Energy Efficiency Solutions

# SKF mechatronics cut energy use by more than 90 % in welding robots

## Benefits

- Reduced energy consumption by more than 90 %
- Faster welding cycle speeds than pneumatic
- Better quality through greater control of the process
- More flexibility in adapting to changes in the line
- Reduced maintenance costs
- Less noise
- Process can be adapted for riveting and clinching robot

## Typical applications

- Robotic use in manufacturing and process industries
- Aerospace
- Appliances
- Automotive
- Electrical/electronic
- Food and beverage
- Instrumentation
- Material handling
- Metalworking
- Pharmaceuticals
- Railway
- Rubber and plastics
- Semiconductors

Compact SKF electromechanical actuators replace pneumatic actuators for dramatic energy savings and 24/7 reliability.

The automotive industry is a heavy user of industrial robots, with an average of 300 welding robots in operation per production line. The majority of these robots use pneumatic actuation devices to grip and weld designated points on the car frame.

This process requires a substantial amount of energy to produce the pressurized air needed to actuate the pneumatic equipment, resulting in very high and costly levels of energy consumption.

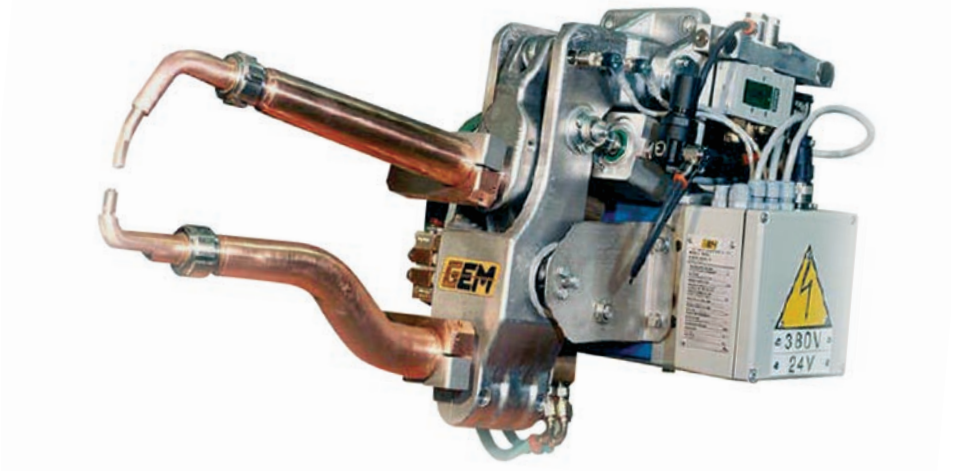
### The SKF energy-saving solution

SKF has extensive knowledge in the technology of mechatronics – the skillful combination of mechanical and electrical engineering to achieve certain tasks.

Using a specialized mechatronics design, SKF developed a compact electromechanical actuator for the robotic welding process that requires only a fraction of the energy needed by the pneumatic process. Energy savings of more than 90 % are realized by manufacturers using the SKF electro-mechanical actuator in their robots versus pneumatic.

### A growing trend

Even though the installed base of industrial welding robots uses pneumatic actuators, there is a growing trend to the electromechanical process. This is not only because of the increased desire for energy savings, but also because of the enhanced speed and quality of the welding operation that mechatronic technology provides.



# SKF energy efficiency solutions

SKF knowledge and engineering can help you address the growing need to reduce energy consumption, in your products and/or your process.

## Energy savings in industrial robots

The following comparison uses real data from a major global manufacturer of automobiles. The type of robots in this example are widely used in the automotive industry, but are also used in many other industries employing welding, riveting or similar processes.

## Energy-saving comparison – automotive production line:

- A robot makes 20 welding points per car
- A robot will process 200 000 cars per year
- A robot will make a total of 4 million welding points per year, or 32 million welds over an 8-year production cycle

**Energy-saving comparison – automotive welding line*)**

| | |
|---|---|
| **Pneumatic actuation of robots 4 million welds per year, per robot** | **50 000 kWh** |
| **Mechatronic actuation of robots 4 million welds per year, per robot** | **5 000 kWh** |
| **Savings in energy consumption** | **45 000 kWh** |

*) Energy consumption is calculated on the basis of the electricity required to make one complete welding point.


*SKF mechatronics actuator employs compact electromechanical design to save energy in robotic welding.*



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