

### «WIRELESS COMPONENTS FOR TOOL MONITORING ?»

- Stamping and pressing tools are expensive investments. Therefore it is very important to know and monitor, how many strokes a tool has done and what is the best time for the operator to change or maintenance tools.
- In comparison to other solutions a radio solution is much more flexible for this special application. Benefits compared to RFID solutions are the longer transmission range without the need of sight and the lower power consumption.
- IK Elektronik has developed the wireless parts for this very innovative, new system, consisting of three devices:
  - **The Tool Sensor.** This device is fixed on the tool and stores all important information, e.g. the tool ID number, the number of strokes the tool has done and the maintenance interval.
  - **The Radio Box.** This device is mounted nearby the Sensors and measures the machine tool operation, it receives and transmits the measured data to the individual Tool Sensors.
  - **The CF Card.** This device is plugged in a PDA and transmits control commands to the Tool Sensor and the Radio Box. It can also read and write the Tool Sensor and Radio Box data.
- All components in the system use the ATMEL ATA-5428 transceiver IC for wireless transmission.
- System Parameters:
  - Radio distance inside the machine 10m min., inside the tool store 20m min.
  - 868MHz operation for EU use,
  - Narrowband FSK modulation,
  - On air data rate of up to 20kbps,
  - Fast installation and easy handling using PDA application software,
  - Robust construction for industry operation.

Radio Box



PDA using  
CF Card



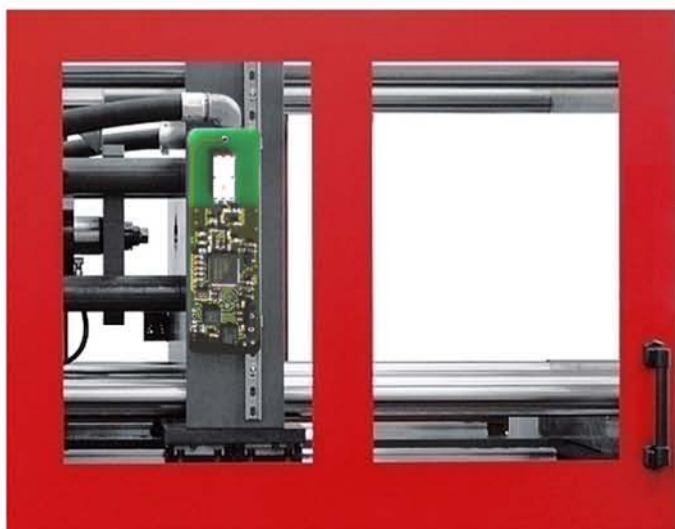
Machine tool with Tool Sensor



### «RADIO TRANSMISSION UNDER HARSH CONDITIONS»

- The rough industrial environment requires the use of robust metal enclosures. But radio propagation in a metal environment is a very difficult claim. IK Elektronik has developed an optimal solution for these task and has created a wireless system with very good performance using the ATMEL ATA-5428 combined with a special circuitry and a high performance chip antenna.
- Every individual sensor is fixed on the tool. In this way there is an exact assignment of measured data and tool.
- Tool Sensor characteristics:
  - Battery lifetime 5 years min.
  - Signalling of maintenance timeouts directly on the Tool Sensor,
  - Large 256kb FRAM memory,
  - Operating temperature 0°C to +70°C,
  - Size (LxWxH) of only 78x22x26mm<sup>3</sup>.

Application Example



### «TOOL MONITORING MADE EASY»

- Using the developed wireless system it is now possible to monitor the maintenance state of stamping and pressing tools in a simple and fast way.
- Radio Box characteristics:
  - One Radio Box can be used with up to 8 Tool Sensors,
  - Ethernet and RS-232 interface, other interfaces and components easily upgradeable,
  - Power supply of 24VDC, energy buffer delivers backup of power supply for several minutes,
  - Size (LxWxH) of only 100x75x36mm<sup>3</sup>.