

A Standard for Cutting Tool Definition Exchange between Manufacturing and Measuring Machine for Closed-Loop Quality Control

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- Details: https://vdma.eu/compliance

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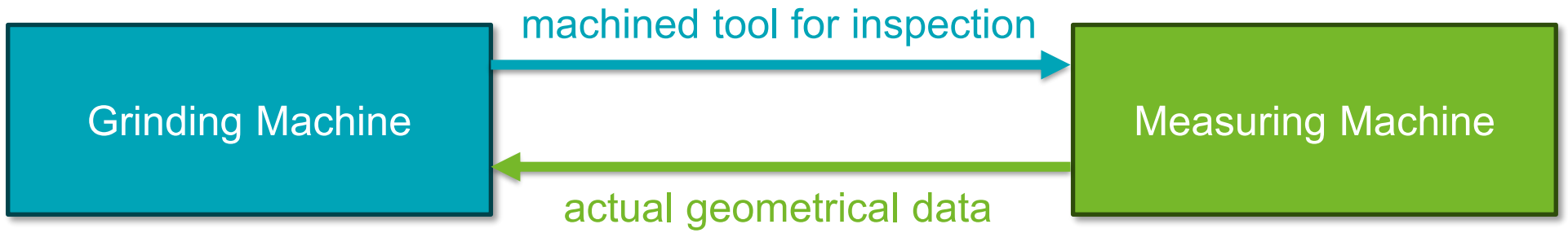
GDX > CTD



„Raider vs. Twix“ von Tim Reckmann, CC BY-NC 2.0

Motivation and Background

- Standardize cutting tool data for closed loop exchange between tool grinding machine and tool inspection/measuring machine



- Formerly known as GDX (Grinding Data Exchange)
  - identical semantics
  - standardized payload via OPC UA, reference implementation in umati

Partners

Tool Grinding Machines

WALTER *
ANCA CNC MACHINES *
ROLLOMATIC *
SAACKE
SCHÜTTE
A.HAAS *
VOLLMER *
SCHNEEBERGER *

Measurement Machines

WALTER *
ZEISS
werth
HEXAGON
ZOLLER Erfolg ist messbar *
ogp Messtechnik GmbH

Software / Research

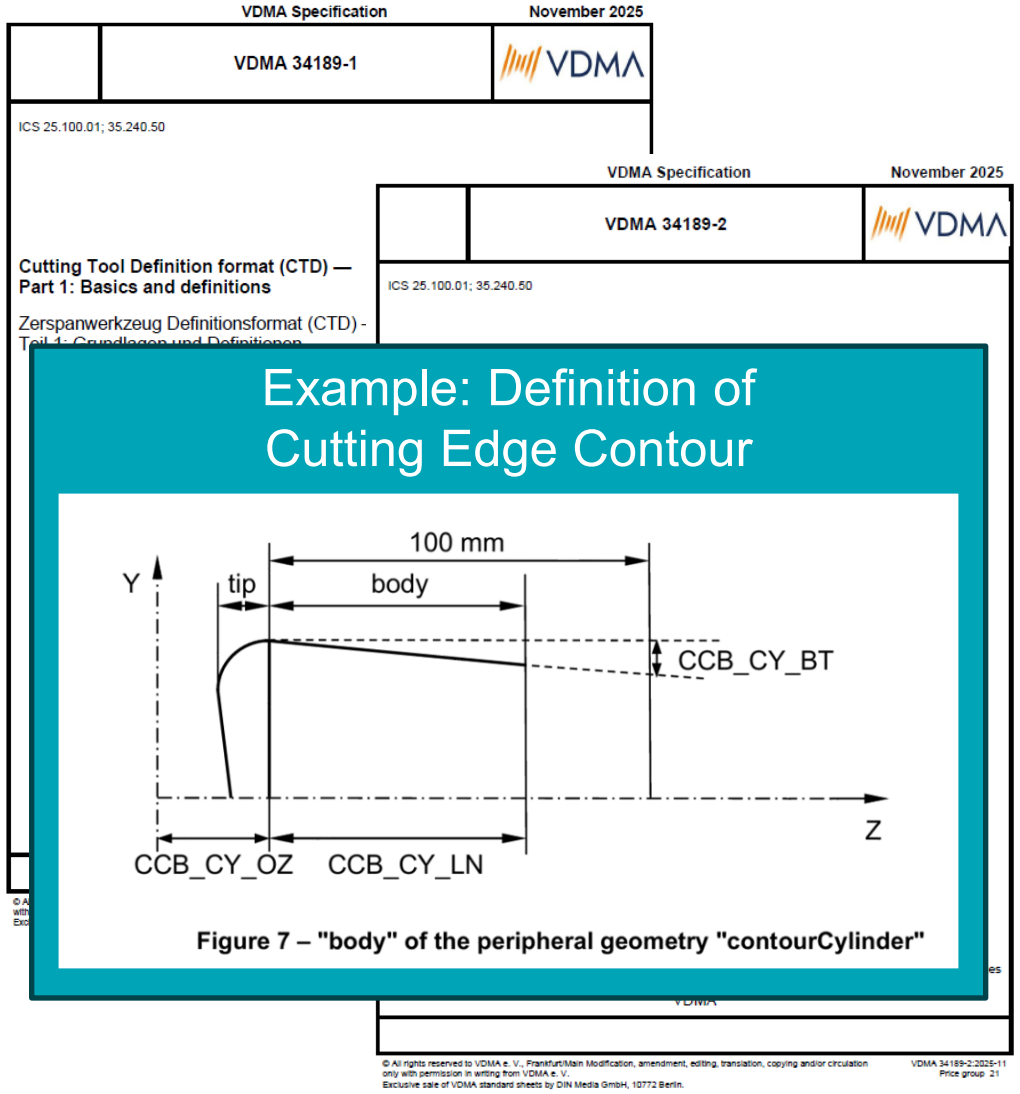
FISW Steuerungstechnik GmbH *
ISBE Solutions for Cutting Tools *
HEIDENHAIN
HOCHSCHULE FURTWANGEN UNIVERSITY HFU

Users

ph HORN ph
WALTER
EMUGE FRANKEN
MAPAL
KENNAMETAL
GÜHRING
Seco

*Member of standardization working group

Standardization (1) – Data Definition



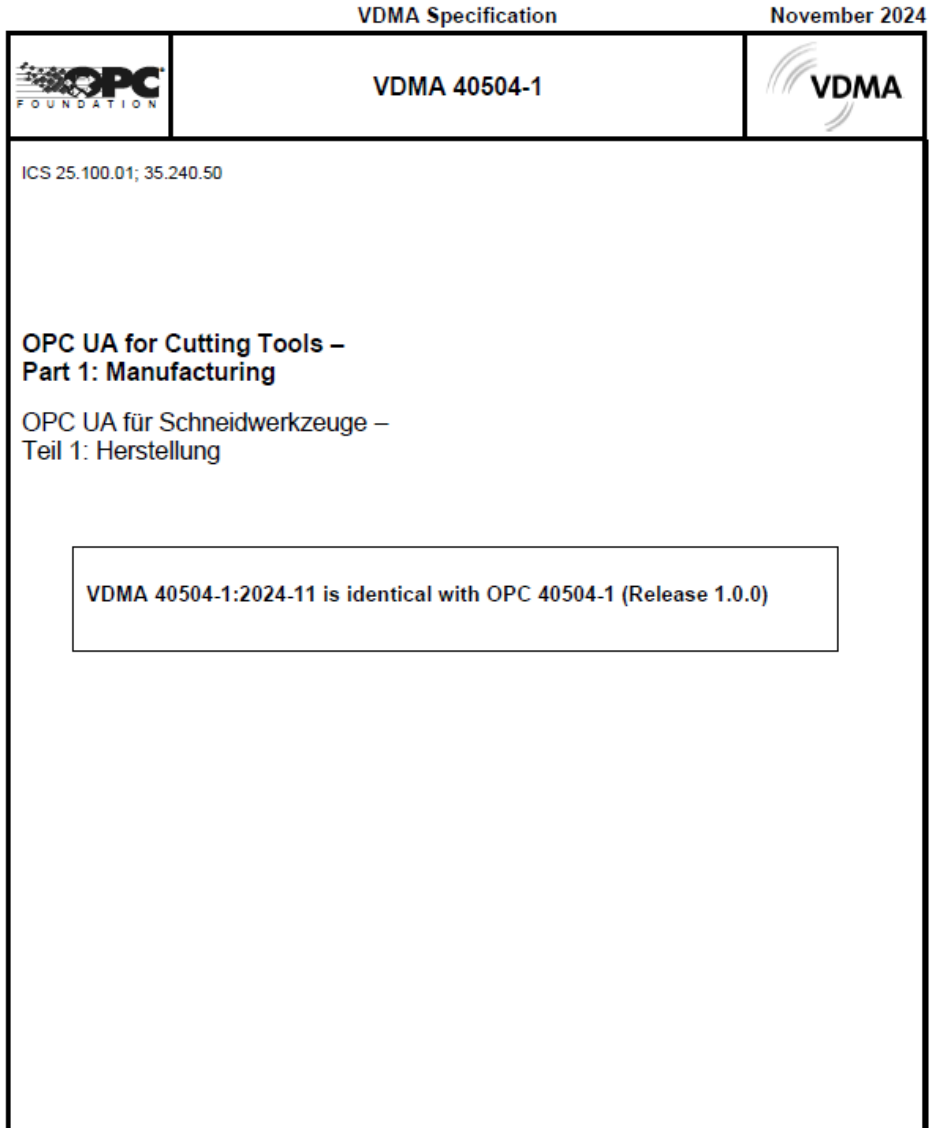
- Definitions and Data Format
- via established industrial specification published by VDMA and DIN-Media (VDMA 31489-Series)

- Part 1: Basics and definitions (published November 2025)
- Part 2: General definitions for cylindrical tools (published November 2025)

- Part 10: Milling Cutters (publ. Jan. 2026)
- Part 20: Drills (publ. Jan. 2026)
- Part 30: Reamers (publ. Jan. 2026)

- DRAFT Part 3: Wheels and Wheel Packs (publ. Jun. 2026)

Standardization (1) – XSD Schema files



VDMA Specification November 2024

VDMA 40504-1

ICS 25.100.01; 35.240.50

OPC UA for Cutting Tools –
Part 1: Manufacturing

OPC UA für Schneidwerkzeuge –
Teil 1: Herstellung

VDMA 40504-1:2024-11 is identical with OPC 40504-1 (Release 1.0.0)

.xsd Schema files available:

https://github.com/CuttingToolDefinition/schema

README MIT license

Cutting Tool Definition

This repository contains the .xsd schema files for the VDMA 34189 specification series.

This specification defines the format for an XML file which should be exchange between cutting tools manufacturing machines, measuring machines and higher level systems. The preferred way to exchange this files, is using OPC 40504 UA for Cutting Tools - Manufacturing.

- OPC 40504 Online Reference
- OPC 40504 Specification

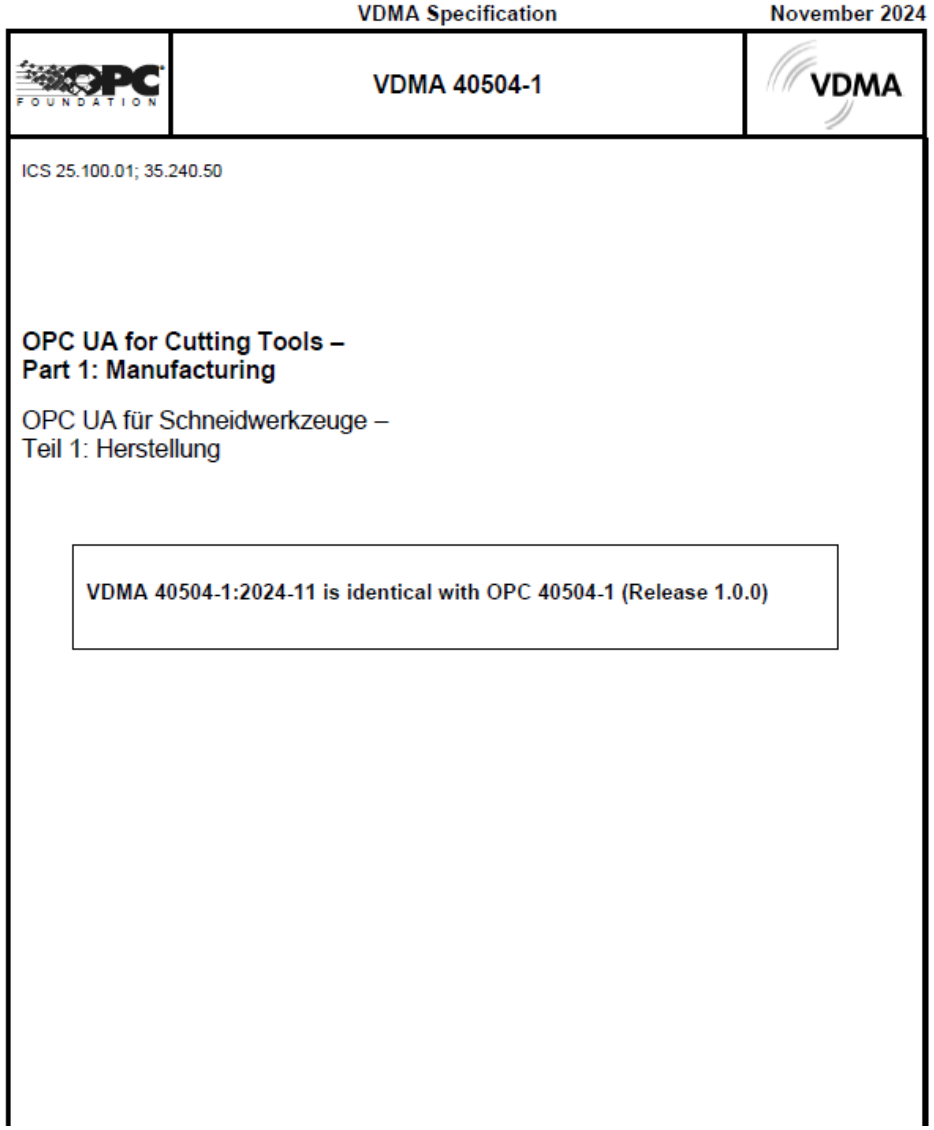
Further details about the VDMA 34189 Specification series can be found at:

- VDMA 34189-1 - Buy Standard DIN Media
- VDMA 34189-2 - Buy Standard DIN Media
- VDMA 34189-10 - Buy Standard DIN Media
- VDMA 34189-20 - Buy Standard DIN Media
- VDMA 34189-30 - Buy Standard DIN Media

License

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Standardization (2) – Data Transport and Interface



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- VDMA / OPC 40504-1: OPC UA for Cutting Tools
- Describes transport of payload via
  - OPC UA Client-Server
  - OPC UA Pub/Sub (MQTT)
- Implemented in umati – universal machine technology interface



More Information

- https://umati.org/ctd

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