

Výukový materiál zpracovaný v rámci operačního programu Vzdělávání pro konkurenceschopnost



INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ

Registrační číslo: CZ.1.07/1. 5.00/34.0084

Šablona: II/2 Inovace a zkvalitnění výuky cizích jazyků na středních školách

Sada: 2 AJ

Číslo: VY_22_INOVACE_PRO_1.,2.,3.,4.,ROC_23

Technical English



Předmět:	Anglický jazyk
Ročník:	1.,2.,3.,4.,ročník
Klíčová slova:	machining, drilling, lathe
Jméno autora:	Mgr. Jolana Čechová
Adresa školy:	Střední škola zemědělská, Osmek 47 750 11 Přerov



Technical English

Machining



Machining

- Machining is any of various processes in which a piece of raw material is cut into a desired final shape and size by a controlled material-removal process.
- The material is cut by sharp cutting tools into the form of chips, sometimes called also swarf.
- Machining is a part of the manufacture of many metal products, but it can also be used on materials such as wood, plastic, ceramic, and composites.



Technical English

Machining

Machinist

- A person who specializes in machining



Machine shop

- A room, building, or company where machining is done.
- It consists of one or more workrooms containing major machine tools





Technical English

Machining



Methods

Traditional method

- In these "traditional" or "conventional" machining processes, machine tools, such as lathes, milling machines, drill presses, or others, are used with a sharp cutting tool to remove material to achieve a desired geometry.

Non-traditional method

- The use of chemical, thermal or electrical processes to machine a work piece and remove material.



Technical English

Machining

Factors that play an important role to achieve a final product

- Tool size
- Tool shape
- Level of contact with a tool
- The depth of the cuts
- Relative motion between the tool and workpiece (cutting speed, feed)
- The type of material that is to be cut



Technical English

Machining



Cutting tools

- has one or more sharp cutting edges and is made of a material that is harder than the work material. The cutting edge serves to separate chip from the parent work material.
- Special properties (heat and wear resistance, bending strength, toughness and thermal stability)
- High-speed steel, indexable carbide, ceramics, diamond)





Technical English

Machining



Cutting machines

- A lathe can be used to create that diameter by rotating a metal workpiece, so that a cutting tool can cut metal away, creating a smooth, round surface matching the required diameter and surface finish.
- A drill can be used to remove metal in the shape of a cylindrical hole.
- Other tools that may be used for various types of metal removal are milling machines, saws, and grinding machines. Many of these same techniques are used in woodworking.
- Advanced machining techniques include electrical discharge machining (EDM), electro-chemical erosion, laser cutting, or water jet cutting to shape metal workpieces.



Technical English

Machining



The principal machining processes are

- **Turning** are operations that rotate the workpiece as the primary method of moving metal against the cutting tool. Lathes are the principal machine tool used in turning.
- **Milling** are operations in which the cutting tool rotates to bring cutting edges to bear against the workpiece. Milling machines are the principal machine tool used in milling.
- **Drilling** are operations in which holes are produced or refined by bringing a rotating cutter with cutting edges at the lower extremity into contact with the workpiece. Drilling operations are done primarily in drill presses but sometimes on lathes or mills.



Technical English

Machining



Practice 1(true or false)

- 1) **T/F** Machining is any of various processes in which a piece of raw material is cut into a desired final shape and size by a controlled material-removal process.
- 2) **T/F** Traditional method is the use of chemical, thermal or electrical processes to machine a work piece and remove material.
- 3) **T/F** Cutting tool has only one sharp cutting edge and is made of a material that is softer than the work material.
- 4) **T/F** A drill can be used to remove metal in the shape of a cylindrical hole.



Technical English

Machining



Practice 2

- 1) What is machining?
- 2) What traditional machining methods do you remember?
- 3) What do we call the machine used in turning?
- 4) What operations can be done on a lathe?
- 5) What is the difference between conventional and non-conventional processes?
- 6) What is the name of the machining operation used for making holes?



Check your answers



Practice 1

1T

2F

3F

4T

Practice 2

Slides 3-9



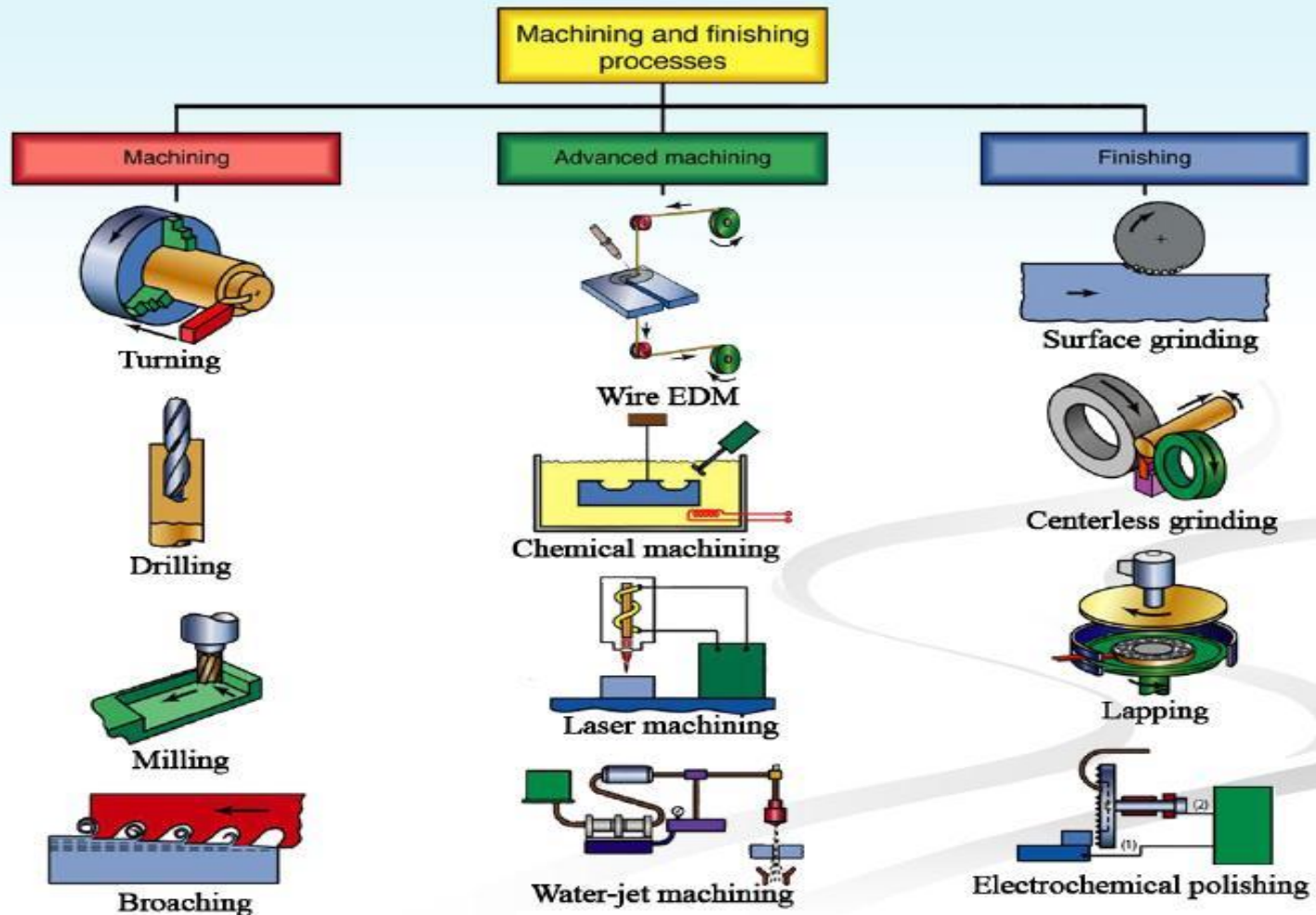
Vocabulary

English	Czech	English	Czech
machining	Obrábění	drilling	Vrtání
desired	Požadovaný	feed	Posuv
precise	Přesný	grinding	Broušení
rotation	Otočení	hardness	Tvrdost
Cutting force	Řezná síla	resistance	Odolnost
Cutting speed	Řezná rychlost	Indexable carbide	Slinutý karbid
Cutting tool	Řezný nástroj	Milling	Frézování
deviation	Odchylka	swarf	Třísky
diamond	diamant	turning	Soustružení
Bending strength	Pevnost v ohybu	Wear resistance	Odolnost proti opotřebení
workpiece	obrobek	lathe	soustruh



Technical English

Machining Summary



Použité zdroje



- Veškeré použité obrázky (kliparty) pocházejí ze sady Microsoft Office 2010.
- Všechny fotografie pochází z archivu autora nebo Wikipedie
- O'Sullivan N., Libbin J.D., *Engineering*, Express Publishing 2011
- White L., *Engineering*, OUP 2003
- Deutsch P., Hendrychová P., *Technická angličtina pro SPŠ se zaměřením na elektrotechniku a strojírenství*, CZ.1.07/1.1.04/01.0086

Autorem materiálu a všech jeho částí, není-li uvedeno jinak, je Mgr. Jolana Čechová
Financováno z ESF a státního rozpočtu ČR.