



SynchroLine INDIVIDUAL

AUTOMATION SYSTEM FOR PRODUCTION OF LIGHT WAVE CABLES

Flexible Machine with Transfer System

Our automation system from the "SynchroLine" series is used for the production of high-quality cables with optical fibers, for example, for medical technology, automotive, or telecommunications. Through a flexible transfer system, welding connections are made fully automatically with high precision on the prepared fibers.

The special properties of polymer optical fibers require parameters and processes specially adapted to the material. Schäfer has many years of experience in the development and manufacture of applicators and machines in this technology. The basis of the fully automatic cable processing machine is a transfer system which transports the wires to the respective stations with shuttles.

Preparations for Cable Production

The optical fiber is fed nearly tension-free by means of a specially developed wire unwinder. Depending on demand, the speed of the unwinding is controlled and a corresponding length of fiber is stored in a buffer. The product-dependent wire lengths are cut at the first station of the processing machine.

- Short fibers are transported in pairs by the shuttles of the transfer system to the respective stations.
- Longer fibers are first wound into loops so that two wire ends can be processed simultaneously.

A high-quality end face is decisive for the desired low light attenuation in the produced lightwave cable. The ideal surface is created at the same time as the cutting process and thus no additional machining is required. The internal vacuum cleaning system removes unwanted plastic particles in quality-relevant process areas.

PRODUCTION OF LIGHT WAVE CABLES

Connecting the Polymer Optical Fibers

Connections of the wires with fiber optic terminals are performed at the welding stations of the processing machine. Standard fiber optic ferrules as well as special pin and socket terminals (pigtails) can be attached. For quality assurance, the integrated fiber measurement monitors each welded connection.

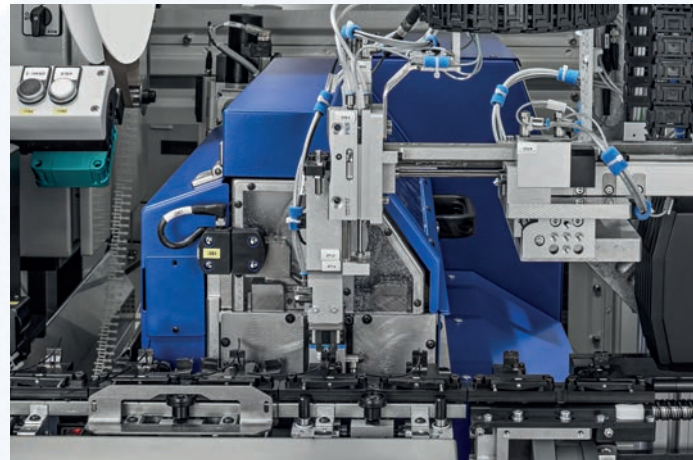
Additionally, the quality-relevant light attenuation is measured during ongoing production. Cables with measured values outside the specified tolerances are automatically sorted out and made unusable for the rest of the process.

With a high production rate and quality assurance functions, the machine is suitable for series production. The high grade components, the robust machine design and the modular construction stand for highest product quality, short set-up times and durability.

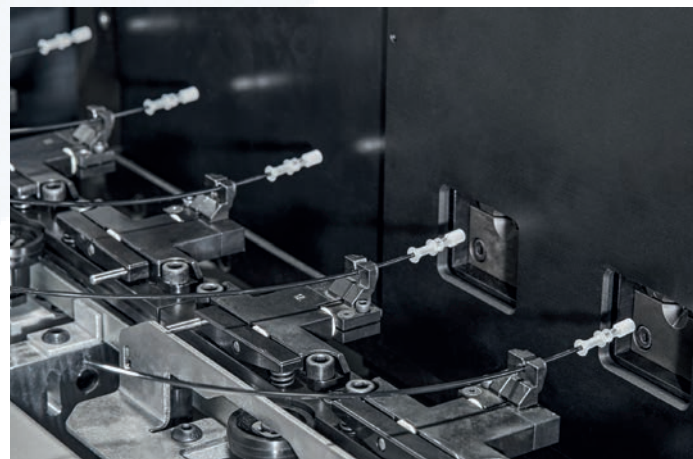
Modern and safe Wire Processing System

The control system with touch screen has an intuitive user interface for easy and safe operation of the machine in different languages. The selection of different user roles and operating modes as well as machine networking functions enable flexible and modern process sequences.

The safety of the operator during processing of the crimping machine is ensured by a monitored safety device. Opening safety doors interrupts the electrical safety circuit, stopping all motors. The machine fully complies with European directives, both in terms of mechanical and electrical safety and electromagnetic compatibility.



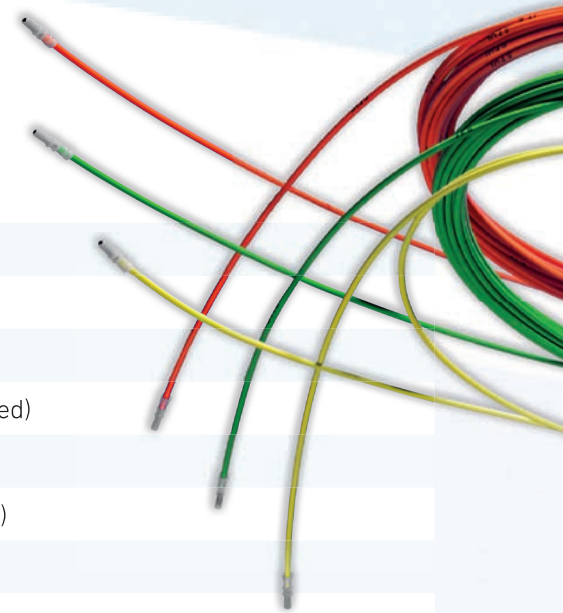
Cutting to length of the light wave cables



Welding with terminals



TECHNICAL DATA



Processable materials

Wires

Ferrule lightwave cables	- Conductor core diameter: 1 mm - Sheath diameter: 2.3 mm (colored)
Pigtail lightwave cables	- Conductor core diameter: 1 mm - Sheath diameter: 1.5 mm (black)

Terminals

- Ferrule (standard)
- Pigtail (sockets and pins)

Performance and geometry

Production rate

Ferrule lightwave cables	(one cable per shuttle laid in a curve) 840 pieces / h at length 1230 mm [1] 570 pieces / h at length 4350 mm [1] 545 pieces / h at length 8500 mm [1]
Pigtail lightwave cables	(two single cables inserted in shuttle) 800 pieces / h at length 60-280 mm [1]

Number of stations

Ferrule lightwave cables	7 stations
Pigtail lightwave lines	9 stations

Number of shuttles	37
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Control

HMI	- WireStar for main control - STI for station control
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Display	Touchscreen
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Supplies and interfaces

Power supply	400 V, 50/60 Hz
Compressed air	6 bar

Dimensions and weight

Width x Depth x Height	4480 x 5925 x 2700 mm [2]
Weight	3500 kg [2]

[1] Depending on materials to be processed and optional settings.

[2] Approximate indication for closed machine and depending on equipment.

PRODUCTION OF LIGHT WAVE CABLES

Overview of the Overall Process

The individual processing steps on the wires are:

- Unwinding and printing
- Cutting to length and finalizing the end face
- Winding and binding
- Mounting of protective caps
- Laser welding with terminals
- Measuring core residue
- Measuring attenuation



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FURTHER INFORMATION

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