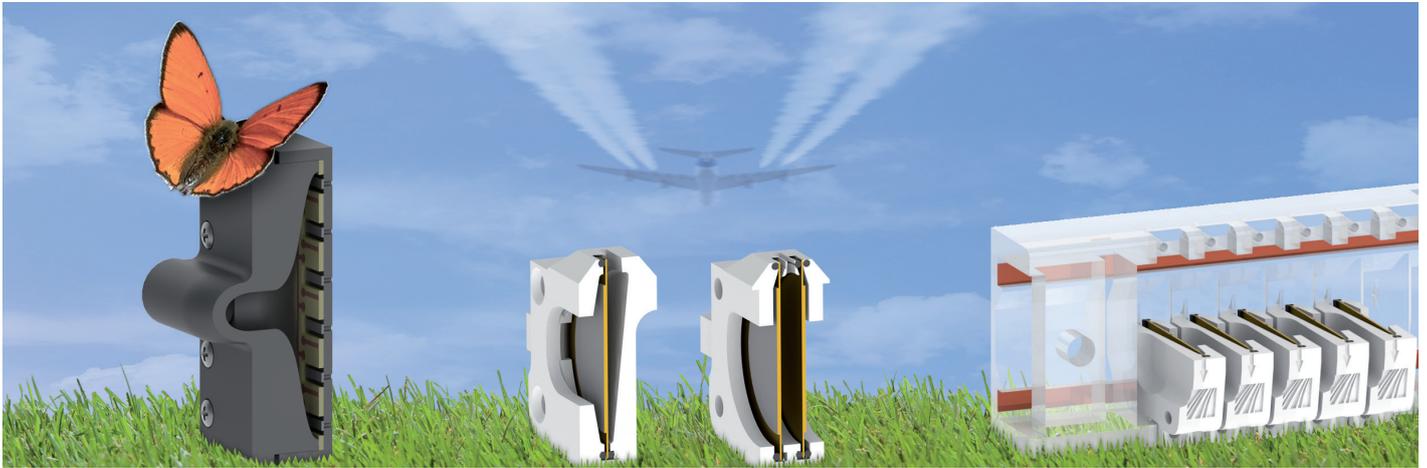


ACTUATORS FOR ACTIVE FLOW CONTROL



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Photo acknowledgments: Fraunhofer ENAS
All information contained in this datasheet is preliminary and subject to change. Furthermore, the described systems, materials and processes are not commercial products.

The Clean Sky program

Environmental friendliness of air traffic is of significant importance due to steadily rising passenger counts worldwide. On the one hand, air transport is a keystone to further economic growth but on the other hand it is facing all the global economic and ecological issues of today. Clean Sky, which combines the efforts of 86 organizations in 16 countries, will deliver demonstrators in all segments of civil air transport. Smart structures and integrated advanced low-noise solutions, innovative concepts for active flow and load control as well as green design, manufacturing, maintenance and recycling for airframe and systems will be demonstrated. Fraunhofer ENAS develops various fluidic actuators for active flow control which are compact, efficient and capable of being integrated.

Pulsed jet actuators

Pulsed jet actuators (PJAs) pulse the airflow of an external pressure source to achieve high frequency and high velocity

flow. In contrast to most of the known systems Fraunhofer ENAS investigates the usability of micro fabricated valves to switch the flow. These are directly integrated into an optimized chamber and controlled by sensors.

Synthetic jet actuators

In the aviation industry synthetic jet actuators (SJA) are known for some years in the field of active flow control (AFC). A SJA is a resonant electroacoustic system in a compact design with low power consumption.

At an effectively net zero mass flow, it generates a pulse greater than zero. Important characteristics of the actuators are the resonance frequency, the exit velocity and the flow of volume or mass. A new concept developed by Fraunhofer ENAS implies the application of two membrane transducers into a Helmholtz resonator and increases the efficiency and output velocity vastly.