SOLDERLESS CONNECTIONS

smcontact.eu

LOCATIONS

100+

EMPLOYEES

Experienced team with strong industry and process expertise

60%

ENGINEERS

Focused on R&D, design and process control

20 CITIES

ACROSS 5 COUNTRIES

Close to customers with local support.

1986

FOUNDED

The company was founded as a French agent of an American company.



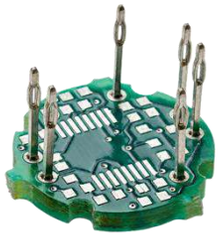


CORE TECHNOLOGIES & PRODUCTS

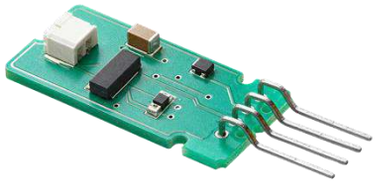
SPLICE CRIMPING

SOLDEERLESS CONNECTION

WIRE PIN



Pressure Sensor
<15M/year



Interior Lighting
>90M/year



Window Switch
60M/year



Solar Sensor
55M/year

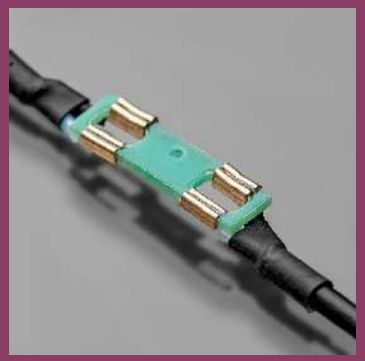
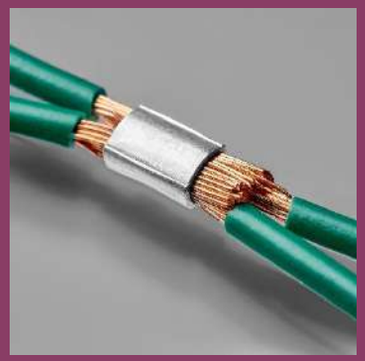
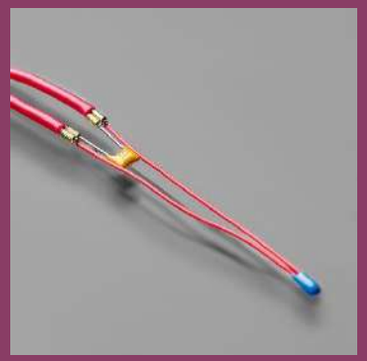
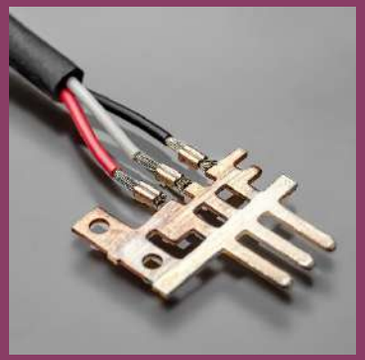
2025
>300 million pins

2025
> 500 million
Splice connections

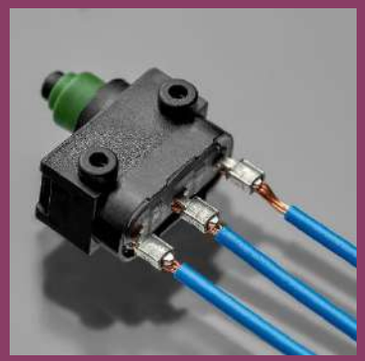
1000+
customers

SPLICE TECHNOLOGY

EXAMPLE

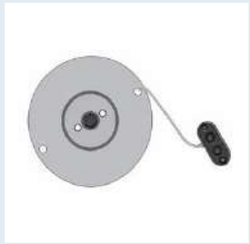




SPLICE PROCESS

01

FEEDING



02

CUT



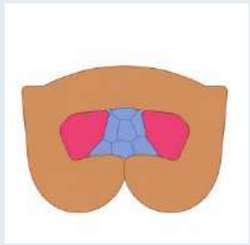
03

PRE-SHAPE



03

CRIMP



SPLICE CONNECTION EXPERTISE

SM Contact designs and produces splice crimping machines for a wide range of electrical components.
We start each project with profound connection and tooling qualification to define its optimal parameters, to adapt machine specification and to match industry norms.

1 STEP

SPLICE BAND DEFINITION

WE DO:

Splice definition depending on type of application, working environment, component size and material.

YOU GET:

Splice band datasheet with material, type, thickness, length and height.



2 STEP

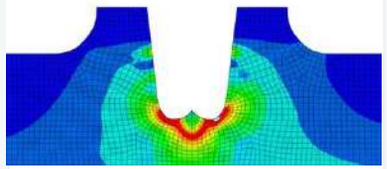
TOOLING DEFINITION

WE DO:

Perform computer simulation of strains and stresses during splice crimping using connection database.

YOU GET:

Report with the equipment andtooling to be used.



3 STEP

SPLICE CONNECTION SIMULATION

WE DO:

Computer model of defined components and simulation of strains and stresses during splice crimping.

YOU GET:

Optimal connection parameters and their improvement options to match industry norms and customer require-ments.



4 STEP

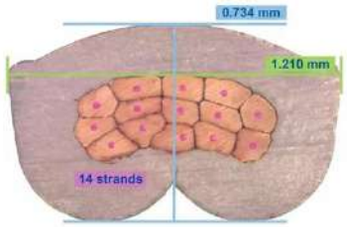
LABORATORY TESTS

WE DO:

Make samples and perform laboratory studies of pull force, electrical resistance, thermal stress and cross view.

YOU GET:

Connection datasheet validated for different splice heights.



5 STEP

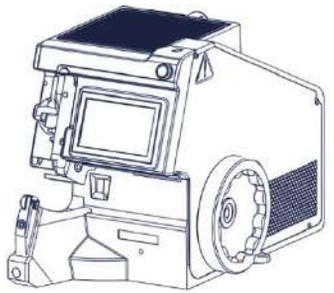
EQUIPMENT MANUFACTU-RING

WE DO:

Machine manufacturing according
|to customer requirements and laboratory tests.

YOU GET:

Customized splice crimping equipment.



PROJECT APPROACH

QUALIFICATION	ADDITIONNAL TEST	MACHINE PRODUCTION	INSTALLATION & TRAINING
			
• REPORT • DATASHEET • SAMPLES	• CLIMATE CHAMBER • SHOCK THERMIQUE • VIBRATION TEST • SLOW MOTION TEST	• PRODUCTION IMPLEMENTATION	• PLUG & PLAY

SPLICE EQUIPMENT



SM CRIMP V8



V8 +MANUAL FIXTURE



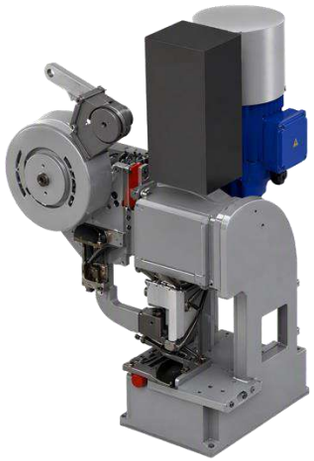
V8 + SEMI-AUTO FIXTURE



CRIMPING STATION



HSCS



PRESS + APPLICATOR

MACHINE

MACHINE | **TOOLING**



SM CRIMP V8

Crimp cycle time:
1 sec

Up to
5 mm²

Crimping dies
QUICK-CHANGE

SM CRIMP V8 STANDARD

SPLICE CRIMPING WITH MANUAL COMPONENT POSITIONING



Operation area with fingerguard



Technical characteristics	
Power supply	220-240 V AC * / 300 W/2 A
Cycle time	300 ms Only crimp
Stroke	35 mm
Noise level	< 75 dB
Weight	62 kg
Dimensions (WxDxH)	289 x 523 x 338 mm
CE Declaration	✓

* Can be adapted to 110%

SM Crimp VB Standard operation includes manual component positioning when operator holds components within the splice area, and splice crimping by pressing the foot pedal.

Switch from one connection to another can be made easily on the touchscreen.



SM CRIMP V8 ADVANCED

SPLICE CRIMPING WITH MANUAL OR SEMI-AUTOMATIC TABLE



With manual table



With semi-auto table

Technical characteristics	
Power supply	220-240 V AC * / ca 500 W /2 A
Cycle time	Depends on product
Stroke	35 mm
Noise level	< 75 dB
Weight	80 - 90 kg
Dimensions (WxDxH)	375 × 660 × 490 mm
CE Declaration	✓

* Adaptable to 110 V

First, components are stacked manually into the special movable worktable - fixture. The fixture is on the table. Then:

* The manual table is moved by hands. Splice crimping is performed by pressing the pedal **(SM Crimp V8 Advanced with manual table)**.

or

After the pedal is pressed, the semiautomatic table moves by coordinates and performs splice crimping automatically **(SM Crimp V8 Advanced with semi-auto table).**

Automatic table with exchangeable jig for splice crimping of 2 sensors with wires



SM CRIMP V8 STANDARD

SPLICE CRIMPING WITH CUSTOMIZED SOLUTION





Technical characteristics	
Power supply	220-240 V AC*/ 3 kW / 14 A
Cycle time	Depends on product
Stroke	35 mm
Crimping area	X-axis 100 mm, Y-axis 60 mm
Noise level	< 75 dB
Weight	approx. 560 kg
Dimensions (WxDxH)	1100x1150 x 2230 mm
CE Declaration	✓

* Adaptable to 110 V

HSCS (HIGH-SPEED SPLICE CRIMPING STATIO

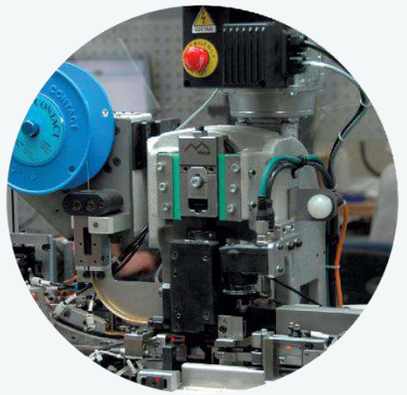
SEMI-AUTOMATIC STRIPPING AND SPLICE CRIMPING FOR INTERFACE AND WIRES



Technical characteristics	
Power supply	220-240 V AC * / ca 3 kW / 14 A
Cycle time	3 - 7 sec
Stroke	35 mm
Noise level	< 75 dB
Weight	approx. 600 kg
Dimensions (WxDxH)	1640 x 780 x 1970 mm
CE Declaration	✓

* Adaptable to 110 V

Component processing area



PIN INSERTION

END-TO-END PIN SUPPLY

Pre-plated round or square wire is passed through a press to realize pre-cutting and acquire the required characteristics.

Pins are supplied on continuous reels in end-to-end format. Compact plastic reels (Ø 800 mm, app. 200 000 pins) are easy to change and rechargeable. End-to-end format means no extra material. Using pre-plated wire is a cost-effective solution for customized PCB assemblies.

MATERIALS & COATING

We can offer pin materials in accordance with your requirements. The most common ones are:

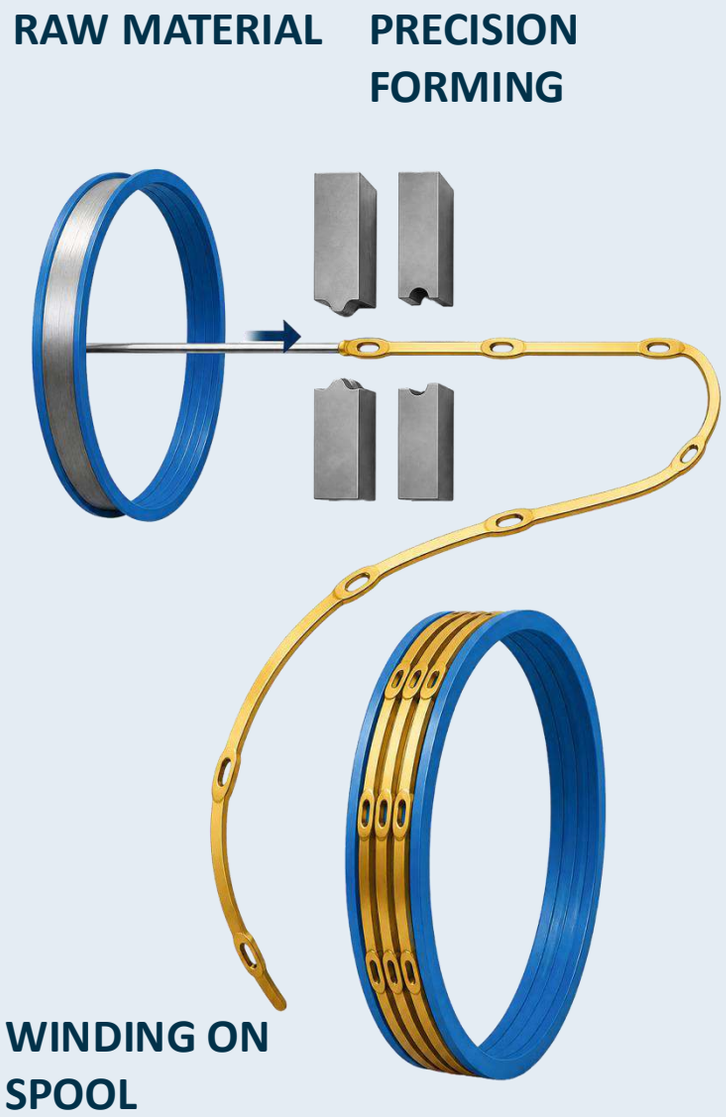
Cupronickel (CuNi3Si – K55, …)

Bronze (CuSn6, CuSn4, …)

Brass (CuZn30, CuZn33, CuZn37, …)

For coating, the material mainly used is Nickel-Tin

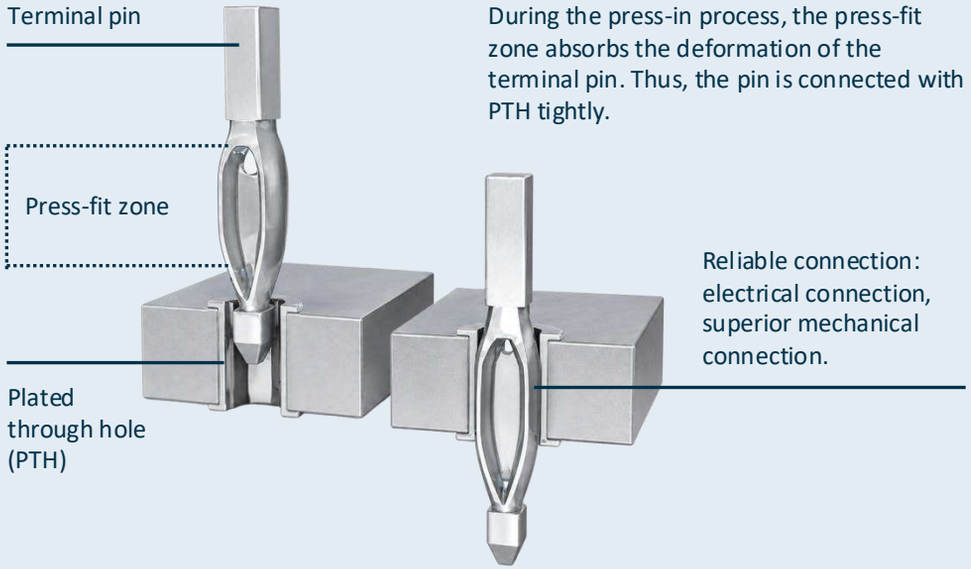
UP TO 200K PER REEL



PRESS-FIT TECHNOLOGY

SM Contact designs Pressfit pins solution for your electrical connection. Our engineers evaluate your components, define suitable pin parameters and test it.

Pressfit pins have an elastic eye-of-the-needle (EON) Pressfit zone which provides reliable connection without soldering

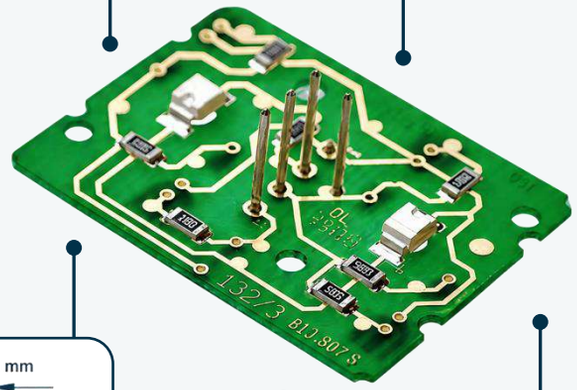


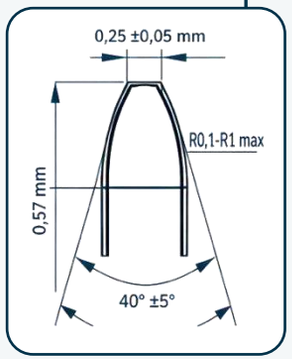
DEFORMATION & VIBRATION RESISTANCE



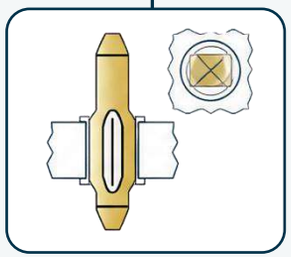
EN 60352-QUALIFICATION







PIN TIP MATCHES AUTOMOTIVE NORMS



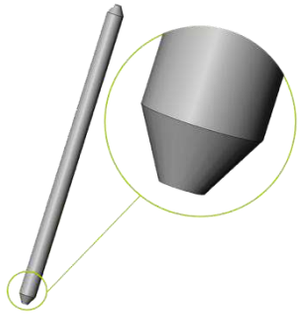
HIGHER RELIABILITY



END-TO-END SUPPLY

PIN TYPES

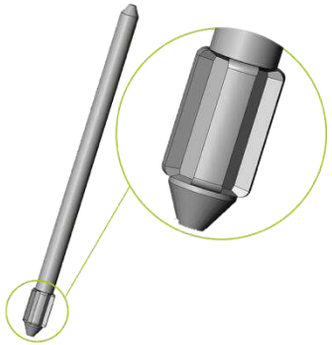
SMOOTH



Coil frames, printed circuits without metalized holes, over-molding, plastic components with drilled holes, metal components whose hole diameters have small tolerances

Chamfers on both ends make it suitable for various connections

STAR



Single- or double-sided PCBs

- Excellent mechanical resistance
- Hole diameter tolerances compensation
- Suitable for "paste-in-pin / pin-in-paste and reflow"

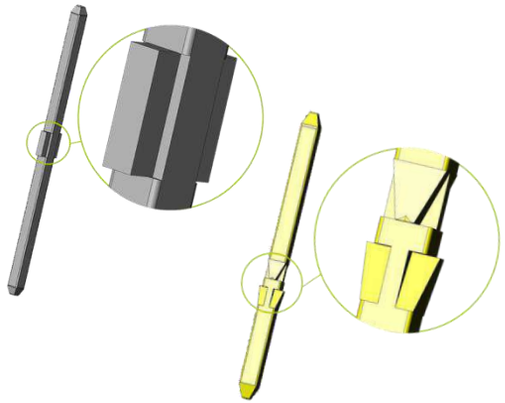
Plastic connectors

- Smooth tip of a pin enters freely without any damage
- 4 peaks of a star provide secure retention

Coil frames

- Suitable for metal insertion

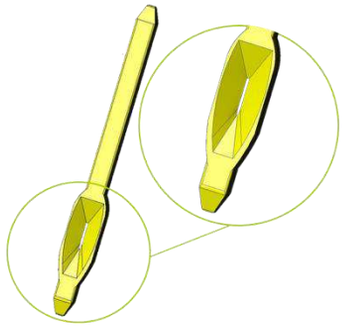
WING-HARPOON



Plastic connectors

- Smooth tip of a pin enters freely without any damage
- 2 peaks guarantee mechanical resistance
- Meets the requirements of automotive industry

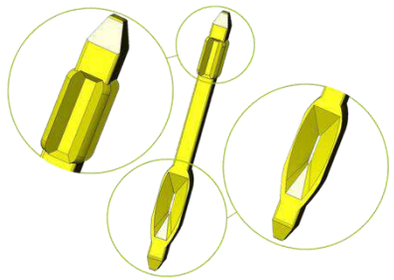
PRESS-FIT



Double-sided PCBs

- Particularly for automotive industry
- Matches components with hole diameter tolerances +0.1/0 mm
- Compliance with EN 60352-5 standard
- Size difference between hole and press-fit zone leads to press-fit deformation and sufficient compression during insertion

COMBINATION



Stacking of CBs, stacking of PCBs with a plastic part

- One pin can have several press shapes for direct - interconnection of two elements
- Pin length, shape and type are defined individually for each connection

HOW DO WE DO IT

SM Contact designs and produces pin insertion machines for a wide range of electrical components, such as custom connector, PCB, coil frame, transformer and leadframe. We start each project with a pin design matching the application, selection of its material and coating to adapt machine specification to customer product and to comply with industry norms.

1 STEP

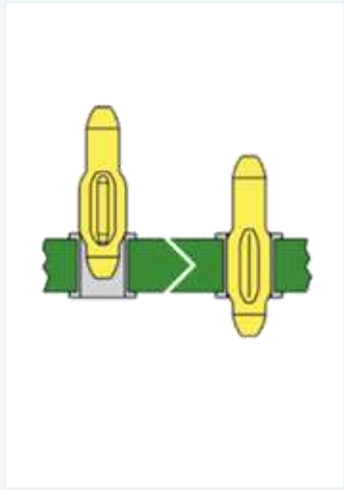
PIN PARAMETER DEFINITION

We do:

Pin features definition depending on type of application, working environment, component size and materials.

You get:

Pin material and coating, shape (square, round, rectangular), type (smooth, star, winged, harpoon, press-fit, double), length (2-70 mm).



2 STEP

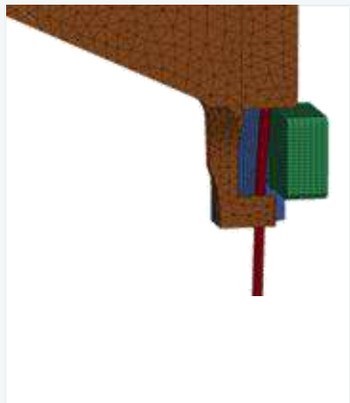
TOOLING DEFINITION

We do:

Define tooling based on the request with a help of database of former realized connections.

You get:

Report with the equipment and tooling to be used.



3 STEP

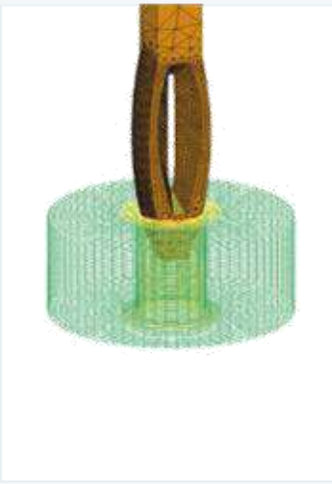
PIN INSERTION SIMULATION

We do:

Computer model of defined components and simulation of strains and stresses during pin insertion.

You get:

Optimal connection and insertion parameters and their improvement options to match industry norms and customer require ments.



4 STEP

LABORATORY TESTS

We do:

Make samples and perform laboratory studies of press-in and pull-out force, contact resistance test.

You get:

Report with precise connection parameters



5 STEP

EQUIPMENT MANUFACTURING

We do:

Adaptation of automation level, speed, special option, and quality control devices.

You get:

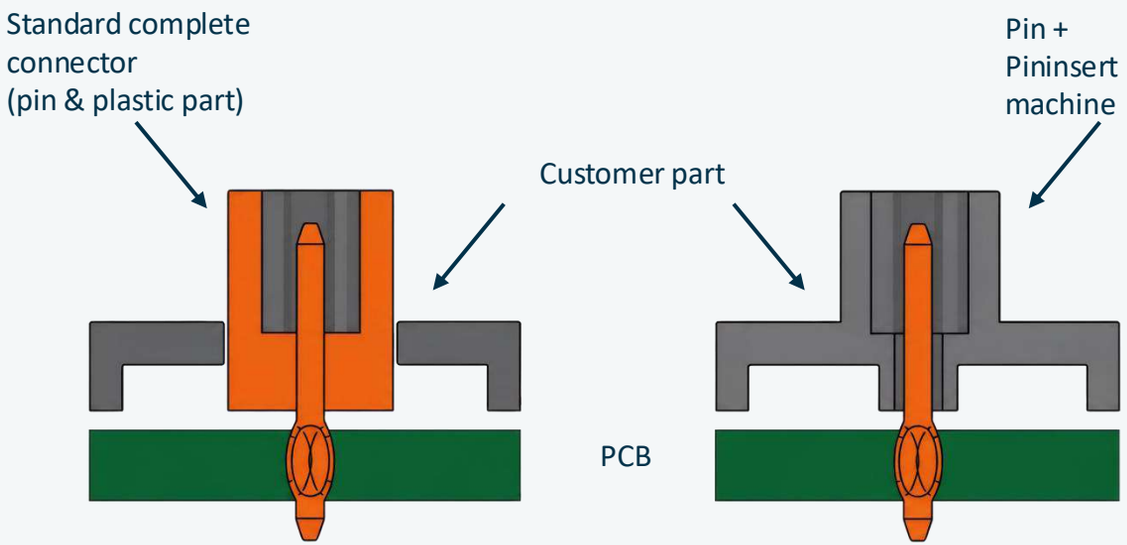
Pin insertion equipment tailored to your manufacturing requirements.



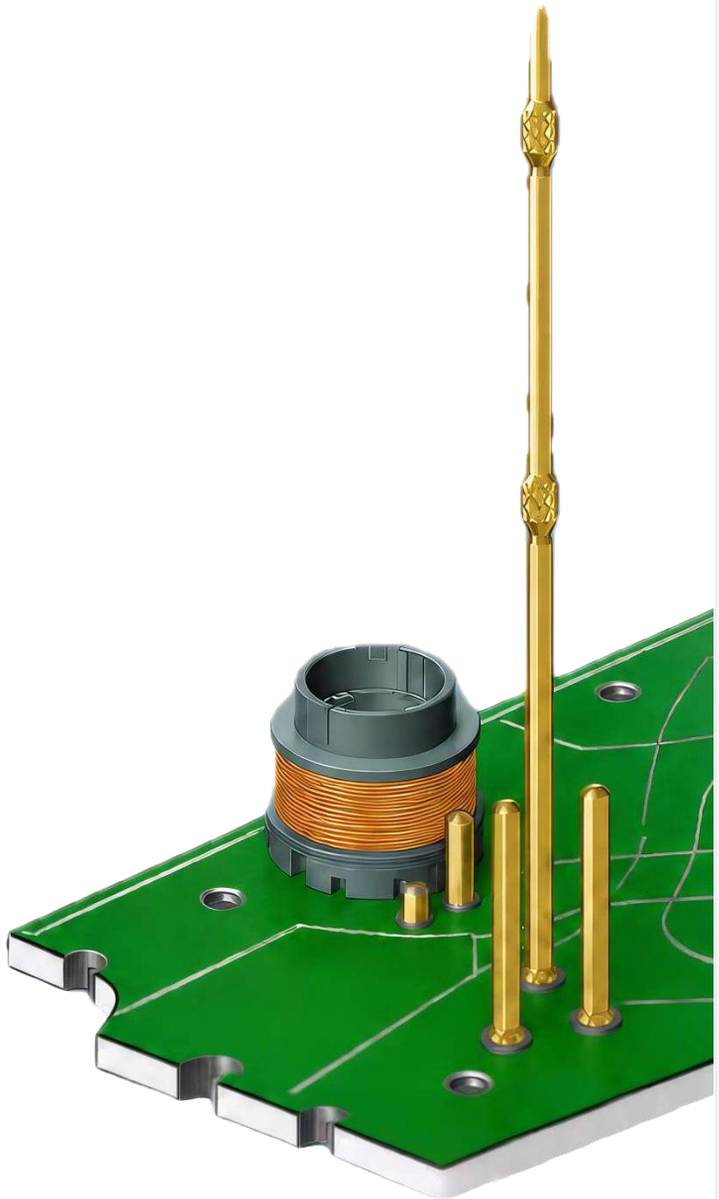
PIN INSERTION TECHNOLOGY

Pin insertion technology is a method of electronic assembly interconnection applicable to PCBs, coil frames, plastic connectors, etc. Various pin press shapes and dimensions allow to adapt precisely to the product. EN 60352-5 qualification and automotive norms compliance assures high quality of connection.

In contrast to complete connectors, this solution is cost-efficient and customizable



> 300 MLN PINS PER YEAR



APPLICATION FIELDS



COIL



PRESS FIT IN PCB



STAR IN PCB



ANTENNA



POWER ELECTRONICS



PIN + METAL HOUSING

PIN PRODUCTION

PACKAGING



IN BULK

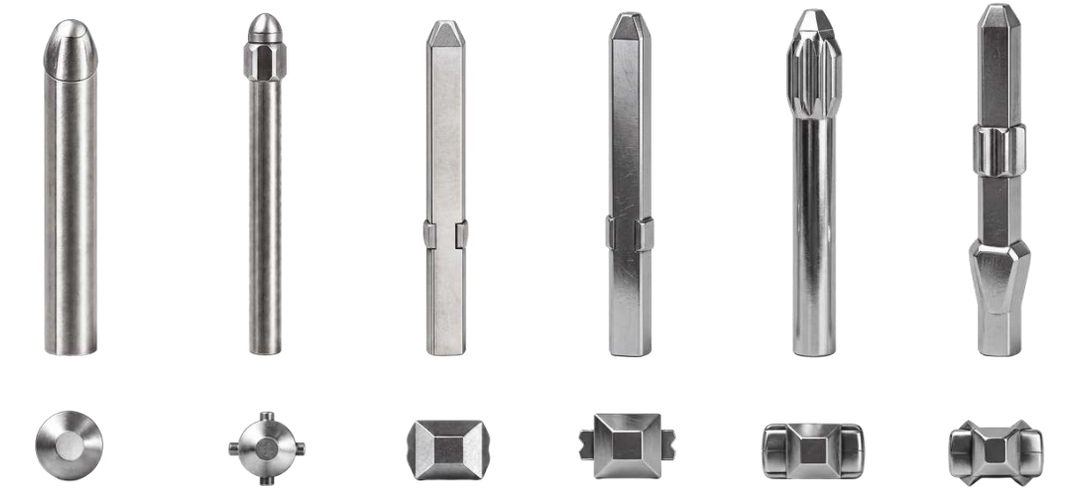


END-TO-END



BANDOLIER

STAMP



SMOOTH | STAR | HARPOON | WINGS | PRESSFIT | DOUBLE STAMP

PIN INSERTION

PROJECT APPROACH

PIN DEFINITION	INSERTION & VALIDATION	MACHINE PRODUCTION	INSTALLATION & TRAINING
			
• DRAWING • SAMPLES • NORM IEC 60352-5			

PIN INSERTION EQUIPMENT

The SM Contact PININSERT Series is a range of high-precision pin insertion machines designed for the automated installation of contact pins into printed circuit boards, connectors, coils, and other electronic components.

Speed is 2-4 pins per second / 1 head

PININSERT 2100 XL



PININSERT 3200



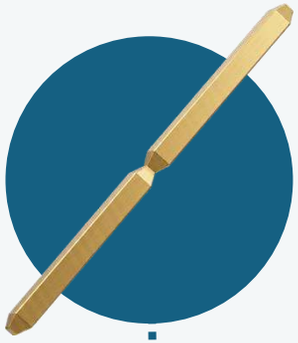
PININSERT LV



PININSERT 2100



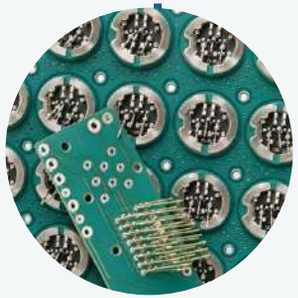
HOW IT WORKS



Pin contacts are supplied as a continuous length of wire



The spool is mounted on the unwinder



Automatic feeding and insertion of pins into the holes on a printed circuit board



PININERT LIGHT VERSION



Description

The Light Version utilizes a single-anvil support concept instead of a dedicated product-specific support jig. The flexible anvil supports the panel directly during the insertion process, eliminating the need for custom flat fixtures for each PCB design. This simplifies setup and significantly reduces tooling requirements.

Accuracy

Pin height positioning accuracy: ±100 µm (6 sigma)

Pin angle positioning accuracy: deviation from 90° ±1

Production

Maximum installation speed: 1 pin per second

Graphical user interface on a PC for motion control and creating control programs

Tooling

Tool change time: 30 minutes

A software component for creating programs and setting pins in semi-automatic mode using the machine's optical system

Dimensions

Overall dimensions: 1200 × 1200 × 2000 (W × D × H) mm

Weight: approximately 700 kg

Power supply: 230 V ±10%, 50 Hz

Maximum board size: 200 × 240 mm

Minimum board size: 50 × 50 mm

Minimum board thickness: 0.5 mm

PININSERT 2100



Description

Pininsert 2100 is servo-drive machine for semi-automatic pin insertion into various electrical components. It was designed as stand-alone or inline machine for small and medium production volumes (up to 3 600 pins per hour)

PCB

Max pin's cross section 1.5 × 1.5 mm

Max pin's length (standard version) 35 mm

Production

Up to 3 600 pins per hour

Cycle time: 500 ms per pin

Tooling

Time of insertion head change 10 min

Time of set of part change into insertion head 15 min

Dimensions

Overall dimensions: 400 × 400 × 700 (W × D × H) mm

Weight: approximately 70 kg

Power supply: 230 V ±10%, 50 Hz

Power: 0.5 kW

PININSERT 2100 XL



Description

Pininsert 2100 XL is a CNC floor-mount machine for semi-automatic pin insertion. It was designed for high production volumes: up to 8 000 pins per hour with a single insertion head and up to 16 000 pins with a double head, up to 32 000 with 4 heads. Supervised by PC and having fully programmable insertion height, Pininsert 2100 XL can be integrated into a production line or operated as a stand-alone unit

PCB

Max pin's cross section 1.5 × 1.5 mm

Max pin's length (standard version) 35 mm

Production

4 heads capacity

Up to 8 000 pins per hour per 1 head

Cycle time: 500 ms per pin

Tooling

Time of insertion head change 10 min

Time of set of part change into insertion head 15 min

Dimensions

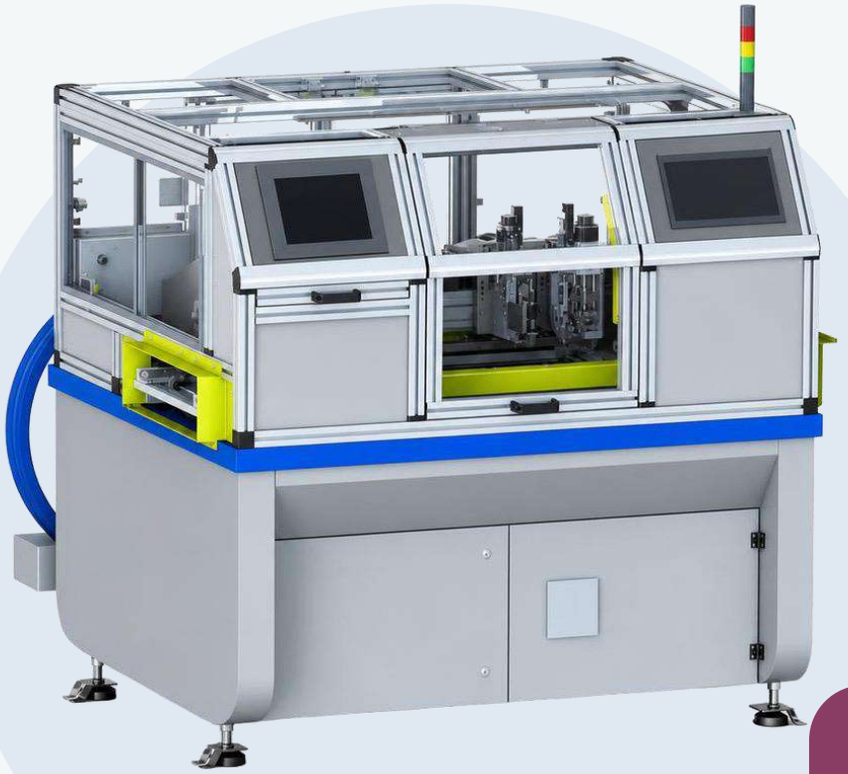
Overall dimensions: 1200 × 1200 × 1600 (W × D × H) mm

Power supply: 220 V. 50 Hz single-phase 10 A

Power: 2,0 kW

Air pressure: 6 bar

PININSERT 3200



Description

Pininsert 3200 (Conveyor Version) is equipped with SMEMA compatible belt conveyor system to enable the integration of equipment into the production line of surface-mounted printed circuit boards.

It can be manufactured as DH (Double-Head) version with two heads to insert pins of different dimensions within a cycle without readjustment.

PCB

Max pin's cross section 1.5 × 1.5 mm
Max pin's length (standard version) 25 mm
PCB dimensions: min 50 x 50 mm, max 400 x 400 mm

Production

Cycle time: 500 ms per pin

Tooling

Time of insertion head change 10 min
Time of set of part change into insertion head 15 min

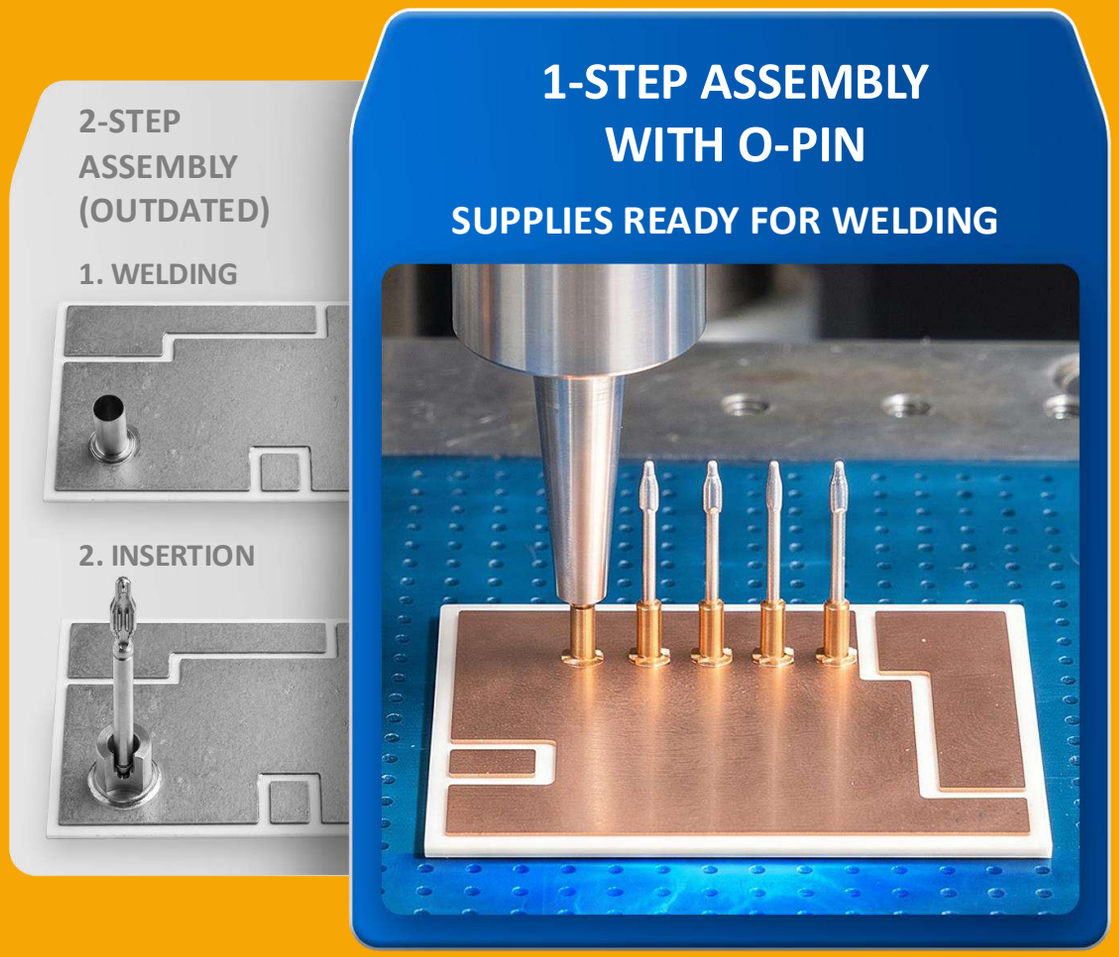
Dimensions

Overall dimensions: 1860 × 1730 × 1670 (W × D × H) mm
Weight: approximately 1500 kg
Power supply: 220 V 50 Hz 10 A
Power: 3,0 kW
Air pressure: 6 bar

O-PIN PATENTED CONNECTORS

UNIVERSAL REPLACEMENT

Patented solution that outperforms outdated copper sleeve and rivet connectors.

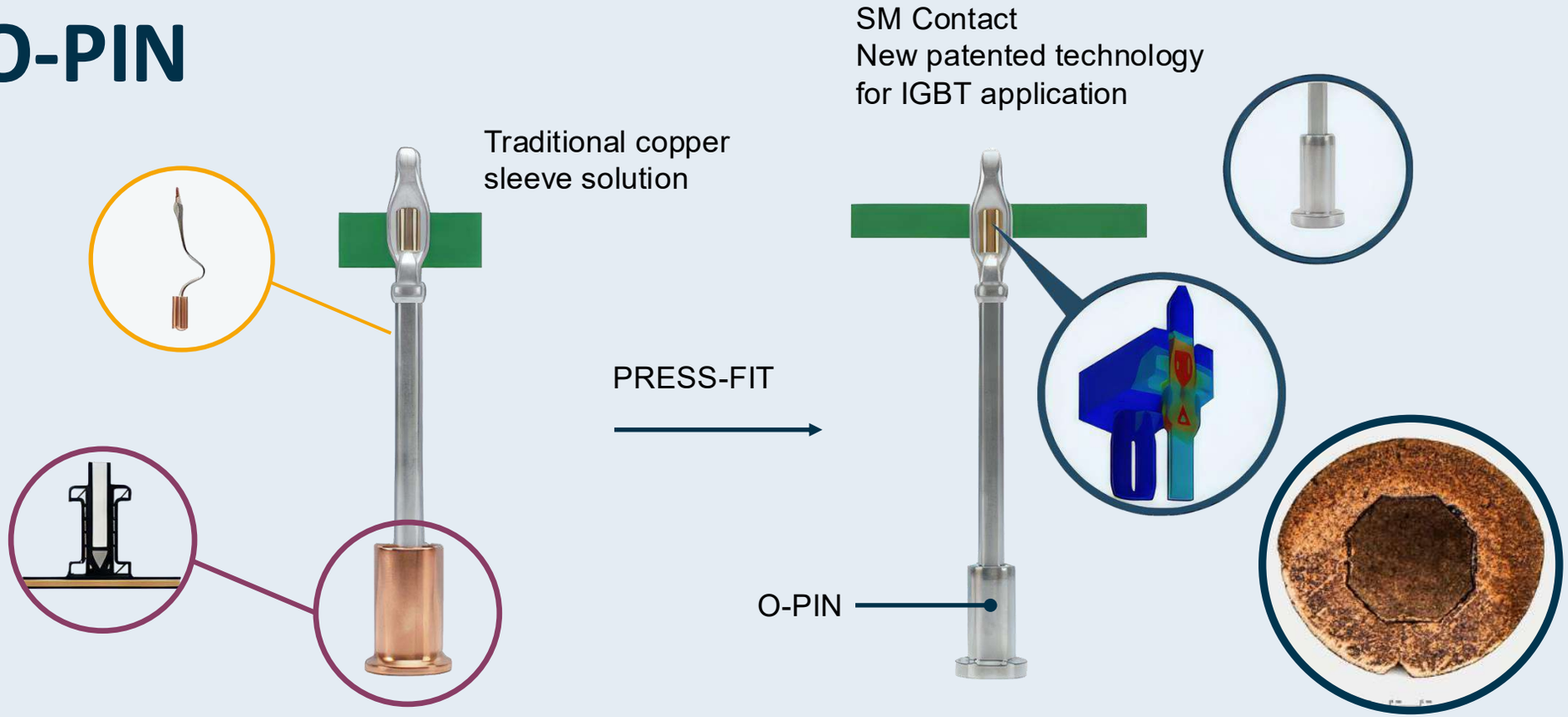


Rivet / Sleeve Technology Challenges:

- Complex multi-factor analysis required. (material, friction, thickness...).
- High-precision required, costly manufacturing.
- Expensive consumables and assembly defects.



O-PIN



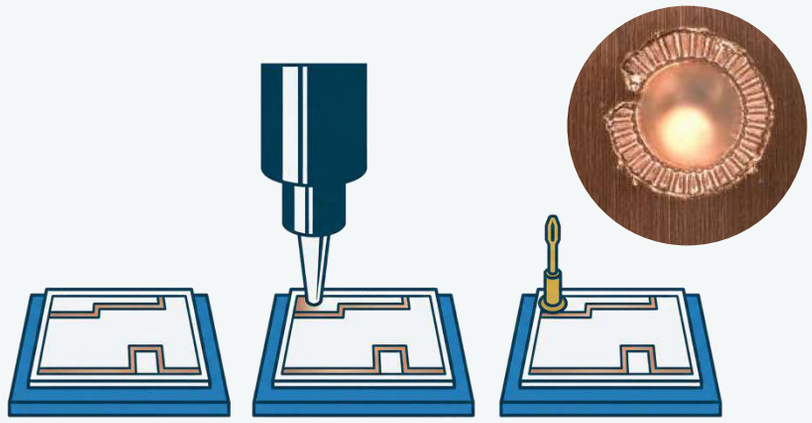
UPGRADE TO O-PIN

Insertion based pin connectivity poses significant challenges in high-precision assembly, leading to inefficiencies, defects, and costly scrap.

Key issues included:

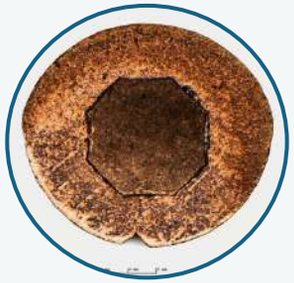
- Pin Damage Risk during insertion.
- Inclination based scrap.





ULTRASONIC WELDING

O-PIN ADVANTAGES



SUPERIOR ELECTRICAL PERFORMANCE

LARGER SURFACE IN TOUCH WITH PIN



SUPERIOR PRESS-IN RESISTANCE

ACCUMULATION OF MATERIAL IN THE BOTTOM



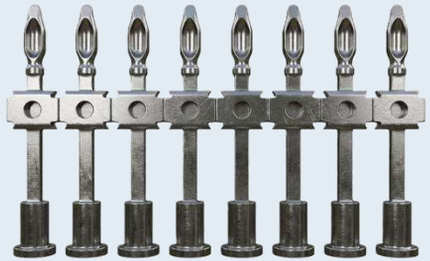
COST / QUALITY EFFECTIVE

100% OF PARTS CHECKED

NO SCRAP FOR INSERTION

NO INVESTMENT FOR INSERTION

PACKAGING



BANDOLIER PACKAGING

Ideal for automated assembly processes.

The connectors are delivered in a continuous U-band.

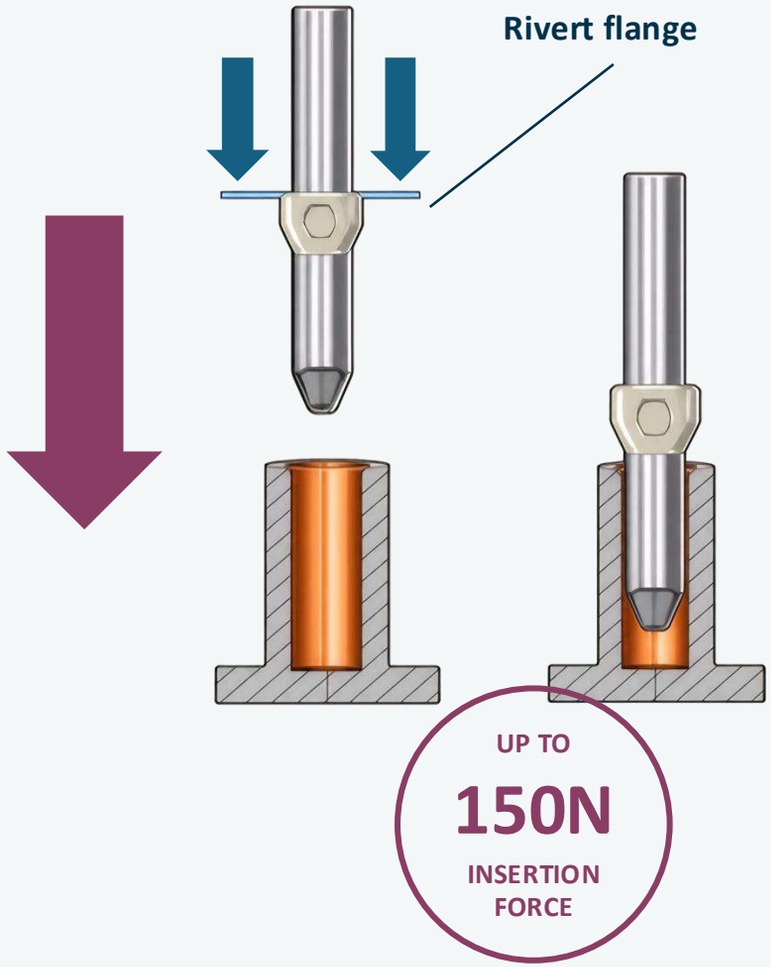


BULK PACKAGING

Ideal for flexibility for assembly process.

The connectors are delivered in bags with pre-defined amount of pieces.

O-PIN VS INSERTION IN RIVET FOR OVERMOLDED MODULES



Overmolded power modules with pins installed require a complex cavity for closure.

Pin position (XY) and inclination tolerances matter here: the tighter these are controlled, the more straightforward mold closure becomes.

Our updated high insertion force wire pin has been enhanced to withstand insertion efforts up to 150 N (up to 180 N depending on a few factors), used together with SM Contact's dedicated adapted insertion tooling.

This closes the performance gap with O-PIN for applications that need the rivet-insertion route.

P-IN PATENTED CONNECTORS

CURRENT FIELD STANDARD

01 INDUSTRY STANDARD, BUT OUTDATED:

- For decades, IDC (Insulation Displacement Connectors) were the only option for magnet wire connections.
- Manufacturers had no alternative—leading to locked-in supplier dependence.

02 HIDDEN COSTS OF IDC

- Overpriced due to excessive material use (up to 80% more cost than O-PIN connectors).
- High production waste – inefficient design increases expenses.

03 THE REAL IMPACT ON BUSINESSES

- Vulnerability to price hikes – expensive material
- Slowed innovation – reliance on old tech held back efficiency.



The Problem with IDC Connectors

INTRODUCING P-IN CONNECTORS

01 Innovative magnet wire connectors replacing IDC technology.

02 Same functionality – reliable electrical connection for coils, motors, and transformers.

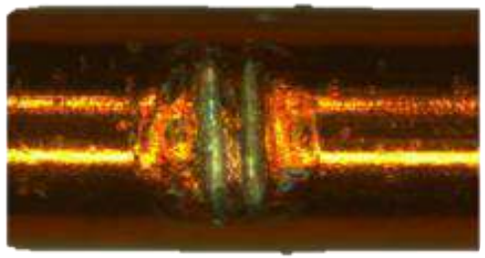
03 Simplified design reduces material waste without compromising quality.

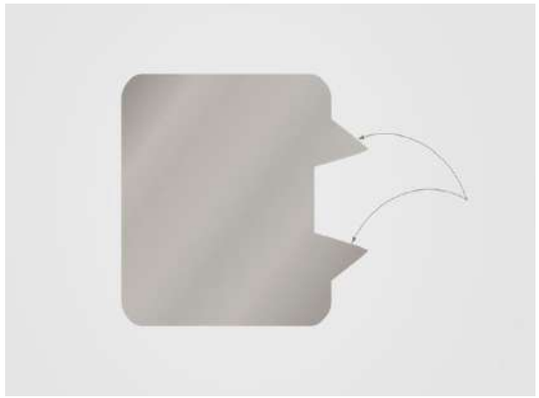


KEY FEATURES:

- ☑ Cost-effective (80% cheaper than IDC)
- ☑ Same electrical performance
- ☑ Wide industry compatibility.

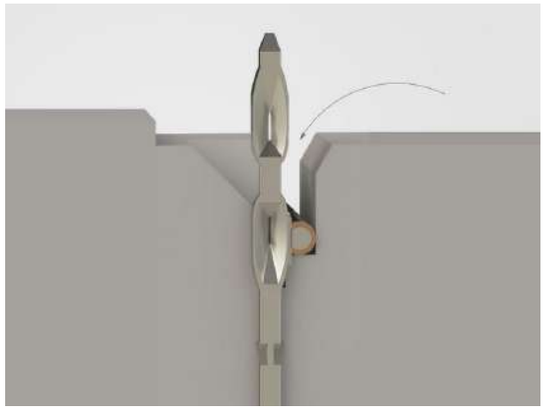
HOW P-IN WORKS





01

The P-in compliant feature defines the simplest technology for IDC connector for magnet wire. **It penetrates the enamel layer when being inserted vertically.**

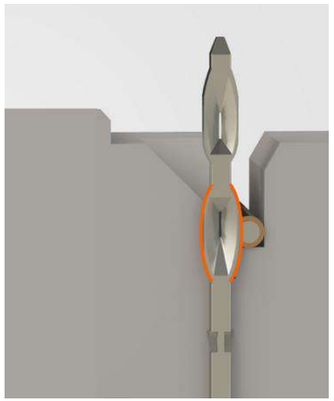


02

Magnet wire must be located in a simple dedicated groove in the plastic housing, **similar to the classic approach.**

03





Electrical connection stability is reached by **deformable spring-load (Press-fit like) geometry. "Pushing" against the plastic housing,** creating a tight contact between the pin and the conductive core of the magnet wire.

ELECTRIC COIL + PCB

connection of the product to PC board without soldering

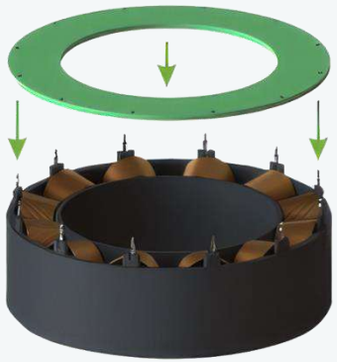
with Press-fit

01

Manufacturing of coils

automatic insertion of IDC pins intola plastic housing





02

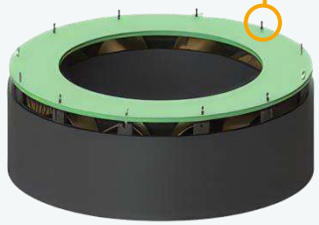
Installing a coil on PCB

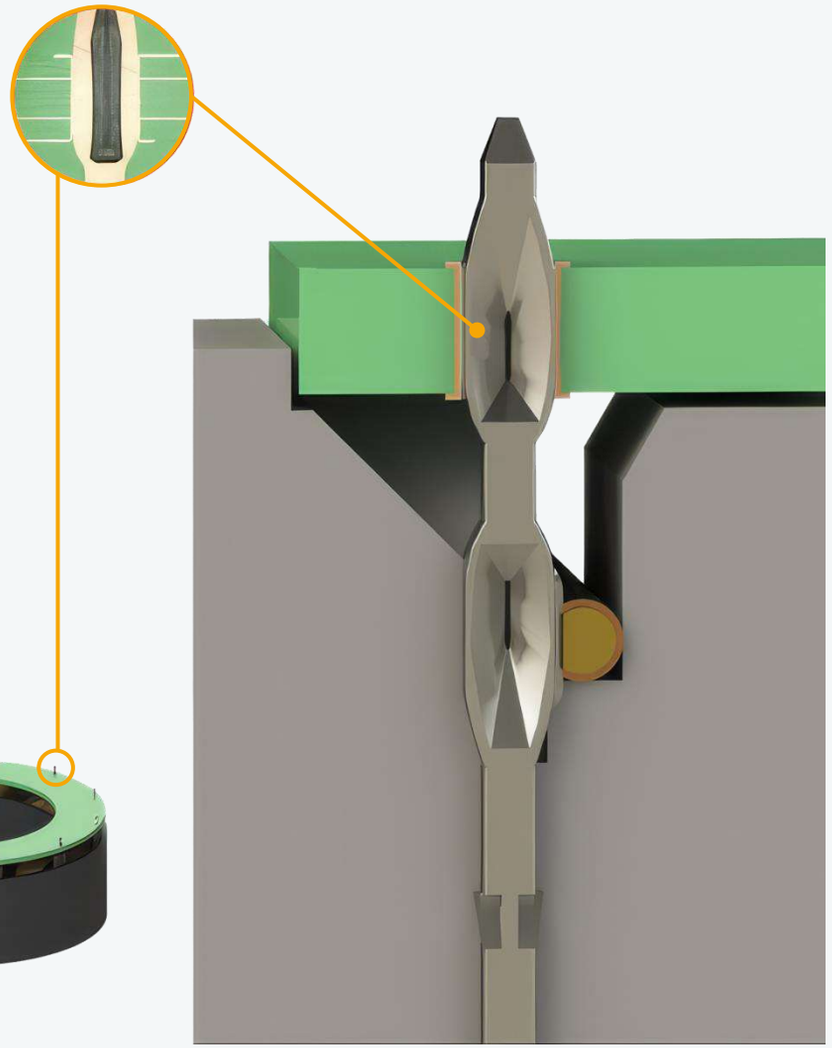
SM Contact Press-fit pins comply with IEC 60352-5 and global automotive manufacturers' standards

03

Coil integrated onto PCB

for automotive and industrial electronics, home appliances, ATC





ELECTRIC COIL + PCB

connection of the product to PC board with soldering

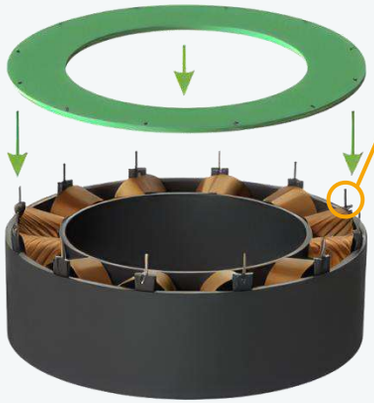
without Press-fit

01

Manufacturing of coils

automatic insertion of IDC pins intola plastic housing





02

Installing a coil on PCB

connection using P-type IDC pins for magnet wire



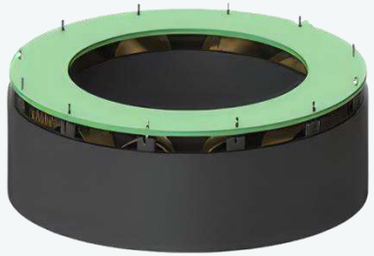
03

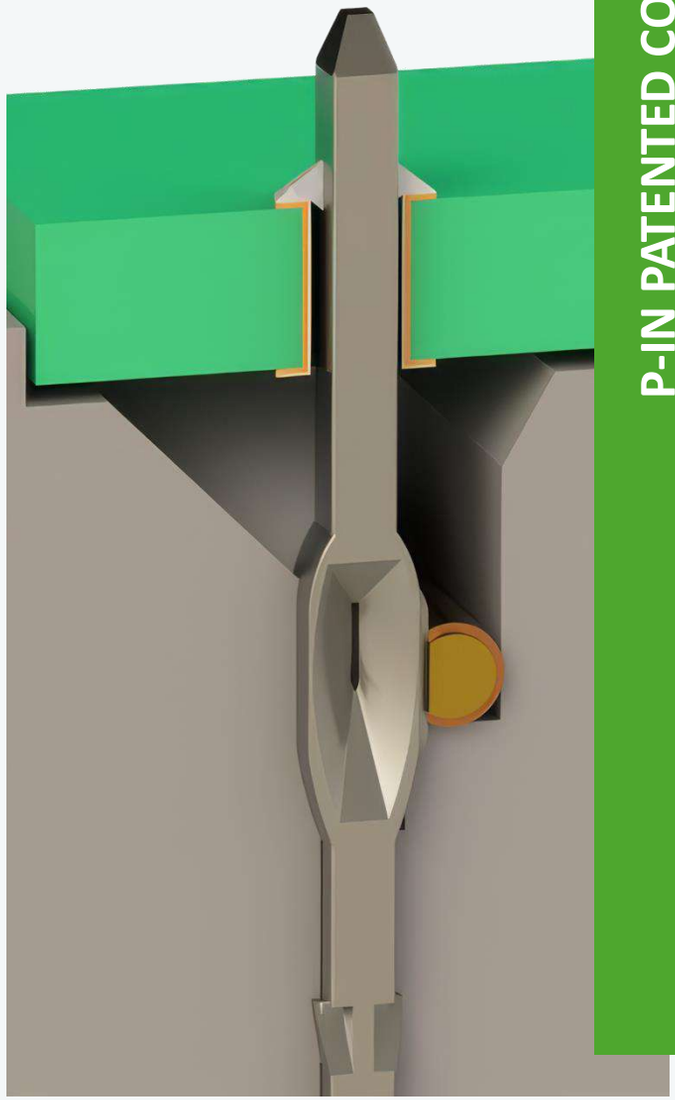
Soldering

04

Coil integrated onto PCB

for automotive and industrial electronics, home appliances, etc.





RISK ANALYSIS

PLASTIC RELAXATION (CRRPING EFFECT).

Validating 5 families.

PP _ LOW RISK, NOT RECOMMENDED.

ABS _ OK ✅

PA66 _ OK ✅

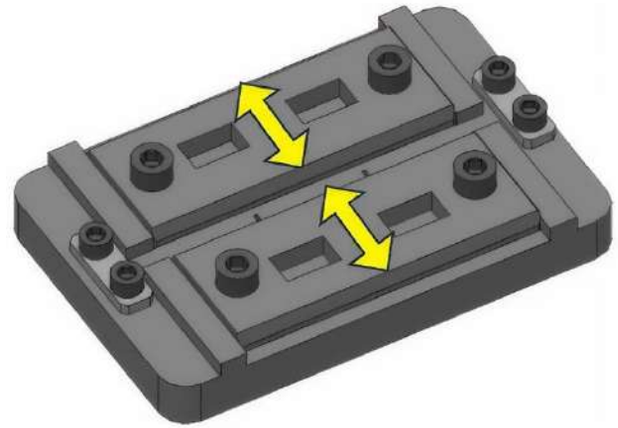
PA66 GF30 _ OK ✅

PPS GF30 _ OK ✅

INDUSTRY STANDARDS (ONGOING)

IEC 60352-4

VALIDATION PROPOSAL



SM Contact plastic jig

5 families of plastic available.

Adjustable allocation for P-in.

MAX and MIN (worst case study) tolerances upon customer needs.

Adjustable thickness of plastic support.

Participation on validation costs from SMContact.

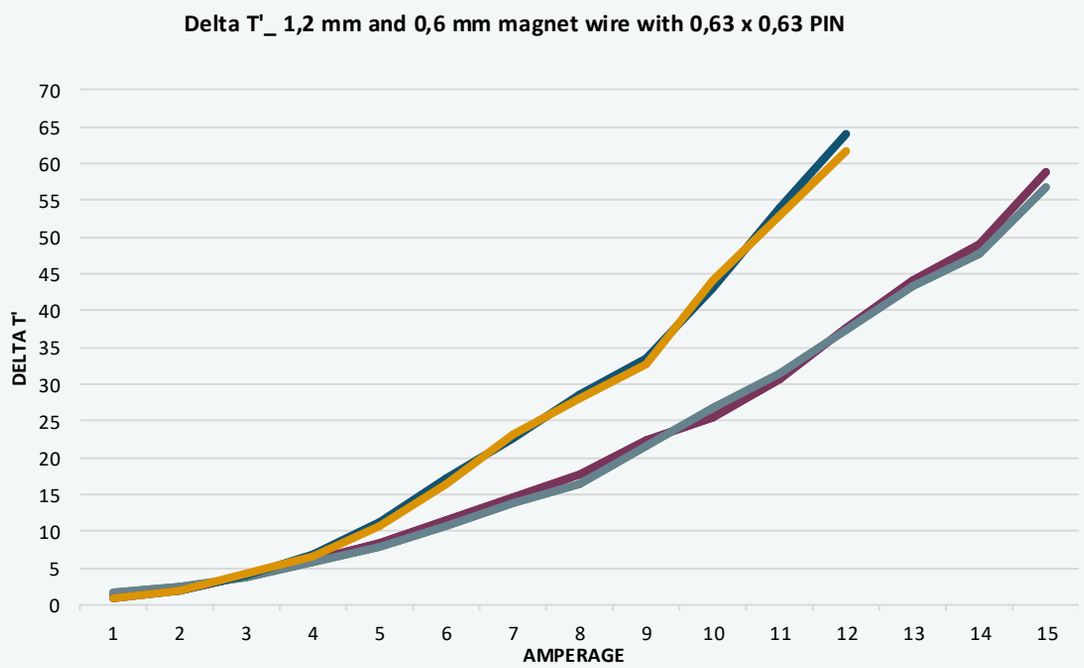
Possibility to deliver samples for functional test.

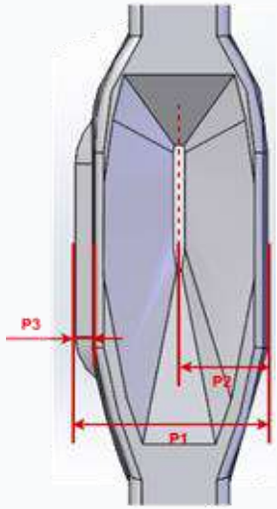
Possibility to validate as well press fit in PCB.

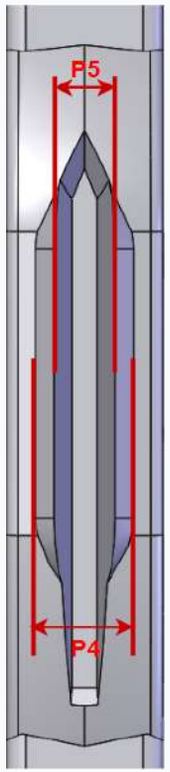
QUALITY TEST RESULTS

The diagram shows the temperature rise of the contact.

P-in connectors are tested in laboratory conditions KPS3020D 0-30V/0-20A.







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