



FULLY AUTOMATIC PROCESSING OF LIGHT WAVE CABLES

CONNECTIONS WITH FERRULES AND PIGTAIL TERMINALS

Flexible machine with transfer system

The high-performance cable processing machine is used for the production of quality POF cables, for example for the automotive industry.

Welded connections with high precision and low light attenuation are produced fully automatically on the prepared wires.

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 tools 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.

- 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.

CONNECTIONS WITH FERRULES AND PIGTAIL TERMINALS

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.

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.

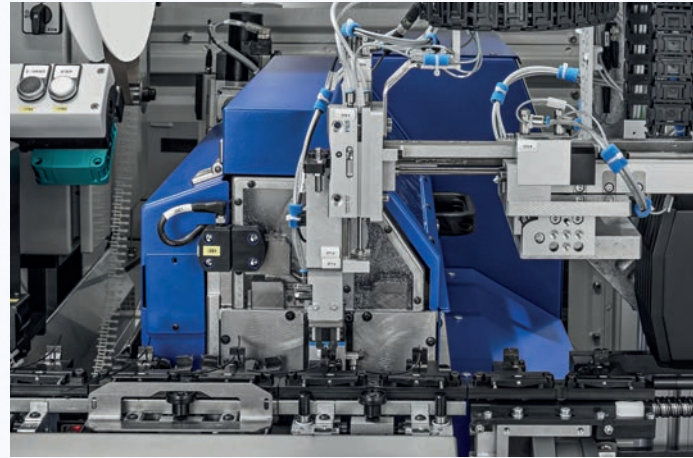
The selection of different user roles and operating modes as well as machine networking functions enable flexible and modern process sequences.

With a high production rate and quality assurance functions, the machine is suitable for series production.

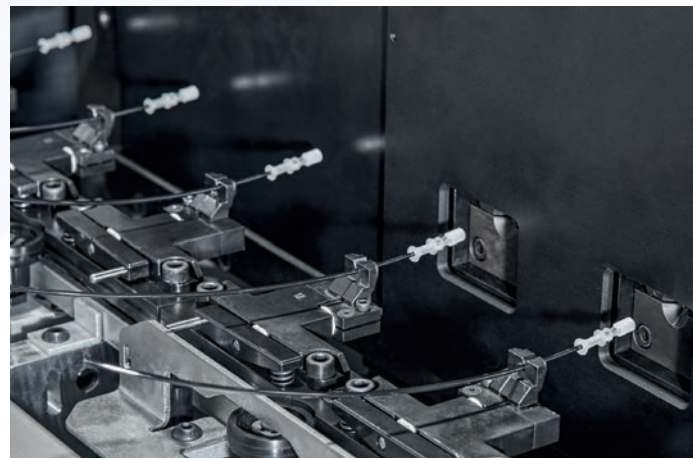
Overview of the overall process

The individual processing steps on the wires are:

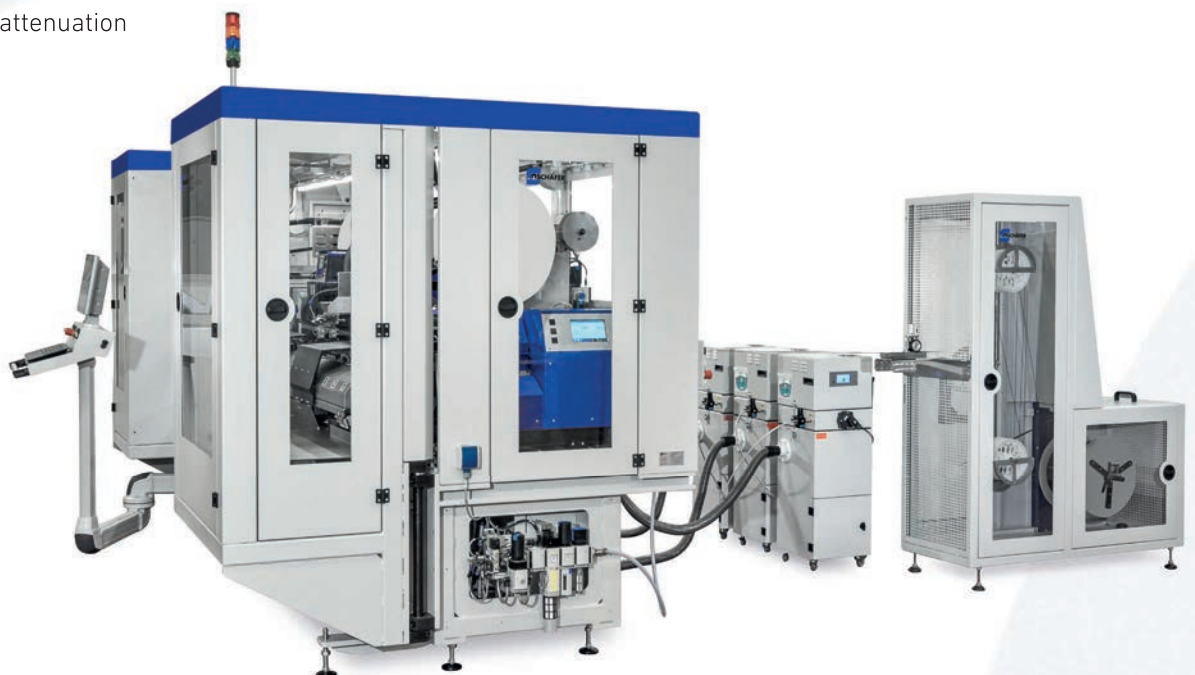
- Unwinding and printing
- Cutting to length and finalizing the end face
- Winding and binding
- Mounting of protective caps
- Laser welding with terminals
- Measuring core residue
- Measuring attenuation



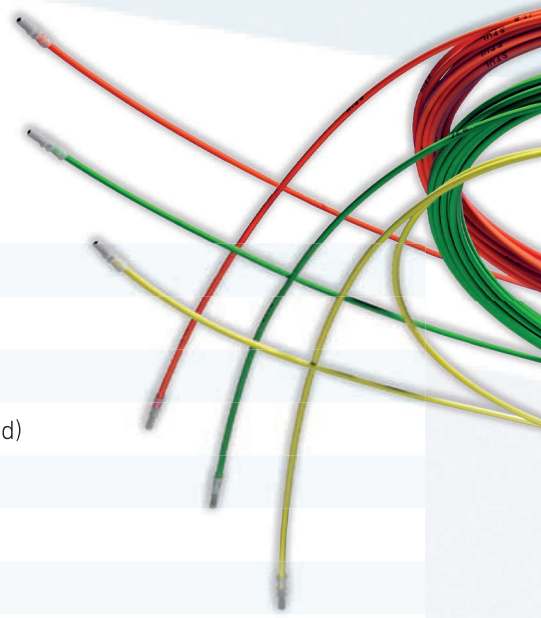
Cutting to length of the light wave cables



Welding with terminals



TECHNICAL DATA



Processable materials

Wires

- | | |
|--------------------------|---|
| Ferrule lightwave cables | <ul style="list-style-type: none">• Conductor core diameter: 1 mm• Sheath diameter: 2.3 mm (colored) |
| Pigtail lightwave cables | <ul style="list-style-type: none">• 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) <ul style="list-style-type: none">• 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) <ul style="list-style-type: none">• 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

Control

HMI

- WireStar for main control
- STI for station control

Display

Touchscreen

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.

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