СП171 Theme: Resource-saving Technologies of Welding Production (ресурсосберегающие технологии сварочного производства)

Read the grammar rule and do grammar exercise.

Модальные глаголы и их эквиваленты (may, can, must)

В английском языке есть группа глаголов, которые выражают не действия, а только отношение к ним со стороны говорящего. Они называются ***модальные*** глаголы.

С их помощью говорящий показывает, что считает то или иное действие возможным или невозможным, обязательным или ненужным и т. д.

Модальные глаголы: *can, could, may, might, must, will, would, shall, should, ought.*

- *He can swim. – Он умеет плавать.*
- *He may swim. – Он может плавать (ему разрешено).*
- *I must swim. – Я должен плавать.*
- *You should swim. – Ты должен плавать (рекомендация).*

Модальные глаголы не имеют суффикса -*s* в 3-м лице единственного числа настоящего времени; у них нет инфинитива, герундия и причастия.

Выберите правильный вариант ответа.

1. You **can/could** buy the present yesterday.
2. 2. I think we c**ould/will be able to** buy the tickets beforehand.
3. Eddy **must/had to** return me this book yesterday.
4. The students **must/mustn't** make a noise in the classroom.
5. The children **may/will be allowed to** play in the park today.
6. My mother **may not/won't allo**w me to take her camera.
7. Your cousin **can/may** play guitar very well.
8. All the students **had to/will have to** pass the exams at the end of the year.
9. Last year Ben **could/couldn't** speak English, but now he can/can't speak English rather well.
10. I think they **can/will be able to** take part in this festival next year.

Работа С текстом: прочитать, понять содержание, запомнить профессиональную лексику, выполнить задания

WELDING

Welding is a process when metal parts are joined together by the application of heat, pressure, or a combination of both. The processes of welding can be divided into two main groups:

•pressure welding, when the weld is achieved by pressure and

•heat welding, when the weld is achieved by heat.

Heat welding is the most common welding process used today.

Nowadays welding is used instead of bolting and riveting in the construction of many types of structures, including bridges, buildings, and ships. It is also a basic process in the manufacture of machinery and in the motor and aircraft industries. It is necessary almost in all productions where metals are used.

The welding process depends greatly on the properties of the metals, the purpose of their application and the available equipment. Welding processes are classified according to the sources of heat and pressure used: gas welding, arc welding, and resistance welding. Other joining processes are laser welding, and electron-beam welding.

Gas Welding

Gas welding is a non-pressure process using heat from a gas flame. The flame is applied directly to the metal edges to be joined and simultaneously to a filler metal in the form of wire or rod, called the welding rod, which is melted to the joint. Gas welding has the advantage of using equipment that is portable and does not require an electric power source. The surfaces to be welded and the welding rod are coated with flux, a fusible material that shields the material from air, which would result in a defective weld.

Arc Welding

Arc-welding is the most important welding process for joining steels. It requires a continuous supply of either direct or alternating electrical current. This current is used to create an electric arc, which generates enough heat to melt metal and create a weld.

Arc welding has several advantages over other welding methods. Arc welding is faster because the concentration of heat is high. Also, fluxes are not necessary in certain methods of arc welding. The most widely used arc-welding processes are shielded metal arc, gas-tungsten arc, gas- metal arc, and submerged arc.

Resistance Welding

In resistance welding, heat is obtained from the resistance of metal to the flow of an electric current. Electrodes are clamped on each side of the parts to be welded, the parts are subjected to great pressure, and a heavy current is applied for a short period of time. The point where the two metals touch creates resistance to the flow of current. This resistance causes heat, which melts the metals and creates the weld. Resistance welding is widely employed in many fields of sheet metal or wire manufacturing and is often used for welds made by automatic or semi-automatic machines especially in automobile industry.

ДОПОЛНИТЕЛЬНЫЙ СЛОВАРЬ:

pressure welding сварка давлением
heat welding сварка нагреванием
instead вместо, взамен
bolting скрепление болтами
riveting клепка
basic основной
to manufacture изготовлять
to depend зависеть от
purpose цель
gas welding газосварка
arc welding электродуговая сварка
resistance welding контактная сварка
laser welding лазерная сварка
electron-beam welding электронно-лучевая сварка
flame пламя
edge край
simultaneously одновременно
filler наполнитель
wire проволока
rod прут, стержень
to melt плавить(ся)
joint соединение, стык
coated покрытый

1. How can a process of welding be defined?
2. What are the two main groups of processes of welding?
3. How can we join metal parts together?
4. What is welding used for nowadays?
5. Where is welding necessary?
6. What do the welding processes of today include?
7. What are the principles of gas welding?

8. What kinds of welding can be used for joining steels?
9. What does arc welding require?
10. What is the difference between the arc welding and shielded-metal welding?

Find the following words and word combinations in the text:

1. сварка давлением
2. тепловая сварка
3. болтовое (клепаное) соединение
4. процесс сварки
5. зависеть от свойств металлов
6. имеющееся оборудование
7. сварочный электрод
8. плавкий материал
9. дефектный сварной шов
10. непрерывная подача электрического тока
11. электрическая дуга
12. источник электрического тока

Theme: Environmental safety of welding production

Keywords
national and ecological safety, industrial development, technosphere, ecological heritage, dangerous processes, risk, losses

The factors that adversely affect the health of welders carrying out electric arc welding are given. The use of comprehensive personal protective equipment for the respiratory organs of welders makes it possible to almost completely secure the work of operators and engineers of welding production.

Работа с текстом: прочитать, устно перевести, составить вопросительные предложения по тексту.

Environmental and production safety

International standards of the following systems: quality management, environmental and labour protection systems. Environmental problems of urbanized areas have arisen on the Earth along with foundation of the first cities. Ecological balance is impossible in an anthropogenic ecosystem, therefore the man has to undertake all the regulation processes for materials and energy flows. Human society should regulate the consumption of energy and resources in cities, that is raw materials for industry and food for people, as well as the amount of toxic waste released into the air, water, and soil as a result of industrial activities.

In the beginning of the third millennium the world is changing its attitude towards the interaction between the man and the industrial sector. Categorical denial of the idea that the technical excellence in oil products output must prevail over the growing people's intolerance of living next to industrial facilities causing the water pollution and air poisoning is assuming more and more prominence. But the most important in this situation is to realize that the destruction of natural balance is not fatal, it can be prevented with knowingly competent and pre-planned measures.