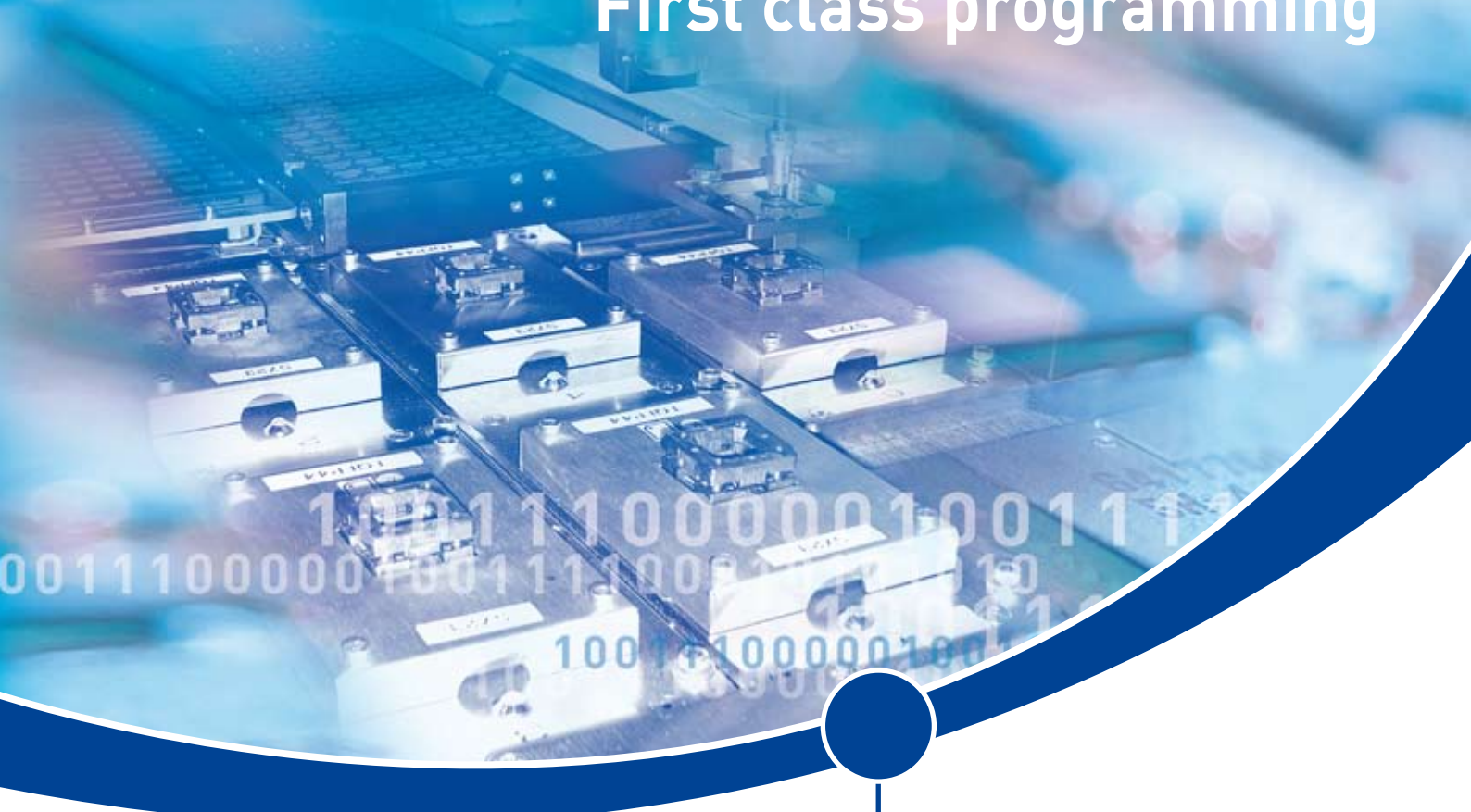
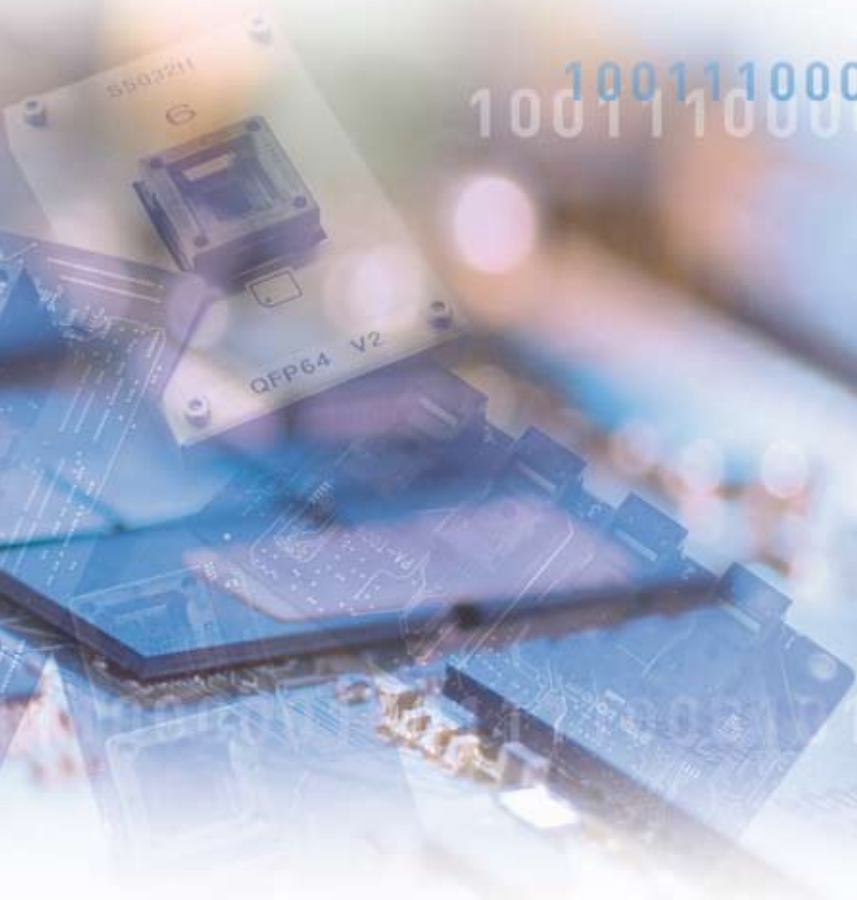


First class programming



**MSC High-Tech
Programming-Services**





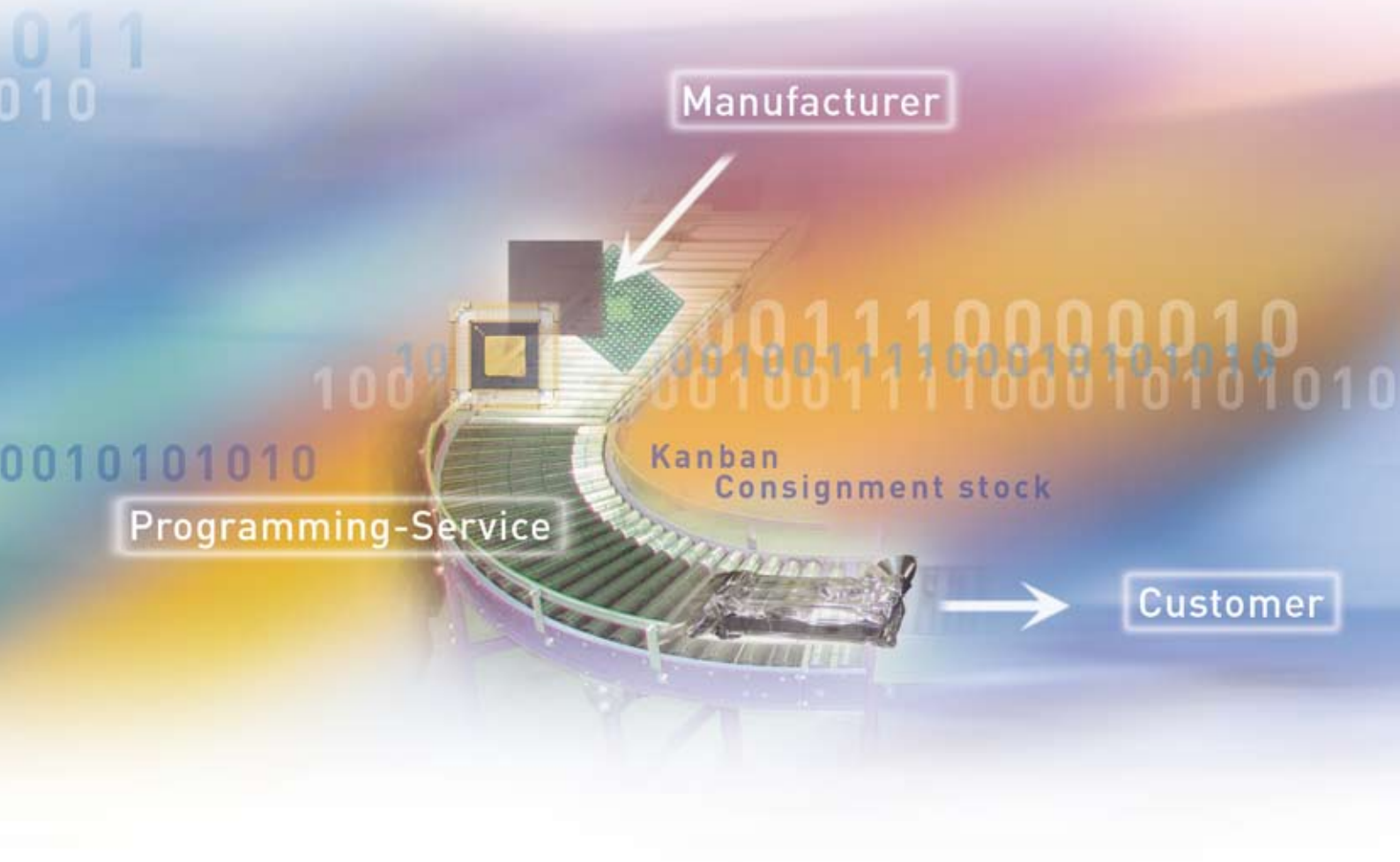
Programming

Marking

Taping

Baking & Dry-Packing

Competent and reliable services



Save valuable time and money – Just use our Know-How and our systems for programming your components

Component programming is becoming more and more complex. At the same time, package types are smaller and more difficult to handle with an increased risk of damage to pins. Keeping pace with developments requires continuous investment in equipment to match the new products and packages: buying new sockets, acquiring new algorithms and, often, completely replacing the programmer. Specialist skilled staff require training and retraining.

Profit from our expertise and use our capacities for your advantage.

- No capital investment
- Just fixed and predictable costs per device
- Logistic concepts
- Fully automated processes
- Shortest delivery times
- Complete tracking
- Achieved certification to DIN EN ISO 9001:2000

Programming to the point of perfection



We are the programming pros and always have the required programming systems as well as the latest algorithms available. Since 1994, we have offered high-quality, fast and reliable programming services to our customers. In this context, it does not matter whether you only want a few components as samples, a pilot production or a constant supply programmed for your needs - we always provide the best solution.

The MSC programming service in Stutensee offers you quality and reliability both for small series as well as for large volumes in all programmable technologies (Flash, OTP, Antifuse, etc.) and all package types. Using the most modern pick&place programming machines guarantees optimum treatment of all your components and gives you the certainty you need for your production.

Today's programming is more than just flashing data into a memory, therefore a team of highly qualified specialists with most up to date programming systems take care of your requirements and

specifications and ensures the fast and reliable programming of your components.





Our services:

- Programming according to a datafile or master
- Sample release
- Project handling through a database
- Special device function handling (AVR, PIC, etc)
- Serialisation
- Secured production mode
- Exclusive use of latest programming algorithm
- 24-hour services
- Data security through "Safe-To-Chip" method

Our equipment:

- Powerful automated programming systems
- High-Speed flash programming
- Secured data network
- Gang programming for all technologies including FPGAs
- Programming adapters for all packages
- Entrance control and monitoring

Our team:

- Fully trained with many years of experience
- Highly qualified
- Effective 3-shift production

Precise – Component marking



B Besides reliable programming, we also offer component marking as part of our service. We offer marking with CO² laser or process-proof labels. Both variants are completely integrated in the programming sequence; there is no additional stress on the components. Laser marking is especially recommended for fine-pitch components, as this method puts the least mechanical strain on the components and poses the least risk of bent module pins.

Other marking options are process-proof label or coloured spot.

The CO² laser marking system will mark additional information like the software revision number or special text information onto the surface of the components. The integrated software controls the marking and can attach the programming date, a lot number or a unique serial number.



Taping, Packaging, Storing



Processing the components in tape&reel is a standard in most production areas. For this we offer a professional reeling or de-reeling service according to the EIA-481-C standard. Using fully automated pick&place systems the parts will be re-packed from tube or tray into the corresponding tape. The programming,



marking and taping processes are completely integrated to avoid any mechanical stress on the components.

We have the facility to moisture bake and repackage devices in accordance with the JEDEC J-STD-033B

standard. We can bake and dry-pack any electronic devices as required. Moisture retention in the package can still cause excessive mechanical stresses during the soldering process, causing cracks and delaminating. In some cases when this damage affects critical areas, long term reliability may be compromised. It is necessary to control the moisture content in the encapsulation, up to the moment that they are submitted to the soldering process.

This control is obtained by shipping and storing sensitive SMD's in moisture barrier bags. They are hermetically sealed and can control the moisture absorption from the ambient environment, thus maintaining the devices in a dry condition until used.

A special Dry-Pack method is applied for long time device storing. For this the dried devices are packaged in extremely tough and durable bags.



Before vacuum sealing, the bag needs to be flushed out with nitrogen to prevent any component corrosion.

Memory card duplication



A further service of the programming center is the memory card duplication service. We program according to the highest standards and use only the best and reliable multi-slot copy stations available on the market today. Whether your requirements are just for a few cards or for very high volume, we have the resources to support you and meet your requirements. Capacities of 10.000 cards per day ensures a "Just-In-Time" delivery.

Hot-swappable switch-boxes for effective and high throughput



Our High-Speed copy station includes a software option for creating and copying smaller image files. With this, memory cards where much less data is stored than the actual storage capacity permits can be programmed much faster. This enables the use a higher capacity memory card to be prepared for future updates without losing throughput during programming.



Our services:

- Programming of all common card types
 - ✓ SD, MMC
 - ✓ microSD, miniSD
 - ✓ CompactFlash
 - ✓ MMC, MMCplus, RS-MMC, MMCmobile
 - ✓ MemoryStick Pro, Pro Duo, MemoryStick Micro M2
 - ✓ USB Sticks
 - ✓ USB Drives
- Custom branding and labelling
- Multiple packaging options available



Your satisfaction is our mission



W

We have achieved certification to DIN EN ISO 9001:2000 for our device programming and tape & reel services to meet the needs of our customers. To guarantee the correct programming we have installed various supporting procedures, multiple documentation defined within the MSC/Gleichmann quality system.

Service and quality for your programmed components:

- Sample release and FMEA according VDA
- Programming orders with central database
- Documented transfer of parts
- Automated Job-Task-Programming
- Check-list before, during and after the programming
- Complete tracking of all routines and DC
- Short and regular service intervals
- "Safe-To-Chip" service for highest data protection
- Continuing process of education for all operators with qualification matrix
- Continuous quality circles
- Access control and ESD area

Audited by

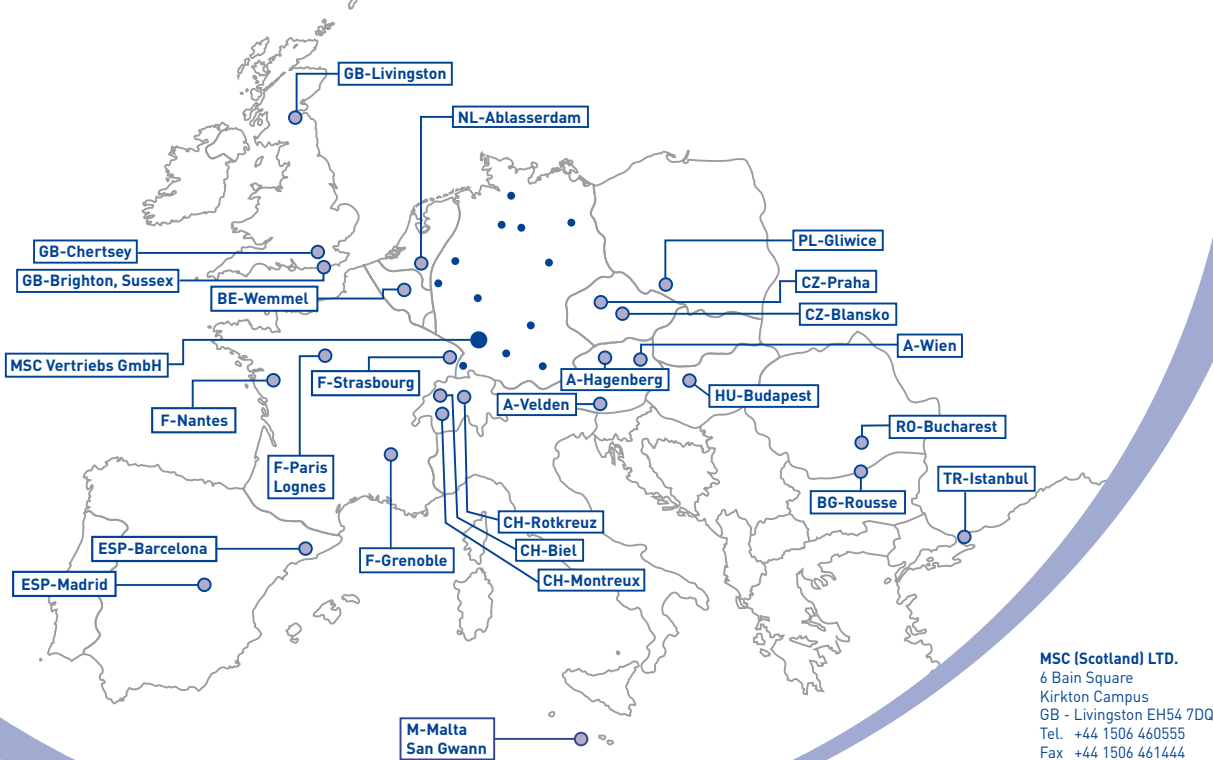


and numerous automotive customers

Milestone Programming Service



- | | | | |
|-------------|---|-------------|---|
| 1994 | Starting programming with ACTEL FPGAs | 2005 | Moisture bake and storage according JEDEC J-STD-033, programming capacity hits 10 Mio parts per year |
| 1995 | First automated programming system | 2006 | Installation of latest generation of flash programming systems and High-Speed copy station for memory cards |
| 1996 | Programming of more than 1 Mio parts per year | 2007 | Extension of production floor, programming capacity hit 15 Mio parts per year |
| 1996 | Certification according to ISO 9002 | | |
| 1997 | Programming capacity hits 3 Mio parts per year | | |
| 1999 | Certification according DIN EN ISO 9001 | | |
| 2000 | New production plant, fully integrated laser marking | | |
| 2002 | Fully integrated tape&reel function, programming capacity hits 6 Mio parts per year | | |
| 2003 | High-Speed Flash Programming system | | |
| 2004 | 3-shift production established | | |



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