

Checking the reel diameter of copper wire coils

In a wire-drawing plant, copper wires with different diameters are produced for the electronics industry. In order to obtain the required wire diameter, a copper wire on a coil on a machine is pulled through a so-called drawing die and then wound onto a second coil for dispatch.

For the coil with the raw material not to run empty during wire drawing, the speed of the drawing machine must be throttled or the system must be stopped once a specific reel diameter is reached on the raw material coil. This reel diameter should therefore be measured on the relevant coil. No easy task, when you consider that copper is generally a material that glistens considerably and, furthermore, the wire on the raw material coil does not produce a smooth surface which can be measured seamlessly.

In order to measure the reel diameters of the relevant copper wire coils consistently, the wire-drawing plant uses a **PT64** with laser line. Due to the linear characteristic of the generated laser beam, the diffuse reflection sensor is able to detect even the uneven surface of the copper wire on the coil and check the diameter of the reel. The distance information of the sensor is transmitted to the machine control unit by means of the analog signal from 4 to 20mA. The control unit controls the throttling of the drawing speed or triggers a system stop based on the sensor signal. Due to the integrated, intelligent control circuit, the diffuse reflection sensor also flexibly adjusts its transmitting power during the query depending on the reflectivity of the copper wire. If the reflectivity becomes weaker, the power of the transmission signal increases. Alternatively, if it becomes weaker, the power of the transmission signal weakens accordingly.

By using a **PT64** sensor, the supplier can now reliably check the reel diameter of its raw material coils, throttle the speed of the drawing machine through a PLC signal and stop the machine before the copper wire coil is completely unreeled.

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