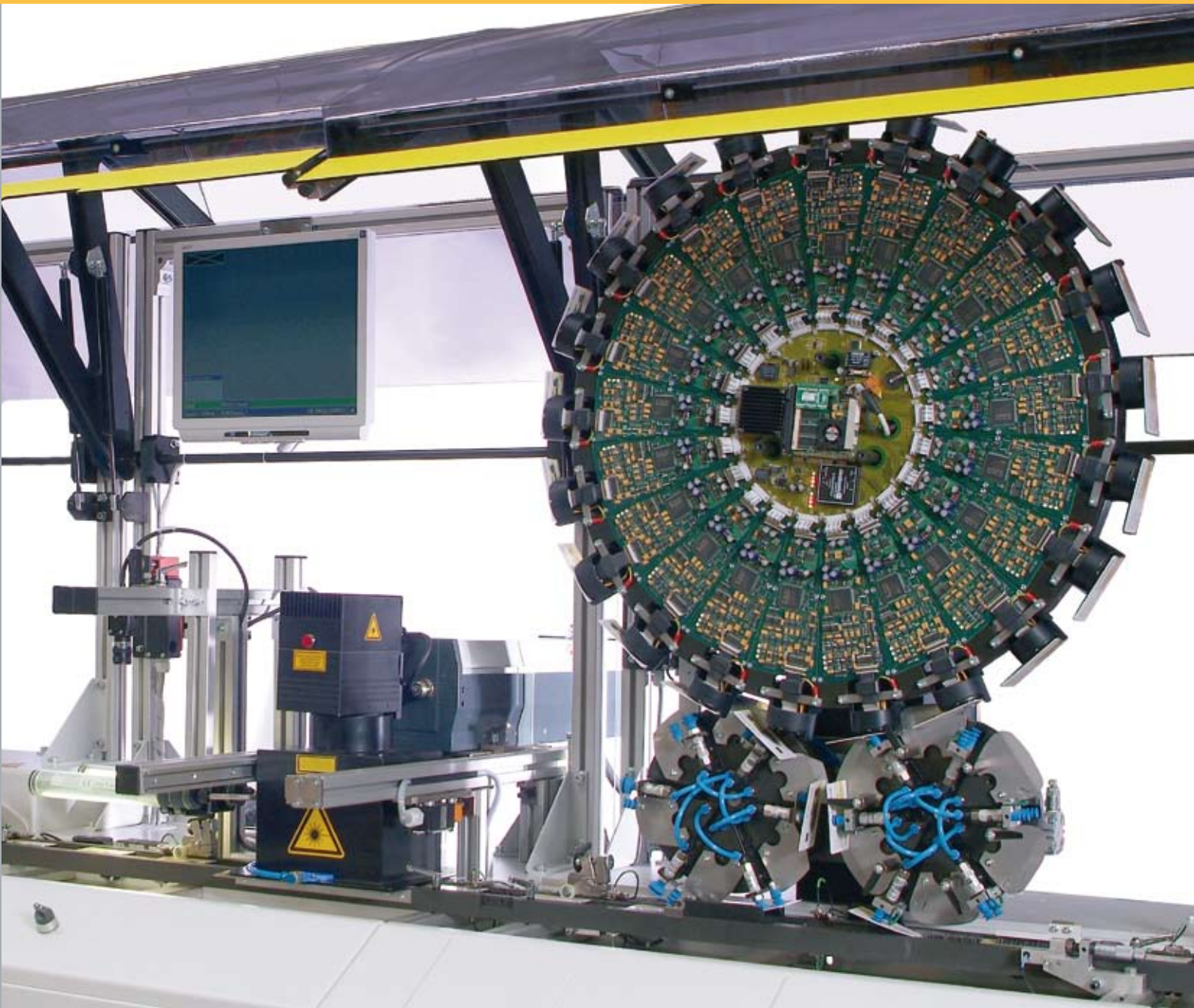# CHIPLINE™

Smart Card and Smart Ticket Personalization End-to-End System Solution

¬ Superior Cost-effective ¬ Scalable Chip Programming
¬ Top Processing Speed ¬ High Quality
¬ High Versatility ¬ Operator-friendly

ATLANTIC ZEISER

SIM CARDS · EMV PRE-PERSONALIZATION · SMART TICKETS

Reduce your personalization costs!

**CHIPLINE™ – high performance system, with a throughput of up to 25,000 cards/h**

- Fast return on investment
- Low personalization costs due to high performance
- High throughput for short response times and fast supply capability
- Unbeatable exploitation of the high-speed potential offered by flash-based microchips
- High throughput even with longer programming times, through extendable numbers of programming heads
- High speed "on-the-fly" laser marking (numbers, text, etc.)
- Integration of different inkjet printing technologies (up to 720 dpi) according to customer requirements (bar code/alphanumeric data)
- Uncomplicated script generation using the state-of-the-art Software Development Kit (SDK)
- Guaranteed high productivity through the use of the real-time controller platform
- Flexibility thanks to configurable log files
- Modular hardware concept ensures upgradeability and hence security of investment

1. Feeding Module

The high-speed friction belt feeder is equipped with a vertical card holder (pictured) that holds up to 800 cards, or a horizontal feeder belt that holds up to 2,000 cards (0.76 mm/30 mil).

Cards can be uploaded without stopping the machine. Complete double card detection provides suitable production control.
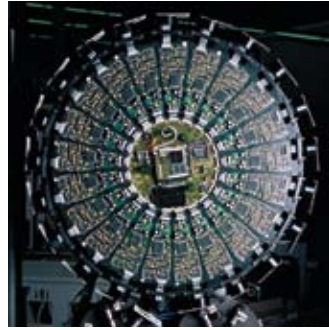
2. Chip Programming Module

For smart card personalization with a continuously moving circular transport mechanism at up to 25,000 cards/h. The module is equipped with a smart card programmer and an embedded real-time controller for 21 smart card programming heads, able to handle contact cards (ISO 7816) and contactless cards (ISO 14443 A & B, ISO 15693).
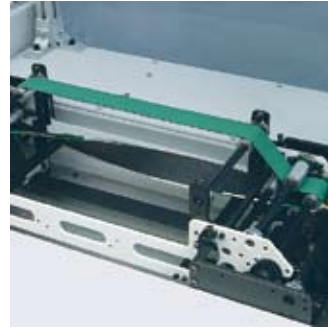
3. Flipping Module

Flipping module for in-line processing of top and bottom sides of cards.

4. Laser Marking Module

Marking of cards with text, numbers and bar codes. Permanent, clean, reliable, flexible marking of cards. In place of, or in addition to, inkjet printing. Available laser technology:
• Nd:YAG

Atlantic Zeiser **CHIPLINE™** in its basic configuration with:

· Feeder
· Chip programming module
· Laser marking module
· VERICAM camera verification system
· Shingle delivery

5. Inkjet Imagine Module

Inkjet printing offering different technologies for numerous application requirements:

- OMEGA™ printer generation with top print resolution of 720 dpi
- Single-array jets for flexible and dependable marking

6. UV Curing Module

The UV curing module offers the use of UV-curable inks with the CHIPLINE™, even at high production speeds, providing high abrasive resistance on plastic substrates in combination with AZ developed inks.

7. VERICAM™ Camera Inspection Module

The VERICAM™ camera system provides 100 percent monitoring of printing and the correctness of data.

VERICAM™ reads and checks the different variable and fixed data (numbers, bar codes, logos, etc.) and compares them online with data from the production file, providing for permanent variance comparison accompanying the production process.

8. Delivery

Horizontal shingling belt for manual handling of cards. Cards with incorrect data, chip programming errors or bad camera reading results are ejected into a lockable box.

Alternatively, the Card Sort module allows efficient sorting and batching of personalized cards. It consists of four sort bins and allows the dynamic remake of cards during production, minimizes handling efforts and costs and reduces the risk of mishandling or fallouts.

9. Host-PC

Simple operation and configuration of production jobs via the central host PC installed on a swivel mount. The Windows-based user interface offers the operator full control of individual modules and settings.

10. Software Development Kit

The Software Development Kit (SDK) from Atlantic Zeiser extends the objective of achieving the greatest possible product throughput to the chip programming process. In an environment separate from the actual CHIPLINE™ production system, programming, developing and testing of scripts is carried out under realistic conditions without blocking the production process. The hardware components used in the SDK are identical to those of the CHIPLINE™.

11. HSM

In many cases smart card programming requires cryptography.

In order to perform these cryptographic operations in a highly secure and tamper resistant environment different types of Host Security Modules (HSM) can be integrated.

High Speed Personalization System for Smart Cards and Smart Tickets

The global chip market is booming. Leading market research institutes are forecasting double-digit growth rates for the coming years. These levels of growth will apply equally to SIM CARDS, SMART TICKETS and FINANCIAL BANK CARDS.

For SIM cards, emerging industrializing countries in particular appear set for a period of rapid growth as a result of the continuous expansion of the mobile phone network coverage and continuously churing pre-paid subscribers.

Major cities around the world are increasingly switching to microchip-based public transport tickets, and this has led to rapid growth in the smart ticket market.

The financial bank card market is experiencing a extremely robust boom as a result of the change to EMV cards. To allow them to respond quickly, major banks have begun to install their own in-house production facilities in order to perform final personalization – this has consequences for card manufacturers. EMV based smart cards need to be pre-personalized during the card manufacturing process.

All three markets – SIM cards, smart tickets and bank cards – are subject to the same factors: cost pressure, short supply times and increasing competition. These are the market requirements facing card manufacturers and personalizers, whether operating locally or on a global scale.

The CHIPLINE™ from Atlantic Zeiser will allow customers to tackle these challenges successfully with this innovative personalization solution. With a sophisticated mechanical card transport concept the CHIPLINE provides the technical design for a competitive and cost-effective smart card personalization process with a throughput of up to 25,000 cards/hour. CHIPLINE™ systems currently installed and in production clearly demonstrate the positive impact of outstanding equipment performance on actual personalization costs.

CHIPLINE™ – advantages that count!

Technical Specifications – CHIPLINE

Card Format	Dimension: according to ISO 7810 / ID-1 Thickness: 0.4 – 1.00 mm / 15.8 – 39.4 mil Location of contacts for contact smart cards according to ISO 7816-2
Throughput	Up to 25,000 cards/h Depending on chip programming time, card material and format
Dimensions	Length: depending on configuration Width: approx. 870 mm 35.0 inches Height: approx. 2,115 mm 83.3 inches
Power Supply	400 VAC ± 5% / 50 Hz or 60 Hz / three phases + neutral + PE
Power Consumption	Depending on configuration
Ambient Temperature	5 – 30 °C
Relative Humidity	20 – 80% at 30 °C – not condensing
Compressed Air Supply	7 bar
Air Consumption	Depending on configuration
Exhaust	Depending on configuration

Technical Specifications – Smart Card Reader

Type of Chips	Microprocessor, memory Contactless, dual interface
Microprocessor Cards	According to ISO 7816, all standard protocols (T=0, T=1) Expandable to non-standard protocols (on demand) Clock up to 20 MHz Adjustable voltage supply 0 – 10V
Memory Cards	Protocols: S=0, S=8, S=9, S=10 Expandable to non-standard protocols (on demand) Adjustable voltage supply 0 – 10 V Adjustable Vpp 0 – 30 V
Contactless Cards	According to ISO 14443 A, ISO 14443 B Programmable magnetic field Programmable frequency Programmable ASK modulation index