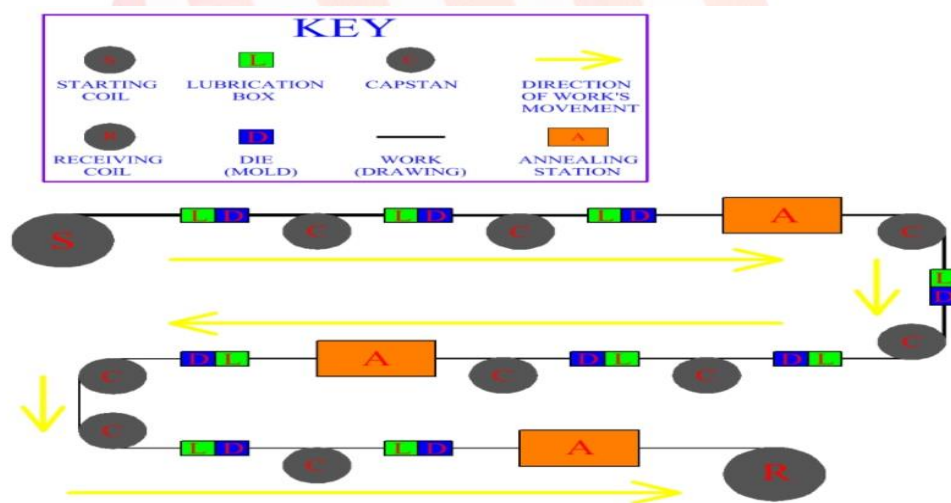


## NEW TECHNOLOGY FOR THE PRODUCTION OF COMPOSITE MATERIAL BY DRY LUBRICATING TENSILE STEEL WIRE

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Enter. Metal drawing process. In the manufacturing industry, the metal drawing process is usually carried out cold. Cold working gives the drawn product precise tolerances, favorable grain structure, improved material properties and good surface finish. Preparation of the work before drawing is an important part of the operation. The work is sometimes annealed first to recover the material from existing stresses. Afterwards, the workplaces are cleaned. A common industrial practice for cleaning metal stock involves blasting or immersion in some (usually acidic) solution. The work can then be washed to remove any solution, and can also be dried at low temperature. After the cleaning step, the stock may be conditioned, which may involve the application of various chemical solutions to the work surface. The specific chemicals used depend on the manufacturing situation and the work material. The main purpose of these conditioning agents is to help the work surface retain the oil required for the process[1-2].



1. fig. metal bending device.

In the process of wire stretching, only the geometric shape, cross-sectional area, length and other dimensions of the wire change. Physical and mechanical properties and metal structure do not change.

In order to ensure the special properties of the wire, additional operations are performed during the wire manufacturing process. For example, various coatings or heat treatment. Heat treatment of the wire is carried out in heated furnaces with low oxidation. Solutions of sulfuric and hydrochloric acids are used for desalination. Boron oxide, phosphate salts, lime and copper are used as a lubricating layer for stretching

Wire drawing is carried out on equipment that intensively cools matrices and drums, which ensures high strength and plastic properties of the metal. The use of modern lubricants ensures that the specific properties of wires meet customer requirements: high corrosion resistance, smoothness of the surface, high adhesion to various materials, etc. In order to improve the quality of the produced wire, stretching equipment is regularly updated and equipped with additional devices that reduce internal forces.

Pulling is the pulling of a wire with a large surface area through a filament. In this case, the wire with a smaller diameter passed through the filament is wound on a coil with the help of an electric motor.

Vibrating stretching - in which the stretching steel wire is directed into the fillet under the influence of a certain vibration. It was determined that the optimal vibration is 200-500Hz. Under the influence of this vibration, 35-45% of the stretching zones are deformed[3-4].

Rotating shaft drawing - in this, the wire is passed through a slot between two rotating shafts and the force causes the wire to stretch and decrease in diameter.

Metal parts in wire drawings are usually subjected to several reductions in diameter because the mechanics of the process limit the amount of reduction in a single draw. This is achieved by successively drawing the work through several dies, each of which causes a gradual reduction in the diameter of the work. The wires are wound several times around a motorized rotating drum called a capstan between the wires before moving on to the next matrix in a row. Annealing of metal can be done between groups of operations(1 fig). Capstans provide power for the manufacturing process. As the diameter decreases, the speed of the wire increases. The speed of the wire exiting the last die in a row can be significantly higher than the operating speed entering the first die. Typical drawing speeds can be 20-100 feet per minute, but in some cases wire can be drawn at speeds of up to 10,000 feet per minute. Spare parts can be welded together as they are inserted into the system of capstans and dies so that the process is completely seamless. Industrial wire drawing operations can produce miles of wire at a time.

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