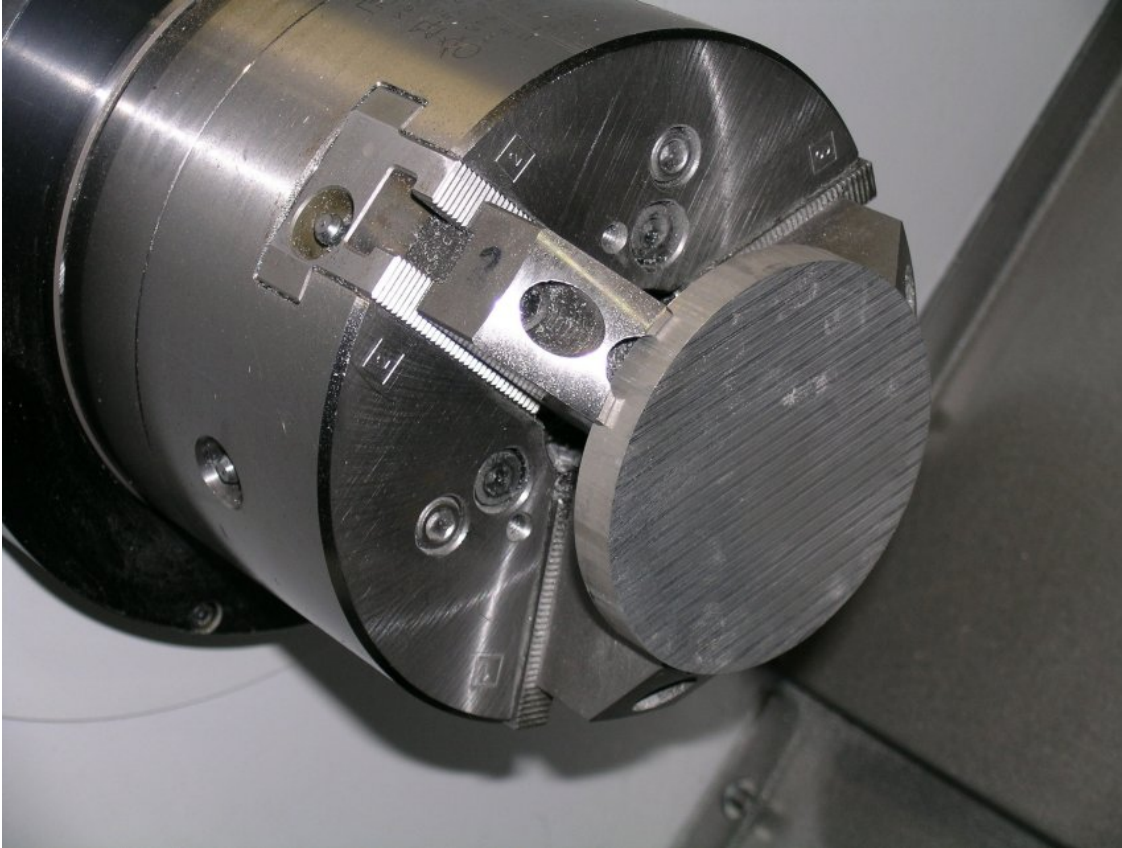
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11. Clamping Setup

Clamping the first side into the jaw chuck of the main spindle



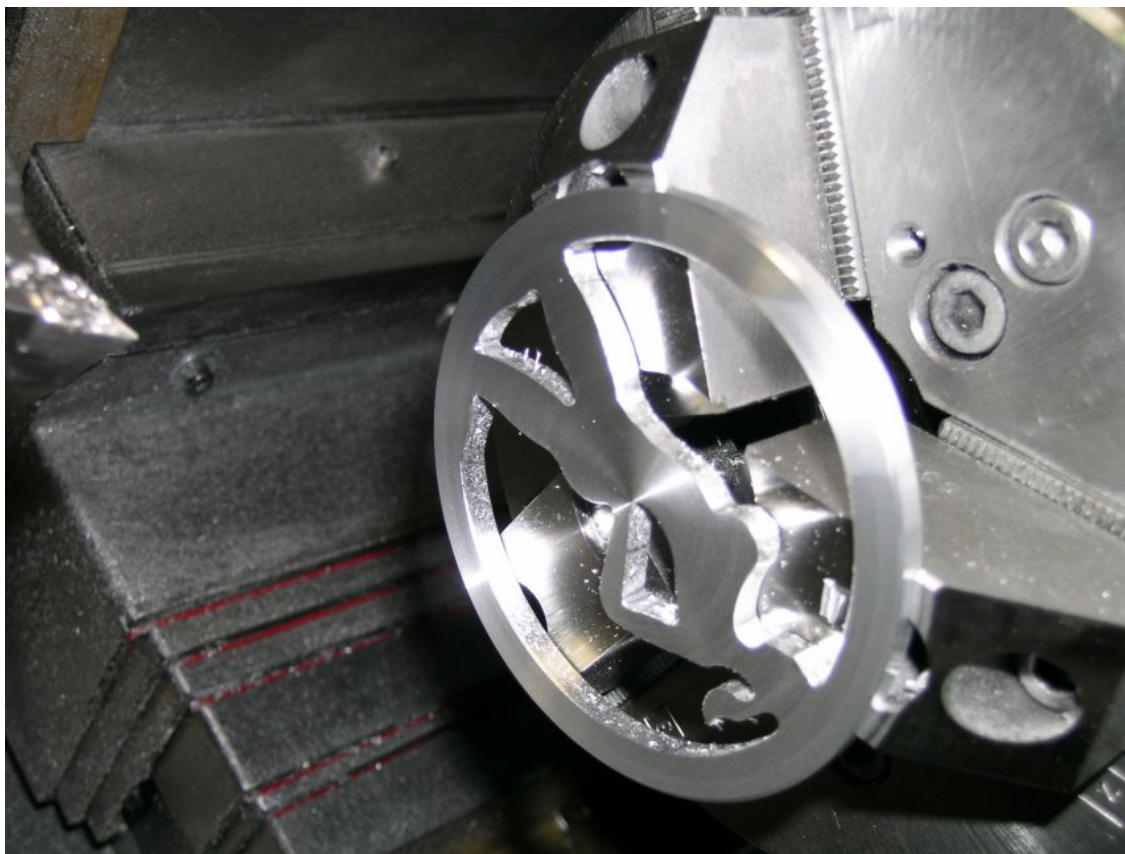
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Clamping the second side into the counter-spindle



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