INFOTECH IN BRIEF

- 100% Development at Infotech
- >95% Producing parts in Switzerland
- >35 (20) Years of experience with automation
- >1'500 Installations worldwide
- >1'000 Modules Infotech Component Matrix
- >110 Employees
- >30 Support engineers worldwide
- >50% Engineers
- >20 Countries
COMPANY HISTORY

1984: Company registration, focus on selling software products

1985: Worldwide highest accuracy die bonder using an open platform

1989: Repositioning of Infotech AG in Solothurn, Switzerland

1995: First production cells

1999: Desktop systems, Infotech Component Matrix

2001: First fully automatic watch movement assembly line in Switzerland

2003: First assembly line for the pharma industry

2007: >1500 successfully installed systems worldwide

2009: First automatic power diode production line with 12” wafer die bonder

2015: Repositioning of Infotech AG in Solothurn, Switzerland

2017: Desktop systems, Infotech Component Matrix

2019: First production lines
Specialists of Zevatech / ESEC are now working at Infotech
- Project leaders, CAD Designers, SW engineers and process engineers
- Infotech wafer die eject feeders in sixth generation
- Solder preform feeders in sixth generation

Specialized process experience
- Dispense experience for solder paste, conductive adhesive, epoxy and any kind of liquid media for smallest amounts of volumes
- Dispense experience for lower side wetting processes
- Die bond experience from various type of feeders, including 12" wafer feeder
- Power diode bonding experience

MORE THAN 30 YEARS OF PRECISION DIE BOND EXPERIENCE
**VISION IN AUTOMATION**

**Allowing complex special automation products with standard peripherals**

Infotech supplies precision automation products which are generating jobs, equivalent manual processes would not be reliable enough and would be too expensive.

These types of automated production processes result in lower production cost, improved product quality, reduced space requirements and allows local manufacturing (in Switzerland).

The automation products are based on modules from the Infotech Component Matrix developed from specialists.

It is not the concept of combing modules from the open market. Infotech stands for building precision machines for specialized applications and does not stand for integrator.
Entire production lines

- Carrier lift to upper conveyor
- Heat sink mounter
- Preform attacher
- Die bonder
- Preform attacher
- Head wire mounter

- Vacuum oven
- Stacker
- Power diode unloader
- Carrier lift to lower conveyor
- Gel dispenser
- Electrical tester
- Unloader
VISION IN AUTOMATION

Exceeding your expectations

The requirements of all participants, in particular these of our customers, define our actions: We are curious, open to new ideas and solutions and strive to exceed all expectations.

Thus we achieve with:

- With our products and services we help our customers to reach their entrepreneurial targets on schedule and within their budgets. With Infotech machines the machine related production costs per component are lower compared with competing automation solutions.

- We are competent and professional partners for our customers to realize future challenges. Our technical support employees assist the customers to use the machines optimally during the entire life time and to guarantee here with a high customer satisfaction.

- We consciously prefer local, flexible and reliable suppliers. With these we establish long lasting, cooperative relationships, to continuously optimize quality, prices and delivery times.

- We create a positive environment, where the personal motivation of our employees can be supported and the individual goals of our employees and the company goals can be consolidated. Every single employee is an effective part of Infotech and knows his tasks and what is expected from him and his team. The perception of competences and the sense of responsibility are being improved continuously by giving examples by the leaders.

- Through controlled growth of the company, permanent improvement of our business processes and guaranteeing team-minded employees with outstanding skills we continuously increase our efficiency and secure the long term existence of the company.
Swissness

Innovative application solutions and Swiss precision are combined on multifunctional production platforms, allowing very flexible and highly precise automation processes and application solutions on smallest work areas. It is possible to handle smallest components and smallest amount of fluids for applications in various market fields.

The engineering of the products are realized 100% in Switzerland. In addition local, flexible and reliable suppliers are preferred.
MISSION IN AUTOMATION

Applications
Pick and place, dispense, micro paint, flux, attach, bond, sort, test, inspect

Peripherals
Head and table peripherals from the Infotech component matrix

Robots
Cartesian Infotech platforms IP-100, IP-220, IP-500, IP-520, IP-620

Products
Desktop, workspace, production cell IC-900, IC-1200, IC-1600, IC-1800, IC-2000

Technologies
Precision mechanics, control technology, vision, VisualMachines™
MISSION IN AUTOMATION

COMPONENT MATRIX

STANDARD EQUIPMENT

SEMICONDUCTOR

CUSTOMIZED EQUIPMENT

ELECTRONICS
Confidential

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PRODUCT PHILOSOPHY

Infotech Desktop platform

Configure the desktop platform to the customer specific application needs and merge all peripherals and processes...

... Process development for processes as: dispense, wetting, solder-preform attaching, die-bonding, flipchip bonding, inspection!

→ Desktop factory!
PRODUCT PHILOSOPHY

Processes developed on the IP-500 Desktop can be transferred to the production line with identical process parameters. Therefore, lower cost development processes are possible and the processes can be tested and qualified at an earlier stage.

→ From “Desktop factory” to “Factory in cell”
PRODUCTS - PRODUCTION CELLS

Precision Cells IC-900, IC-1200, IC-1800 and IC-2000 (with 12” wafer Die ejector)
<table>
<thead>
<tr>
<th>IP-100</th>
<th>IP-500 Desktop</th>
<th>IP-500 Zelle</th>
<th>IP-520 Zelle</th>
<th>IP-620 Zelle</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="IP-100" /></td>
<td><img src="image" alt="IP-500 Desktop" /></td>
<td><img src="image" alt="IP-500 Zelle" /></td>
<td><img src="image" alt="IP-520 Zelle" /></td>
<td><img src="image" alt="IP-620 Zelle" /></td>
</tr>
<tr>
<td><strong>Travel range X</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>93 mm</td>
<td>400 mm</td>
<td>400 mm</td>
<td>210 mm</td>
<td>210 mm</td>
</tr>
<tr>
<td>148 mm</td>
<td></td>
<td></td>
<td>270 mm</td>
<td>270 mm</td>
</tr>
<tr>
<td><strong>Travel range Y</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>440 mm</td>
<td>400 mm</td>
<td>400 mm</td>
<td>400 mm</td>
<td>540 mm</td>
</tr>
<tr>
<td>550 mm</td>
<td></td>
<td></td>
<td></td>
<td>620 mm</td>
</tr>
<tr>
<td>680 mm</td>
<td></td>
<td></td>
<td></td>
<td>710 mm</td>
</tr>
<tr>
<td><strong>Resolution</strong></td>
<td>0.0002 mm (0.2 µm)</td>
<td>0.0002 mm (0.2 µm)</td>
<td>0.0002 mm (0.2 µm)</td>
<td>0.0002 mm (0.2 µm)</td>
</tr>
<tr>
<td><strong>Repeatability</strong></td>
<td>±0.005 mm @ 3σ</td>
<td>±0.005 mm @ 3σ</td>
<td>±0.005 mm @ 3σ</td>
<td>±0.004 mm @ 3σ</td>
</tr>
<tr>
<td><strong>Process accuracy</strong></td>
<td>±0.010 mm @ 3σ</td>
<td>±0.010 mm @ 3σ</td>
<td>±0.010 mm @ 3σ</td>
<td>±0.009 mm @ 3σ</td>
</tr>
<tr>
<td><strong>Cycle time</strong> <strong>Pick &amp; Place</strong></td>
<td>ca. 1.5s</td>
<td>4.4s</td>
<td>1.4s</td>
<td>1.0s</td>
</tr>
</tbody>
</table>

* Accuracy definitions are based on performing glass flip chip tests. Using dedicated configurations, accuracies < 5µm @3 Sigma can get achieved.
** Vision and pick, vision and place.
PRODUCTS - ASSEMBLING
PRODUCTS - FEEDING
Relative assembly of opto electric transceivers

Relativbestückung von opto-elektronischen Transceivern
Dispense-and assembly processes for pressure sensors

Dosier- und Bestückungsprozesse für Drucksensoren
Pre-assembly of optical parts for solid-state laser

Vorbestückung von optischen Teilen für Festkörperlasern
IP-500 WORKSPACE (ARBEITSPLATZGESTELL)

Production of peltier elements

Fertigung von Peliter-Elementen
IP-500 WORKSPACE (ARBEITSPLATZGESTELL)

Production of watch dials

Fertigung von Zifferblättern
Cap placer with dip dispenser, magazine to magazine

Kappenbestücker mit Dip-Dosierer, Magazin zu Magazin
IC-1000 / IP-520

Sorting and inspection process for precious metal blanks

Sortier- und Prüfanlage für Edelmetallrohlinge
Sort, inspection and place system for watches indexes

Sortieren, prüfen und platzieren von Uhrenteilen
Using the IC-900 Dispenser, dispense applications can be processed precise, efficient and repeatable. With the Infotech designed universal dispense valve interface, several different dispense pumps can be exchanged quickly.

From left to right:
IC-1200 - DIE-BONDER 12" WAFER

Preform and die bonder for power module production with 12" Wafer die eject feeder

Lötfolien und Die Bonder für die Produktion von Modulen für die Leistungselektronik mit 12" Wafer Die-Eject Zuführung
IC-2000 - POWER MODULE BONDER 12" WAFER

High-speed die bonder for power module production with 12" Wafer die eject feeder and six independent assembly heads

Lötfolien und Die Bonder für die Produktion von Modulen für die Leistungselektronik mit 12" Wafer Die-Eject Zuführung und sechs unabhängigen Bestückungsköpfen

Options

- Return transport system
- Stack tray feeder 4" x 4"
- Static 4" waffle pack
- T/P dispense head
- Dispense purge- and calib unit
- Wafer sky-camera
- Application plate with feeders
Watch assembly (Swatch):
2X FC-1600 / 5X IP-100 / 1X IP-520
Assembling and soldering of pcb onto leadframe
Welding of quartz onto leadframe
Cut, test and sort into output tray

Uhrenmontage (Swatch):
2X FC-1600 / 5X IP-100 / 1X IP-520
Bestücken und löten von Elektronikbauteil
Bestücken und schweissen von Quarz
Schneiden, testen und ablegen in Ausgangstray
Pharma assembly line:
3X IC-1200 / 2x IP-520 / 4x IP-100
Precision membran assembly of a valve

Pharmamontagelinie:
3X IC-1200 / 2x IP-520 / 4x IP-100
Präzisions Membranbestückung in einem Ventil
FC-1200 - INTAKE VALVE ASSEMBLY LINE

Intake valve assembly line
3x FC-1200 / 2 FC-1600 / 4x IP-520
Base, top-housing and Spring assembly, UV-glue dispensing, UV-curing, mechanical and optical testing and packaging

Einlassventilmontagelinie
3x FC-1200 / 2 FC-1600 / 4x IP-520
Basis, oberes Gehäuse und Feder bestücken, UV-dosieren, UV-aushärten, mechanisch und optisch prüfen und verpacken
IC-1000 - DBC ASSEMBLY LINE

Power module assembly line
5x IC-1000 / 5x IP-520
DBC (substrate) loading, laser marking, inspection, Preform and Die bonding, NTC assembly

Leistungshalbleiter Bestückungslinie
5x IC-1000 / 5x IP-520
DCB (Substrat) laden, laserbeschriften, kontrollieren, Lötfolien und Die bestücken, NTC bestücken
Watch movement assembly (Swatch Boncourt):
8x IC-1000 / 8x IP-520 / 6x IP-100
Line 1 of 4 for the fully automatic assembly of the caliber for the
Swatch SISTEM51

Uhrwerkmontagelinie
(Swatch Boncourt):
8x IC-1000 / 8x IP-520 / 6x IP-100
Linie 1 von 4 zur vollautomatischen
Bestückung des Kalibers für die
Swatch SISTEM51
# POWER MODULE PRODUCTION - EQUIPMENT

<table>
<thead>
<tr>
<th>Power Module production equipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dispenser</td>
</tr>
</tbody>
</table>

## Applications
Pick and place, dispense, micro paint, flux, attach, bond, sort, test, inspect

## Peripherals
Head and table peripherals from the Infotech component matrix

## Robots
Cartesian Infotech platforms IP-100, IP-220, IP-500, IP-520, IP-620

## Products
Desktop, workspace, production cell IC-900, IC-1200, IC-1600, IC-1800, IC-2000

## Technologies
Precision mechanics, control technology, vision, VisionMachines
# POWER MODULE PRODUCTION - EQUIPMENT

## Power Module Bonder

<table>
<thead>
<tr>
<th>Equipment</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dispenser</td>
<td>Precise handling of small parts and liquids</td>
</tr>
<tr>
<td>Preform bonder</td>
<td></td>
</tr>
<tr>
<td>Die bonder</td>
<td></td>
</tr>
<tr>
<td>KGD Tester</td>
<td></td>
</tr>
<tr>
<td>DBC Assembly line</td>
<td></td>
</tr>
<tr>
<td>Baseplate assembly line</td>
<td></td>
</tr>
<tr>
<td>DBC Baseplate assembly line</td>
<td></td>
</tr>
<tr>
<td>Die Attach for Sinter products</td>
<td></td>
</tr>
</tbody>
</table>

"Motion and Vision"
Polyimide Dispenser with load- and unload modules

- Polyimide Jet-Dispenser using Liquidyn P-Jet
- Nitrogen clean module
- Jet-dispenser
- Substrate heater
- Optional load- and unload module
Instead of using e.g. graphite jigs often wetting processes are being used. The wetting of the substrate, solder-preforms or dies will keep the product in place during the transport to the inline vacuum oven. These adhesion promoters will be cleaned out in the first chamber of the vacuum oven. Various type of adhesion promoters exist and all of them can be dispensed using Infotech dispense equipment or peripherals. Some of these can be dispensed bottom up, allowing lower cost solutions. The wetting process from below is preferred, as the solder-preform and the dies can be wetted just before the placement process.

Dispensing top down: All Infotech Component Matrix dispense valves and peripherals can be used (also for fully of partial solder paste processes).
- Applying wetting processes top down
- Within a separate dispense cell
- Using a separate robot platform within the assembly cell
- On the same robot as the assembly process using a separate dispense head

Dispensing bottom up: Infotech offers special jet-dispense valves, which can process low viscose adhesion promoters e.g. Ethanol to the lower side of the solder preforms or the dies. If multiple assembly heads are used, then the wetting process can be performed in parallel.
Instead of using solder paste, often solder preforms are used when the requirements of the solder joints between die and substrate, but also between the substrate and the base plate, are extremely high and flux free vacuum soldering processes are used.

Infotech offers the feeding and processing possibility of solder preforms from a reel instead of precut preforms in waffle trays or tape feeders. The standard preform bonder can be equipped with up to four preform feeders, which are able to cut different widths of preforms in the required length directly on the machine. These preforms can afterwards be picked and placed precisely with up to six assembly heads. With the vision system, each step of the process can be monitored and controlled.

- Preform feeder PF2-14 (Tape width 2 mm ... 14 mm)
- Preform feeder PF12-26 (Tape width 12 mm ... 26 mm)
- Preform feeder PF22-36 (Tape width 22 mm ... 36 mm)
- Drive unit to preform feeder PF2
- Preform stack feeder PS32-66 (Preform size 32 mm ... 66 mm)
IC-900 - PREFORM BONDER

IC-900 Preform bonder with 3 preform feeders PF2-14 - Cut, pick, inspect and place solder preform from tape onto DBC-substrates (for power modules)

IC-900 Lötfolien Bonder mit 3 Lötfolienzuführungen PF2-14
Schneiden, aufnehmen, Qualitätskontrolle und absetzen der Lötfolie auf eine DCB-Substrat (Modul für die Leistungselektronik)
IC-1200 - POWER MODULE BONDER 8" WAFER

Die-, Preform-, Spacer-, NTC-, SMD Bonder
Wafer-, Preform-, Tape-, Waffle pack-, loose parts- Feeder
Processing directly into oven wpc
Dispenser, Flipper, Dip-station any many other from the Infotech component matrix
IC-1200 - POWER MODULE BONDER 12'' WAFER

- Die-, Preform-, Spacer-, NTC-, SMD Bonder
- Wafer-, Preform-, Tape-, Waffle pack-, loose parts- Feeder
- Processing directly into oven wpc
- Dispenser, Flipper, Dip-station any many other from the Infotech component matrix
IC-2000 - POWER MODULE BONDER 12" WAFER

Options
- Return transport system
- Stack tray feeder 4" x 4"
- Static 4" waffle pack
- T/P dispense head
- Dispense purge- and calib unit
- Wafer sky-camera
- Application plate with feeders
PARTIAL DISCHARGE TESTER

PD-Tester with load-and unload modules

- Read DMC, load in tester, sort IO/NIO
- Electrical test with MPS test system
KGD tests cause specific electrical, mechanical and physical challenges. CREA and Infotech started a collaboration to create an all in one solution.

Each company is deeply specialized in their own field. Now working together there has successfully been developed pioneering testing stations. Difficulties for customers as integration and finding the right sub-suppliers are smoothly solved with the KGD testing line and the "limits of testing" are pushed a bit further.
KGD TESTING LINE - HANDLER

KGD Test Handler 8” Wafer

- Waferhandler for input
- Static and dynamic test station
- Interposer for reference DIE
- Four grade waffle pack stack feeder for output

KGD Test Handler 12” Wafer

Test station area

Output area

Input area

Test station area

Output area

Input area
Power module – Fully automatic Baseplate-Assembly line – flux free using preforms

Wpc is moved on the lower transport system back to the start of the line, where it is lifted from the lower to the upper transport system.

At the end of the line, the wpc is lowered from the upper to the lower transport system and back to the start of the line. The lower transport system is completely covered and moves in a tunnel avoiding particles falling onto the wpc, the base plates and fixtures. Cleaning systems can be installed optionally.
POWER MODULE - ASSEMBLY LINES

5 work piece carrier XL Oven-WT Stacker with return transport system
Production run - DBC-level

- Lift oven work piece carrier and center in first production cell
- Load DBC substrate from stack
- Laser mark DBC (optional), inspect DMC and mount DBC into work piece carrier
- Cut, pick, dispense wetting media from below and place preform (die to DBC soldering)
- Pick DIE from wafer, tape or waffle pack, dispense wetting media from below and place die onto preform
- Dispense NTC dispense media (mostly only on one DBC type per base plate)
- Pick from tape and place NTC (mostly only on one DBC type per base plate)
- Vacuum solder in VADU oven
- Unload final assembled and soldered DBC module from work piece carrier into transport work piece carrier
- Unload transport work piece carrier to stack or magazine
- Optionally use AGV for transferring stack or magazine to next process, e.g. cleaning, testing, ultrasonic scanning...
BASEPLATE-ASSEMBLY LINE

Production run – Baseplate-level

- Load and mount baseplate, optional laser marking of base plate
- Mount baseplate fixture from transfer conveyor
- Lower oven work piece carrier and return on lower conveyor to the front of the line
- Lift oven work piece carrier and center in first production cell
- Pick & place preform for (DBC to baseplate soldering)
- Load DBC module and mount DBC module onto preform
- Vacuum solder in VADU oven
- Remove baseplate fixture and pass on transfer conveyor
- Unload final assembled and soldered Baseplate module from work piece carrier into transport work piece carrier
- Unload transport work piece carrier to stack or magazine
- Optionally use AGV for transferring stack or magazine to next process, e.g. cleaning, testing, ultrasonic scanning...
Baseplate-and DBC Assembly Line

Production run – Baseplate- and DBC-level

- Load and mount baseplate, mount baseplate fixture from transfer conveyor
- Lower oven work piece carrier and return on lower conveyor to the front of the line
- Lift oven work piece carrier and center in first production cell
- Pick & place preform for (DBC to baseplate soldering)
- Load DBC substrate from stack, optional laser mark DBC, inspect DMC and mount DBC onto preform
- Cut, pick, dispense wetting media from below and place preform (die to DBC soldering)
- Pick DIE from wafer, tape or waffle pack, dispense wetting media from below and place die onto preform
- Dispense NTC dispense media (mostly only on one DBC type per base plate), pick NTC from tape and place NTC
- Vacuum solder in VADU oven
- Remove baseplate fixture and pass on transfer conveyor
- Unload final assembled module to work piece carrier, optionally clean module and unload
Production run – DBC-Level

Production run – Baseplate-Level

Production run – Baseplate- and DBC-Level
The highly flexible Die attach power module bonder is used for various production demands from laboratory up to series production.

- Heated bond head 300°C, with manual exchangeable heater tools
- Standard assembly head with interposer to transfer Die from cold to heated bond head
- Substrate holder plate with manual tilt adjustment, heated substrate surface 300°C and integrated force sensor table
- Substrate pre-heat station
- Bond force capabilities up to 300N (optional 500N)
- Supports DTF process (Die Transfer Film - Alpha Assembly Solutions) from 4x4"", Jedec size or wafer frame
- Die-, Preform-, Spacer-, NTC-, SMD Bonder
- Wafer-, Preform-, Tape-, Waffle pack-, loose parts-Feeder
- Processing directly into oven wpc
- Dispenser, Flipper, Dip-station any many other from the Infotech component matrix
DIE ATTACH FOR SINTER PRODUCTS

The highly flexible Die attach power module bonder is used for various production demands from laboratory up to series production.

DTF and Tack processing

- Loading substrates
- Pre-heating substrates
- Die recognition on wafer / waffle pack / Tape (ink dot, alignment) using upper vision
- Pickup Die with heated bond head
- Transfer film to Die with force feedback
- Die alignment and quality inspection of sinter foil on Die using lower vision
- Verify substrate temperature
- Tack on heated substrate with heated bond head and force sensing
- Unloading of substrates

Cycle time (substrate with 12 components)

- 46 seconds with 250 ms transfer time and 500 ms tacking time (including exchange of substrate).
- <= 4 Seconds cycle time / >= 900 UPH
POWER DIODE PRODUCTION LINE

- Carrier lift to upper conveyor
- Heat sink mounter
- Preform attacher
- Die bonder
- Preform attacher
- Head wire mounter
- Vacuum oven
- Stacker
- Power diode unloader
- Carrier lift to lower conveyor
- Gel dispenser
- Electrical tester
- Unloader
Exceeding your expectations