

## Energy Efficiency Solutions

## SKF throttle-by-wire reduces fuel use by 5% in business jets

### Benefits

- Reduced fuel consumption of up to 5%
- Optimum control of engine thrust throughout flight
- More accurate arrival times
- Increased flight safety
- Smooth, pilot-in-the-loop, thrust lever control
- Extended range
- Increased passenger payload
- Increased passenger comfort
- Minimal time between takeoff and landing
- Reduced crew workload

SKF by-wire “auto-throttle” automatically positions the throttle levers to control the aircraft’s thrust throughout the flight.

Pilots of business jets make frequent speed adjustments in response to changing conditions and new instructions from traffic controllers at the destination airport. Regardless of the degree of individual pilot experience and skill, arbitrary control of throttle speed contributes to wasted fuel during flight, and often to inaccuracies in arrival times that result in unnecessary extra fuel consumption.

### The SKF energy-efficiency solution

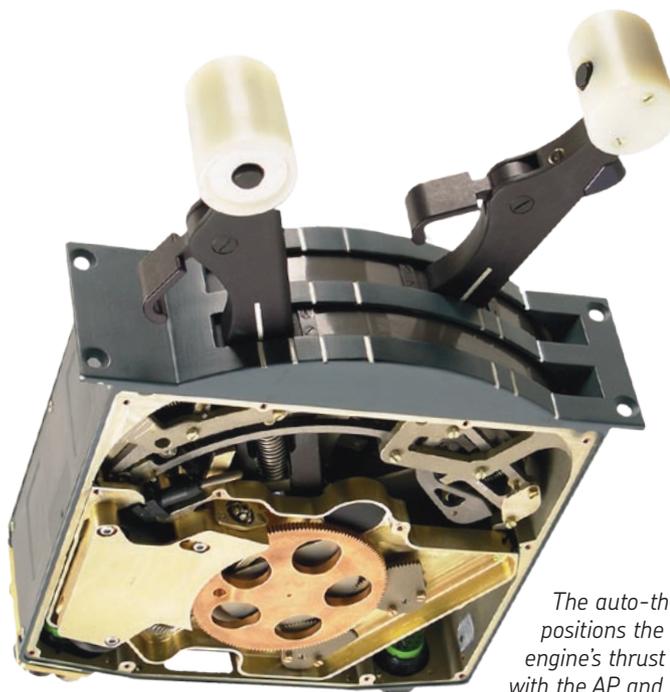
Auto-throttle (AT) systems provided by SKF are being used by leading business jet manufacturers to keep the aircraft within its preferred thrust and speed envelopes throughout the flight. In addition to more accurate arrival times, business jet fleets benefit from as much as a 5% reduction in fuel use.



The SKF by-wire auto-throttle works with full-time engine synchronization to automatically control engine thrust, delivering the best rate of climb and determining the optimum speed as weight is reduced due to fuel burn-off. The auto-throttle also provides automatic speed management for more accurate time of arrival. A pilot interface is part of the system for pilot-in-the-loop control.

### Safer, more fuel efficient aircraft

As the number of business aircraft increases, pilots will have to deal with increasingly stringent regulations required for safety reasons. By automating engine thrust, the SKF auto-throttle system reduces crew responsibilities for added safety as well as fuel savings.



*The auto-throttle system automatically positions the throttle levers to control the engine’s thrust modes in synchronization with the AP and FaDec modes.*



## 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.

### Improving the business side of business jets

Manufacturers of business jets are continually looking for ways to enhance the value and performance of their aircraft for customers, and to gain a competitive edge in the market.

Feedback from a major SKF customer – one of the world’s leading manufacturers of business aircraft – indicates that their planes are achieving a 5% reduction in fuel consumption using the SKF by-wire auto-throttle system.

The energy savings projected in the chart to the right are based on average fuel use by business jets currently using SKF auto-throttle systems, as well as average annual and lifetime air miles of these aircraft.

To demonstrate the potential energy savings of this technology, a global business jet population of 25 000 has been assumed.

### Energy-saving projection – business jet<sup>\*)</sup>

<b>Fuel savings per flight hour, per aircraft</b>	<b>100 litres</b>
<b>Fuel savings per aircraft, per year</b>	<b>50 000 litres</b>
<b>Fuel savings per aircraft, per lifetime</b>	<b>1 000 000 litres</b>
<b>Fuel savings for 25 000 aircraft, per lifetime</b>	<b>25 000 000 000 litres</b>

<sup>\*)</sup> Assumes average fuel consumption of 2 000 litres per flight hour, 20-year life cycle, and 5% fuel savings with SKF auto-throttle.

