

## Experts in analog, RF and mixed-signal IC design



**Wireless data transmission** systems are being developed in AnSem since its foundation in 1998, making AnSem the leading European independent wireless design center. We cover all aspects of a total solution for wireless systems across a wide frequency range.



- ◆ Full radio concept, architecture & IC circuit design
- ◆ DSP based and hardwired PHY modem implementations
- ◆ In house SW tools for system and IC architecture design
- ◆ State-of-the-art validation lab
- ◆ From 40kHz for Ultrasonic over all ISM bands to 6GHz for professional radio

**Wired data transmission** communication systems for high speed (optical) backend as well as for broadband home networking and industrial busses. AnSem's track record has a large collection of Serdes cores as well as analog front ends for home access and home networking.



- ◆ SerDes front ends and IOs from 622Mbps up to 10Gbps
- ◆ MIPI PHY interfaces
- ◆ High speed home networking: HomePNA, G.Hn
- ◆ Solutions for the emerging smart grid: G3 and Prime
- ◆ Analog Front Ends and line drivers for OFDM communication

**Low power design** in handheld and battery operated systems for consumer applications is well known but can also be applied in industrial sensors and medical implants. AnSem has been pioneering low power IC & system design and combines this with other expertise domains.



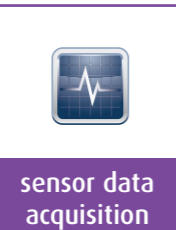
- ◆ Ultra-low power deserialisers (Serdes) up to 6Gbps
- ◆ Ultra-Low power wake up receivers
- ◆ Remote control for configuration of medical implants
- ◆ 200MHz radio operating from a battery down to 0.9V
- ◆ Low power building blocks for the power management of digital ICs

**High voltage** circuit design for low power applications in medical, industrial and automotive products. AnSem's deep knowledge of the high voltage or BCD transistors and processes combined with special design techniques for low power consumption provide optimal solutions.



- ◆ MI inductive links for short range energy & data transfer
- ◆ Automotive building blocks
- ◆ MEMS drivers
- ◆ Bus & cable drivers
- ◆ Power management building blocks: DCDC converters, SMPS, (capacitorless) LDO

**Data acquisition** design solutions are always tailored to the specific requirements of each ASIC. AnSem's broad library of building blocks is the ideal starting point to bring the highest performance and the fastest development time to custom ASIC solutions in this field.

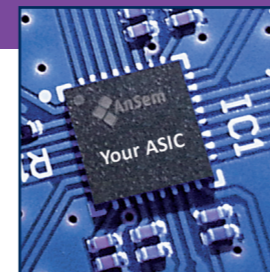


- ◆ Arrays of MEMS switches
- ◆ Pipeline, SAR, delta-sigma and cyclic ADC
- ◆ Current steering DAC
- ◆ Wheatstone bridge interface for strain gauge sensor
- ◆ High precision (V,T) drivers and signal conditioning for multiple types of sensors and MEMS

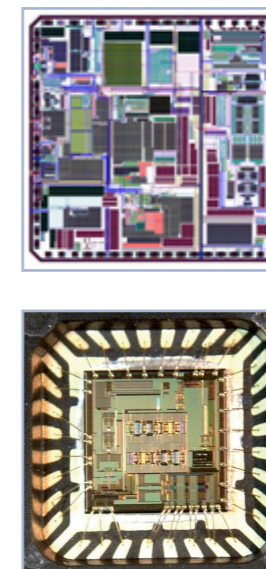
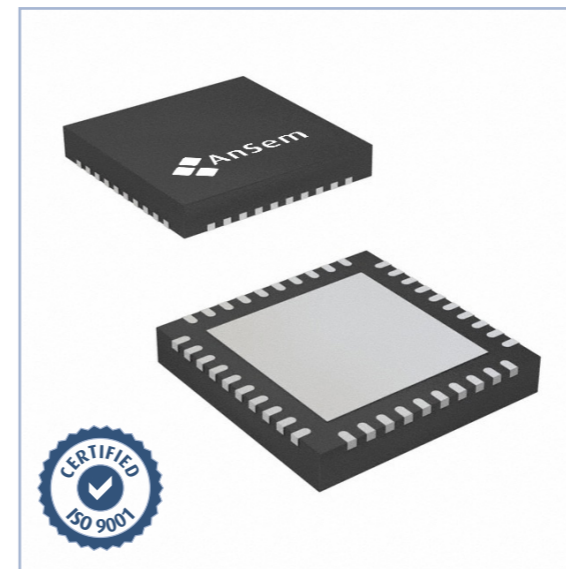


## Europe's leading Analog ASIC design service company

### Analog, RF and mixed-signal IC design and ASIC supply



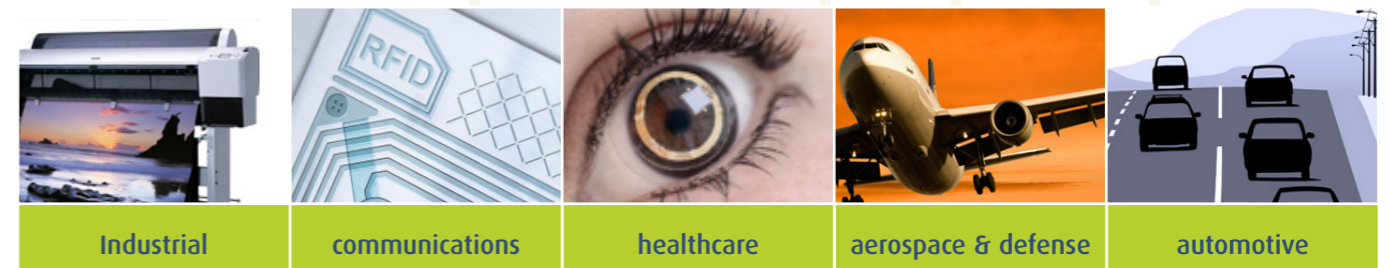
AnSem is Europe's leading fabless analog ASIC design service company, designing and delivering state-of-the-art analog, RF and mixed-signal integrated circuits to customers worldwide.



### The ASIC advantages

- ◆ Smaller PCB footprint
- ◆ Lower power consumption
- ◆ Increased system performance
- ◆ Lower system cost
- ◆ Higher reliability
- ◆ System know-how protection

### ASIC MARKETS



AnSem NV  
Esperantolaan 9 | B-3001 Heverlee | Belgium  
Tel: +32 16 38 65 00 | Fax: +32 16 38 65 65  
business@ansem.com

[www.ansem.com](http://www.ansem.com)

Analog, RF and mixed-signal IC design and ASIC supply

# Advanced IC design & Turnkey ASIC solutions



## Advanced IC design

AnSem offers advanced IC design services to (fabless) semiconductor companies and OEMs.

AnSem collaborates with the customer's IC design groups on IC definition, design, layout and prototype evaluation.

## Turnkey ASIC solutions

AnSem offers affordable full turnkey ASIC solutions to system OEMs for small and medium production volumes.

AnSem remains involved during the complete product lifecycle, being a true one stop shop for its customers.



**Definition phase**

AnSem works closely with the customer tailoring the specific ASIC requirements to the customer's detailed system needs.

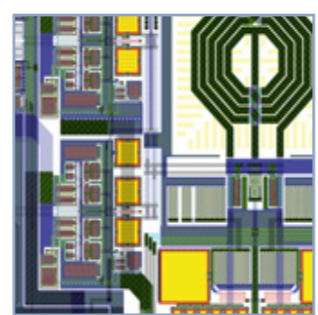
The chip architecture and the circuit topologies are studied and defined. Testability, reliability and qualification requirements are discussed. A final ASIC specification is agreed with the customer.



**Development phase**

AnSem's team of expert engineers executes the design, circuit simulations and layout with the latest EDA tools.

Our large analog IP library of proven building block designs, supplemented by the IP libraries of our design partners, form the basis for a fast development timeline, meeting customer's time-to-market requirements.



**Prototype manufacturing**

AnSem takes responsibility for the manufacturing of the prototypes, coordinating this with silicon and packaging suppliers.

The GDSII database is submitted to the foundry. Silicon manufacturing can be done through Multi Project Wafer or with a Multi Layer Mask. The prototypes are packaged in the final production package.



**Prototype evaluation**

The prototypes are extensively tested and validated in AnSem's fully equipped in-house evaluation laboratory.

A test setup is developed. The electrical parameters are verified against the specification over the full voltage and temperature range. The customer validates the prototypes in the application.



**Industrialization**

AnSem takes responsibility for the industrialization process. The prototype design is made ready for volume manufacturing.

The industrial wafer and final test programs are developed on the selected ATE machine. The required reliability and qualification tests are performed and the product is released for manufacturing.



**ASIC supply**

AnSem provides full supply chain management services during the whole lifetime of the ASIC and manages the inventory and delivery.

We take in orders from customers, manage the ASIC supply chain with our subcontractors (foundry test and packaging), monitor continuously the yield and product quality and finally ship to the customer.

