

INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ

First School Year

WELDING METHODS USING AN ELECTRIC CURRENT

In the following text you will learn about 2 methods only:

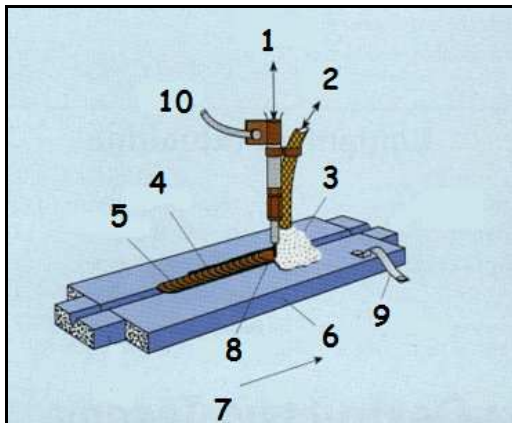
1. *Welding using a fluxing agent*

The base of *welding* using a *fluxing agent* uses a *bare* electrode. This electrode is automatically put into a *welding* point. The electrode *melts* under the influence of electric *arc* heat.

This electric *arc* is under a layer of *fluxing agent*. The function of the fluxing agent is to protect the *arc* and molten pool from the effects of air.

In Picture 1 you can see the details of this method.

Picture 1



1. Bare fusion electrode
2. *Fluxing agent* lead
3. *Fluxing agent*
4. Slag
5. *Weld*
6. Base material
7. *Welding* direction
8. Molten metal + *fluxing agent*
9. Electric contact
10. *Current* source

2. *Welding by electrical resistance*

We use this *welding* method for automatic operations. A *current* flows through *welded* material. The *current* heats *welded* material at the *welding* temperature.

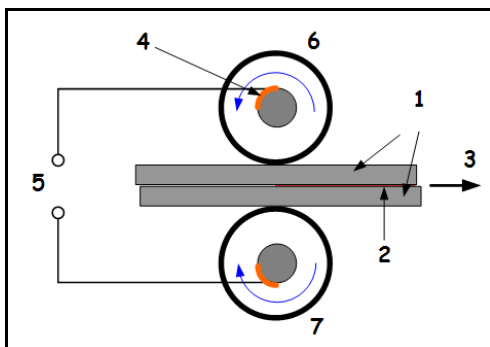
This happens in the place of connection. It uses contact *resistance*. The electrode contact pressure then *welds* 2 materials together.

Among the resistance *welding* methods there are for example:

- *contact welding* (see Picture 2)
- *point welding* (see Picture 3)

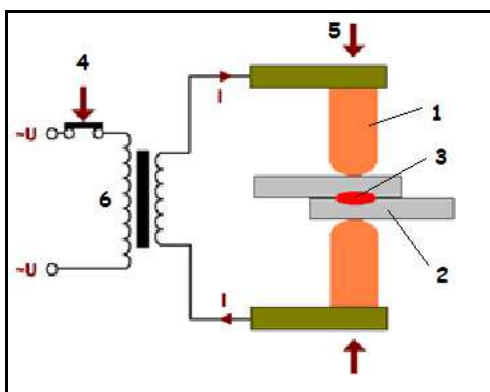
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Picture 2 – Contact welding



1. *Welded* material
2. *Weld*
3. *Welding* direction
4. Electric contact
5. *Direct voltage source*
6. Upper *wheel electrode*
7. Lower *wheel electrode*

Picture 3 – Point welding



1. Copper electrode
2. *Welded* material
3. *Point weld*
4. *Switch*
5. *Thrust*
6. *Welding* transformer

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VOCABULARY

arc	oblouk
bare	holý
contact welding	stykové svařování
current	proud
direct voltage source	zdroj stejnosměrného napětí
electrical resistance	elektrický odpor
fluxing agent	tavidlo
melt	tavit
point welding	bodové svařování
switch	spínač
thrust	přítlačná síla
weld	svařovat, svar
welding	svařování
wheel electrode	kotoučová elektroda

COMPREHENSION QUESTIONS

1. Can you explain welding using a fluxing agent?
2. What do you know about welding by electrical resistance?

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EXERCISES

1. Hidden message - 12 words were placed into the puzzle. Find the words and the hidden message then translate:

E	L	E	C	T	T	R	I	E	C	A	L	R	E	N
S	I	S	T	A	C	N	L	C	E	N	J	R	K	O
W	P	H	Z	K	P	E	G	X	T	K	Q	O	L	I
K	S	O	E	U	C	N	T	Q	G	P	T	R	L	T
J	E	H	P	T	I	P	G	O	D	X	E	E	E	C
K	D	P	R	D	H	B	W	U	R	H	M	W	E	E
O	E	O	L	A	L	C	A	B	L	P	P	O	H	R
R	D	E	R	Q	D	W	T	A	E	H	E	L	W	I
E	W	C	U	N	A	Z	L	I	W	I	R	D	R	D
B	Z	Q	U	H	I	M	O	N	W	Y	A	Z	G	U
Z	H	G	J	R	F	E	A	B	G	S	T	X	N	T
X	E	N	Q	T	R	C	K	B	G	P	U	I	J	P
Z	E	D	J	Q	L	E	R	Z	J	T	R	R	S	L
X	D	S	K	G	R	O	N	T	C	X	E	S	A	O
E	M	E	L	K	I	H	R	T	M	Y	S	P	E	D

ARC
ELECTRODE
PROTECT
UPPER

CURRENT
HEAT
SWITCH
WELDING

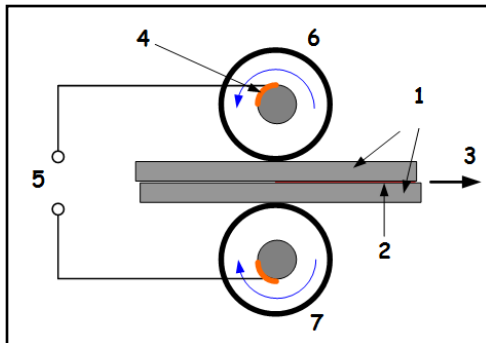
DIRECTION
LOWER
TEMPERATURE
WHEEL

Hidden message

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2. Describe the picture below:

- 1 _____
- 2 _____
- 3 _____
- 4 _____
- 5 _____
- 6 _____
- 7 _____



3. Translate the expressions into English or into Czech:

- | | | |
|----|-----------------------|-------|
| 1 | svařovat, svar | _____ |
| 2 | fluxing agent | _____ |
| 3 | spoj, zapojení | _____ |
| 4 | electrical resistance | _____ |
| 5 | proud | _____ |
| 6 | tavit | _____ |
| 7 | arc | _____ |
| 8 | protect | _____ |
| 9 | měď | _____ |
| 10 | lower | _____ |

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EXERCISES – KEY

1. Hidden message - electrical resistance

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E L E C T T R I E C A L R E N
S I S T A C N L C E + + + + O
+ + + + + E G + + + + + I
+ + + + U C N T + + + T R L T
+ + + P T I + + O + + E E E C
+ + P R D H + + + R + M W E E
+ E O L A + C + + + P P O H R
R D E R + + + T A E H E L W I
E W C + + + + + I + + R + + D
+ + + U + + + + + W + A + + +
+ + + + R + + + + + S T + + +
+ + + + + R + + + + + U + + +
+ + + + + + E + + + + R + + +
+ + + + + + + N + + + E + + +
+ + + + + + + + T + + + + +

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(Over,Down,Direction)

ARC(5,7,SW)

CURRENT(3,9,SE)

DIRECTION(15,9,N)

ELECTRODE(9,1,SW)

HEAT(11,8,W)

LOWER(13,8,N)

PROTECT(11,7,NW)

SWITCH(11,11,NW)

TEMPERATURE(12,4,S)

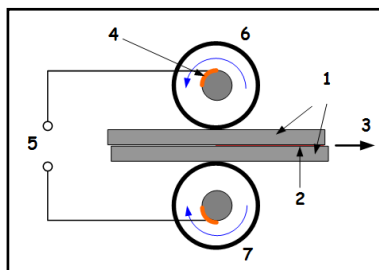
UPPER(5,4,SW)

WELDING(2,9,NE)

WHEEL(14,8,N)

2. Describe the picture below:

1. **Welded** material
2. **Weld**
3. **Welding** direction
4. Electric contact
5. **Direct voltage source**
6. Upper **wheel electrode**
7. Lower **wheel electrode**



3. Translation

- 1 svařovat, svar
- 2 fluxing agent
- 3 spoj, zapojení
- 4 electrical resistance
- 5 proud
- 6 tavit
- 7 arc
- 8 protect
- 9 měď
- 10 lower

weld
tavidlo
connection
elektrický odpor
current
melt
oblouk
chránit
copper
spodní