



INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ

Střední průmyslová škola strojnická Olomouc, tř.17. listopadu 49

**Výukový materiál zpracovaný v rámci projektu „Výuka moderně“
Registrační číslo projektu: CZ.1.07/1.5.00/34.0205**

Šablona: III/2 Anglický jazyk

Sada: 2

Číslo materiálu v sadě: 19

Tento projekt je spolufinancován Evropským sociálním fondem a státním rozpočtem České republiky

Název: Metal-forming processes 2

Jméno autora: Mgr. Jana Novotná

Předmět: anglický jazyk

Jazyk: anglický, český

Klíčová slova: cold forming process, blanking, bending, drawing, extrusion

Cílová skupina: žák 3. ročníku

Stupeň a typ vzdělání: střední odborné

Očekávaný výstup: Žák si rozšíří slovní zásobu na téma „zpracovávání kovů“.

Metodický list/anotace:

Žáci si na základě této prezentace rozšíří slovní zásobu k tématu „zpracovávání kovů“, především o tváření kovů za studena. Při vypracovávání úloh využívají znalostí z odborných předmětů.

Datum vytvoření: 14. 3. 2013

1. Look at the picture and answer the questions.

1. What is the man's profession?
2. Where is he?
3. What is he doing?



Picture 1

Key:

1. black smith
2. smithy / forge / workshop
3. He is forging (probably an axe) by a hammer. It is open-die forging.

2. Read the text.

Cold forming processes:

These processes are applied for soft materials otherwise the workpiece would crack. The force required must be much higher than in hot forming. Cold forming is a fast and cheap manufacturing technique. Cold forming processes are: blanking, bending, drawing, extrusion and many others.

BLANKING is a metal forming operation in which a piece of sheet metal is removed from a larger piece by applying a great shearing force. The removed piece is called **blank**. Blanking is used to cut workpieces with simple geometries. The process requires a blanking press, sheet metal, blanking punch and blanking die.

BENDING is a process during which material is plastically deformed into various angles. The act of banding results in tension and compression in the sheet metal. When the bending pressure is removed at the end, the material has a tendency to returned partially to its original shape. It means that it is necessary to over-bend the sheet to achieve a desired bend angle.

DRAWING is a process in which a metal is stretched into the desired shape. The metal must be resistant to stress and tension damage. The workpiece is stretched around a plug and then pulled through a die. Common products are cylinders for aluminium cans or kitchen sinks.

EXTRUSION is the process by which long straight metal parts with various cross-sections can be produced. The cross-sections can be round, rectangular, T-shape or L-shape. The materials used for extrusion must be stress-resistant (e.g. tin, lead, titanium, etc.)

Vocabulary:

(to) achieve – dosáhnout

angle – úhel

bending – ohýbání

blank – výstřižek

blanking – stříhání

blanking die – střižnice

blanking press – stříhadlo

blanking punch – střižník

can – plechovka

compression – tlak

(to) crack – prasknout

cross-section – průřez

desired – požadovaný

die – zápustka

drawing – tažení

extrusion – protlačování

force – síla

lead – olovo

plug – razník, tažník

(to) pull – táhnout

(to) require – požadovat

resistant – odolný

(to) result in – mít za následek

shearing – stříhací

sheet metal – plech

sink – dřez

straight – rovný

stress – napětí

(to) stretch – natáhnout

tension – tah

tin – cín

various – různý

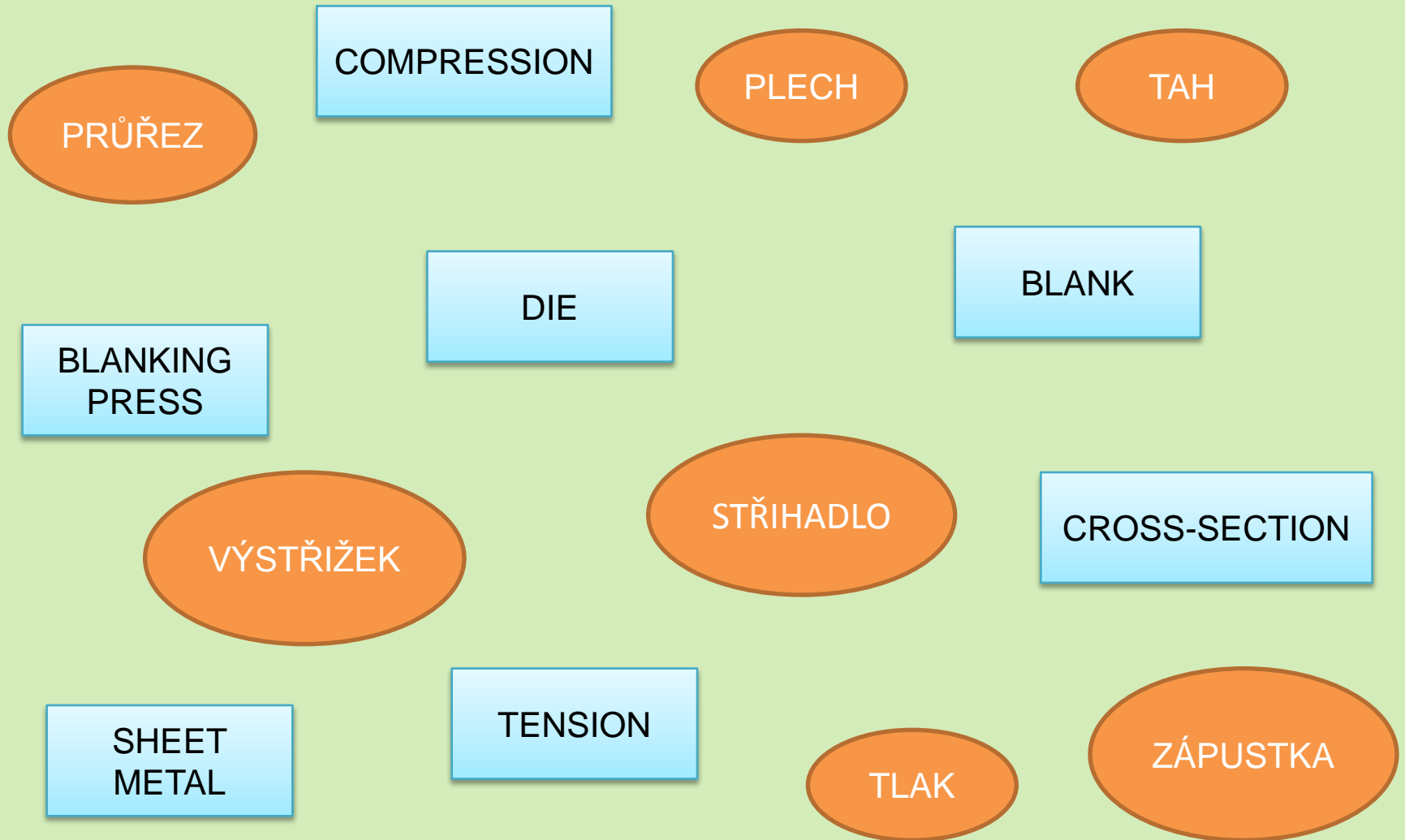
3. Choose the correct answer.

1. **BLANKING/ FORGING** is not a cold forming process.
2. **DRAWING / BLANKING** is a process in which a metal is stretched into a desired shape.
3. **BLANKING / EXTRUSION** is used to cut workpieces with simple geometries.
4. **BENDING / DRAWING** is a process during which material is deformed into various angles.
5. By **FORGING / EXTRUSION** long straight metal parts with various cross-sections are produced.

Key:

1. **BLANKING/ FORGING** is not a cold forming process.
2. **DRAWING / BLANKING** is a process in which a metal is stretched into a desired shape.
3. **BLANKING / EXTRUSION** is used to cut workpieces with simple geometries.
4. **BENDING / DRAWING** is a process during which material is deformed into various angles.
5. By **FORGING / EXTRUSION** long straight metal parts with various cross-sections are produced.

4. Match the English words with their Czech equivalents.



Key:

1. blank – výstřížek
2. blanking press – stříhadlo
3. compression – tlak
4. cross - section – průřez
5. die – zápustka
6. sheet metal – plech
7. tension - tah

5. Answer the questions.

1. Which cold forming processes do you know?
2. While must be the materials soft when they are formed in cold conditions?
3. What equipment is used for blanking?
4. What is a blank?
5. Which products can be made by drawing?
6. What materials are used in the extrusion process?
7. Why is it necessary to over-bend the sheet metal during the bending process?

Key:

1. blanking, bending, drawing, extrusion, etc.
2. otherwise they would crack
3. blanking press, blanking punch, blanking die
4. Blank is a removed piece when we are blanking.
5. cylinders for aluminium cans, kitchen sinks, etc.
6. malleable and stress-resistant materials: tin, titanium, copper, lead, etc.
7. The material has a tendency to return partially to its original shape. It means that it is necessary to over-bend the sheet to achieve a desired bend angle.

Použitá literatura:

vlastní zdroje

DEUTSCH, P., HENDRYCHOVÁ, P. *Technická angličtina zaměřená pro střední průmyslové školy se zaměřením na elektrotechniku a strojírenství*. Olomouc, 2011.

Internet

Picture 1

SULONEN, P. *Wikimedia Commons* [online].[cit. 14. 3. 2013]. Dostupné na:
[http://commons.wikimedia.org/wiki/File:Blacksmith_Lebanon_\(Petteri_Sulonen_-_Flickr\)_cca2.0.jpg](http://commons.wikimedia.org/wiki/File:Blacksmith_Lebanon_(Petteri_Sulonen_-_Flickr)_cca2.0.jpg)

Dostupné pod licencí Creative Commons Attribution – 2.0 Generic.