Тема занятия: «История развития сварочного производства»

Цель занятия: выучить новый лексический материал по теме «История развития сварочного производства»; совершенствовать навыки чтения и перевода текста профессионального направления; систематизировать знания, ответив на контрольные вопросы по теме занятия.

Уважаемые студенты! Ознакомьтесь с материалами лекционного занятия на тему «История развития сварочного производства». Конспект занятия выполняйте **в рабочей тетради письменно**, **обязательно указывая дату занятия, тему занятия, номер упражнения.** Ответы предоставить преподавателю на проверку **до 15. 02. 2023 г.** в электронном виде **(фотоотчёт)** на e-mail mikagol2605@mail.ru. Телефон преподавателя для консультации и возникающих вопросов: 072-14-15-816.

С уважением, Голодюк Марина Викторовна.

1. **Запишите новую лексику в словарь, выучите новую лексику.**
2. **Прочитайте и устно переведите текст « From the History of Welding».**
3. **Дайте письменно ответы на вопросы к тексту.**

From the History of Welding

Vocabulary:

joining, joint - соединение, связь, сращивание, шов

armour- броня

carburization -науглероживание

brittle -хрупкий, ломкий

interlayering -чередование слоев

high-carbon -высокоуглеродистый

hammer forging- свободная ковка на молоте

cast iron -чугун

blacksmith- кузнец

jeweler -ювелир

fusion- плавка; расплавление
riveting -производить клёпку — rivet, join by rivets
boiler -паровой котёл, бойлер
oxyacetylene -ацетилено-кислородный
consumable- расходуемый
bare wires -непокрытый проволокой, проводкой
coating -покрытие
spot -точечная
seam- роликовая
sheet- лист
butt -стыковая
tungsten- вольфрам
beam -луч
bonding -соединение, (с)крепление, связывание

Welding is a technique used for **joining** metallic parts usually through the application of heat. This technique was discovered during efforts to manipulate iron into useful shapes. Welded blades were developed in the first millennium AD, the most famous being those produced by Arab **armour**ers at Damascus, Syria. The process of **carburization** of iron to produce hard steel was known at this time, but the resultant steel was very **brittle**. The welding technique - which involved **interlayering** relatively soft and tough iron with **high-carbon** material, followed by **hammer forging** - produced a strong, tough blade.

In modern times the improvement in iron-making techniques, especially the introduction of **cast iron**, restricted welding to the **blacksmith** and the **jeweler**. Other joining techniques, such as fastening by bolts or rivets, were widely applied to new products, from bridges and railway engines to kitchen utensils.

Modern **fusion** welding processes are an outgrowth of the need to obtain a continuous joint on large steel plates. **Riveting** had been shown to have disadvantages, especially for an enclosed container such as a **boiler**. Gas welding, arc welding, and resistance welding all appeared at the end of the 19th century. The first real attempt to adopt welding processes on a wide scale was made during World War I. By 1916 the

oxyacetylene process was well developed, and the welding techniques employed then are still used. The main improvements since then have been in equipment and safety. Arc welding, using a **consumable** electrode, was also introduced in this period, but the **bare** wires initially used produced brittle welds. A solution was found by wrapping the bare wire with asbestos and an entwined aluminum wire. The modern electrode, introduced in 1907, consists of a bare wire with a complex **coating** of minerals and metals. Arc welding was not universally used until World War II, when the urgent need for rapid means of construction for shipping, power plants, transportation, and structures spurred the necessary development work.

Resistance welding, invented in 1877 by Elihu Thomson, was accepted long before arc welding for **spot** and **seam** joining of **sheet**. **Butt** welding for chain making and joining bars and rods was developed during the 1920s. In the 1940s the **tungsten**-inert gas process, using a nonconsumable tungsten electrode to perform fusion welds, was introduced. In 1948 a new gas-shielded process utilized a wire electrode that was consumed in the weld. More recently, electron-**beam** welding, laser welding, and several solid-phase processes such as diffusion **bonding**, friction welding, and ultrasonic joining have been developed.

Answer the questions:

1. What is welding?
2. How was welding discovered?
3. Who were the first welders?
4. What did the first welding technique for making blades involve?
5. Did the improvement in iron-making techniques conduce to the development of welding?
6. Is it efficient to apply riveting for making boilers?
7. When did gas, arc and resistance welding appear?
8. What was the quality of the welds produced by the arc welding using bare wires like?
9. What does the coating of the modern electrode consist of?
10. What are the years 1877, 1916, and 1948 remarkable for in terms of welding?