MACHINING: TURNING TOOL AND PROCESS BASICS

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Learning made Simple, Visual, and Interactive

Turning Fundamentals introduces learners to the components and operations involved in turning. Using animated demonstrations and other visual aids to break down complex concepts, the course aims to demystify the process of turning and related cutting operations. By the end of the course, learners will understand how a variety of industries—from automotive to ball bearing to aerospace—rely on this machining process.

Credit Hours **1.5**

Learning Objectives

- Define the metal cutting process of turning and its objective.
- Recognize common terminology and modes of classification used to describe indexable turning inserts and tool holders.
- Demonstrate an understanding of the cutting forces at work during turning and the mechanics of chip formation and breakage.
- Distinguish between different workholding arrangements commonly used in turning.
- Compare and contrast the various cutting operations typically associated with the capabilities of a typical turning center.

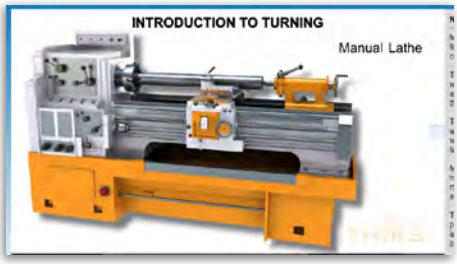
Table of Contents

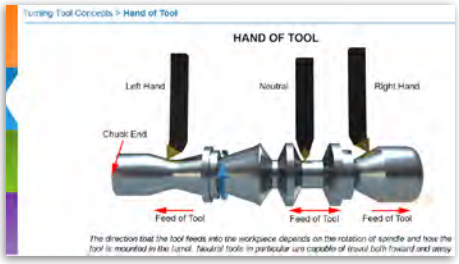
I. Turning Tool Concepts

- **Tool Construction**
- **Tool Signature**
- **Hand of Tool**
- **Insert Properties**
  - o Insert Material
  - o Insert Orientation
  - o Insert Chipbreaker
- **Chip Formation and Breaking**
  - o Cutting Force
  - o Chip Types
    - - Continuous Chips
    - - Discontinuous Chips
  - o Chip Curl
    - - Depth of Wear
    - - Cutting Speed

II. Principles and Processes

- **Operational Axes**
- **Workholding**
  - o Part Setups
    - - Two Setups
    - - Single Setup Alternative
  - o L/D Ratio and Holding Points
- **Roughing and Finishing**
- **Turning Process Cycle Operations**
  - o Facing
  - o Turning
  - o Boring
  - o Grooving
    - - Radial Grooving
    - - Face Grooving
  - o Parting Off
  - o Threading
- **Cutting Zone Conditions**
  - o Coolant Purpose
  - o Coolant Delivery





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