



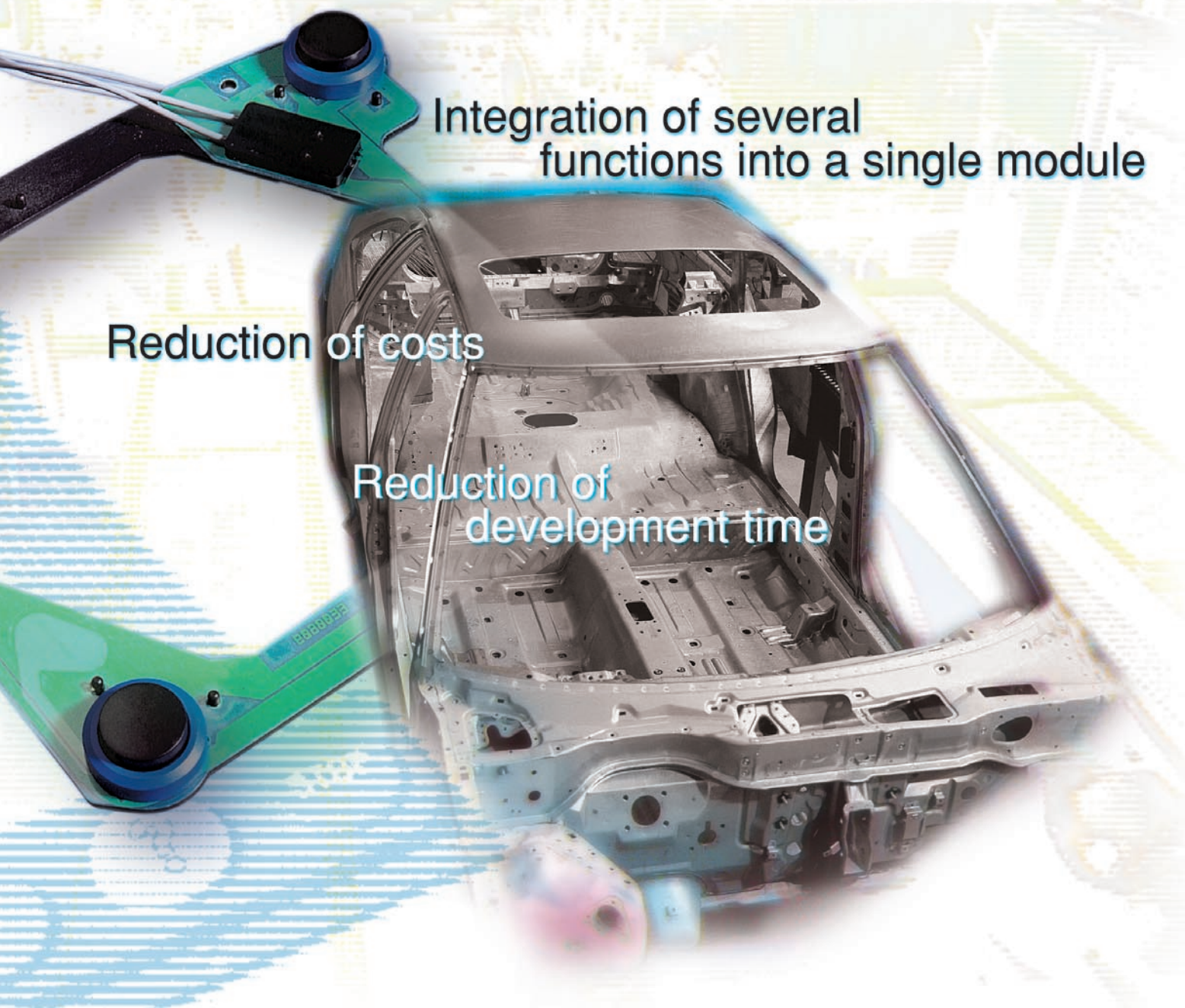
ERMEC, S.L. BARCELONA  
 C/ Francesc Teixidó, 22  
 E-08918 Badalona  
 (Spain)

Tel.: (+34) 902 450 160  
 Fax: (+34) 902 433 088  
[info@ermec.com](mailto:info@ermec.com)  
[www.ermec.com](http://www.ermec.com)

ERMEC, S.L. MADRID  
 C/ Sagasta, 8, 1ª planta  
 E-28004 Madrid  
 (Spain)

PORTUGAL  
[portugal@ermec.com](mailto:portugal@ermec.com)  
 BILBAO  
[bilbao@ermec.com](mailto:bilbao@ermec.com)

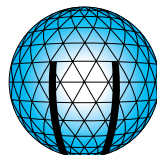
# APEM, Innovative technical solutions for automotive applications



Integration of several  
 functions into a single module

Reduction of costs

Reduction of  
 development time



A P E M

A world of switching capabilities



NEXT PAGE

# From switch to module

**APEM, a switch specialist, designs and manufactures specific modules for all types of vehicles.**

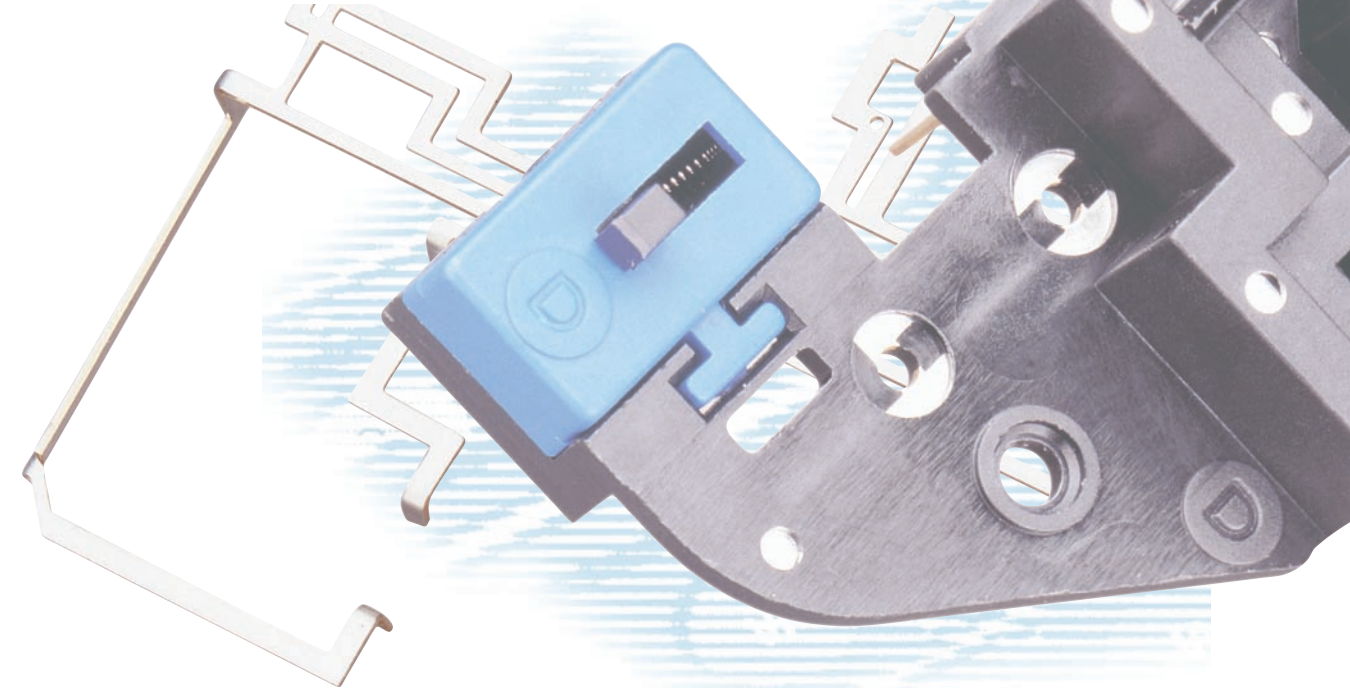
**The integration of several functions begins at the design stage and results in higher product reliability, improved performance, reduced weight and easier assembly.**

**This approach reduces costs and development time for the equipment manufacturer (OEM).**

**Each module is an innovative solution and therefore requires specific tooling for plastic injection, stamping, testing and assembly. Tooling costs are rapidly amortized on automotive large production runs.**

## Switch for rear door latch

- **Customer problem :**  
Specific shape, little space available.  
Switch required with integrated connection and fixation.
- **APEM solution :**  
A compact slide switch terminated with connector pins, reliable electrical contact and mechanical actuation, meeting the automotive environmental requirements.



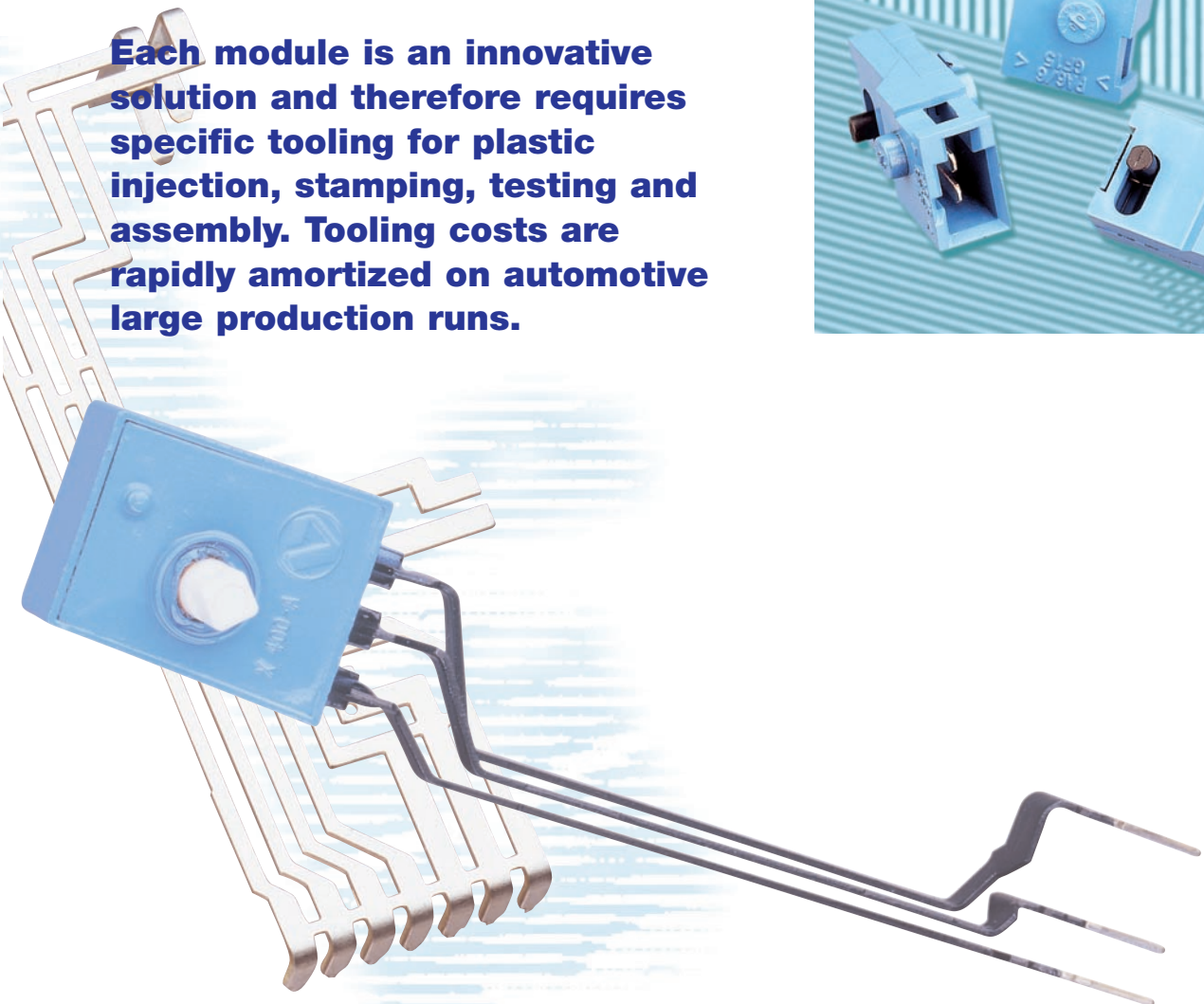
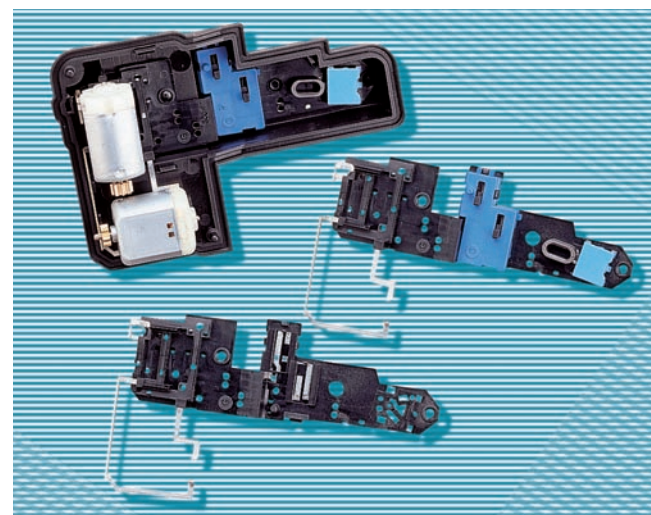
## Blower control module

- **Customer problem :**  
Lack of reliability due to multiple connections required for the assembly of more than 6 elements (PC board, connector, position selector, relay, rotary switch and fixation parts).
- **APEM solution :**  
A single product ready for integration, with insert-molded lead frame. Elimination of connector and relay (30A direct control), no risk of intermediate position, reduced noise level.



## Central door latch module

- **Customer problem :**  
Several components (PC boards, connectors, switches, connector pins for motors, motors), thus several suppliers and assembly stages.  
Lack of reliability due to the numerous solder points.
- **APEM solution :**  
A single integrated module, 100 % tested, ready for mounting.



# The capability to develop innovative solutions

## RESEARCH AND DEVELOPMENT

APEM engineers have many tools at their disposal to develop and validate specific modules :

- Our design, methods and tooling specialists work on a network of CAD stations equipped with Autocad, Cadstar, Pro-Engineer and Catia.
- Fast prototyping methods (stereolithography, silicon molds, electro-erosion) are used to validate the design with our customers.



## PROJECT MANAGEMENT

A dedicated team is created for each project. The team manager coordinates all the tasks and manages the resources. He can, if necessary, accelerate the project to meet the customer's demand. He is responsible for the project conformity to specifications and for the respect of the cost / time / quality commitments. This team regularly communicates with the customer.



## CUSTOMER PROJECT

### CONCEPT ANALYSIS

Search for integrated solutions characterized by :

- Less component parts
- Easy and quick assembly
  - Lower weight
  - Less noise
- Improved MTBF
- Reduced cost

### DESIGN AND PROTOTYPES

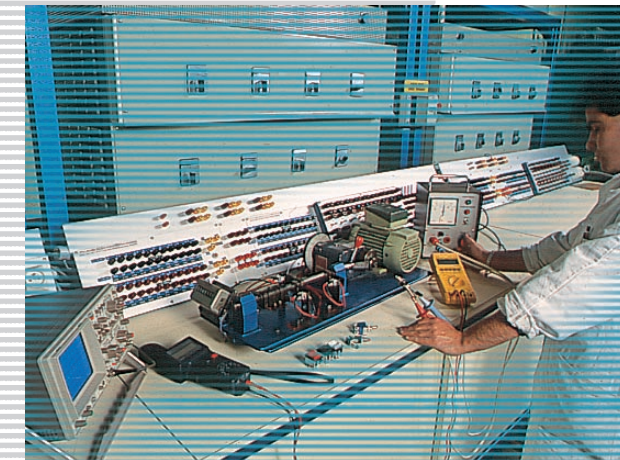
- Technical and financial comparisons
  - Development schedule
- Fabrication of tools for prototyping
  - Tests...

## APEM SOLUTION

## QUALITY AND RESPECT OF ENVIRONMENT

APEM personnel work according to the ISO 9000 standards (ISO 9002 certification in 1992, ISO 9001 in 1995) and to the ISO 14001 standards.

Product FMEA's (Failure Mode Effect and Analysis) allow us to validate the design. APEM has its own test laboratories to carry out new product qualification tests, as well as extensive periodical tests.

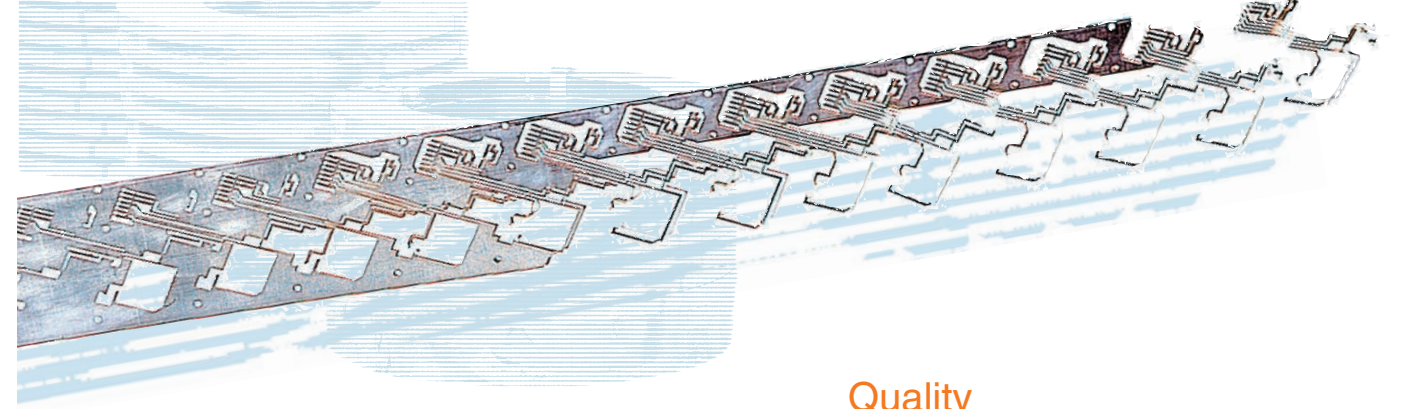
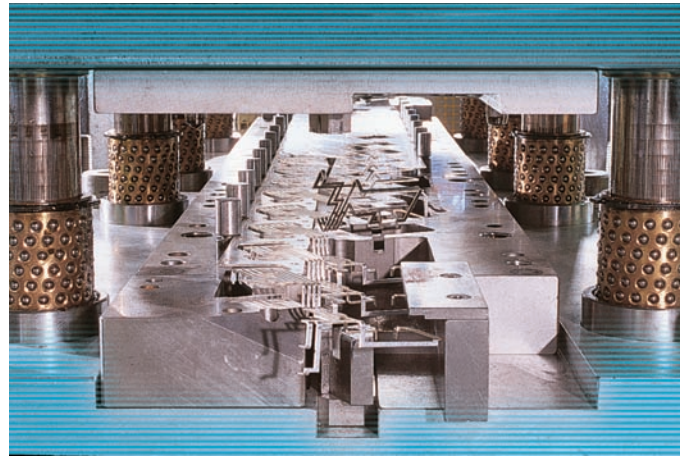


# A totally integrated production

**From raw material transformation - plastic materials, metals - to finished products, through the design and production of tooling, APEM controls all of the production stages. This vertical integration allows APEM to better manage cost prices. It provides great flexibility for proposing new technical solutions, for product evolution or re-scheduling of deliveries.**

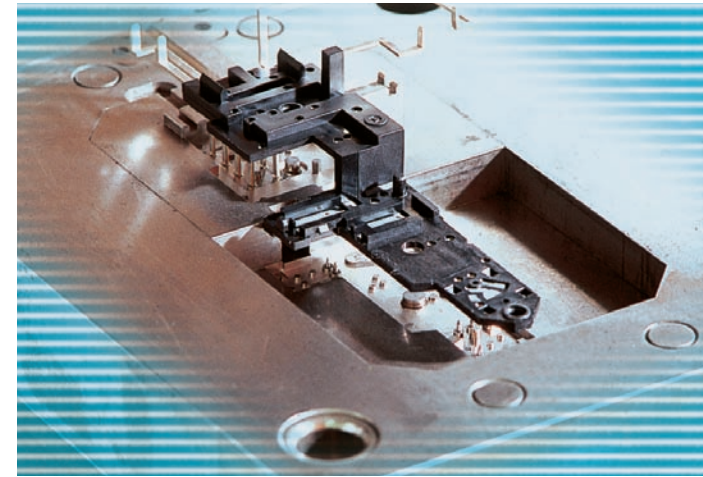
## Autonomy and large production runs

APEM has totally integrated in-house production, with more than 300 machines, its own tool manufacturing shop and a workshop dedicated to the design and fabrication of special machines for optical aim controlled cutting, automatic assembly, marking, testing with data recording, etc.



## Quality

A quality management system meeting the requirements of the ISO 9001 standards is implemented at all production and organization stages. Quality in production is controlled by statistical tools and by 100 % testing of the parameters which are critical for the customer. Plans for continuous improvement are implemented with a "zero defect" target. Process FMEA's (Failure Mode Effect and Analysis) and forward contingency planning guarantee deliveries without incidents over the years. Particular attention is paid to the protection of the environment according to the ISO 14001 standards.



## An international production

APEM's strategy was always to adapt its organization to market needs. To be close to its international customers, APEM owns production plants on 4 continents - Europe, North Africa, America and Asia.



■ APEM production sites