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VORTEX GENERATORS AS A COMPONENT OF SMART AIR CONDITIONING SYSTEMS

Vortex Generators as an Element of Smart Air Conditioning Systems within Flexible Automated Complexes

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Aerodynamic noise suppressors and standardized vortex foam generators, vortex generators, are considered as components of smart robotic systems within flexible automated manufacturing complexes for photolithography, which incorporate elements of artificial intelligence and artificial neural networks in their control and monitoring systems, as well as components of the ecosystem of industrial air conditioning systems.

Thus, as a rule, the specified complex technical system includes aerodynamic grippers, stepper piezoelectric motors, and aerodynamic noise suppressors possessing functions of full dynamic regeneration of compressed air flows, which is critically important for smart air conditioning systems as well.

The proposed device can also be used as a foam generator, a washing head, a device for mixing poorly miscible liquids, and as an element of the infrastructure of a smart air conditioning module.

The structural elements of this device make it possible to implement a multifunctional system with aerodynamic and hydrodynamic components using only two parts, which, in turn, provides unlimited possibilities for integration into any layout or technological scheme. This is of particular importance for integration into ecosystems at all levels that contain air conditioning modules, which, owing to these qualities, can be embedded into multifunctional air conditioning modules.

Keywords: *Vortex tube; vortex generator; air conditioning; air conditioner; complex technical system; production complex; flexible automated manufacturing complex; aerodynamic noise suppressor; poorly miscible liquids; washing liquid; photolithography complex; smart air conditioning*

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Contents

Introduction

Aerodynamic noise suppressors as a component of robotic systems within flexible automated manufacturing complexes for photolithography, incorporating elements of artificial intelligence and artificial neural networks in their control and monitoring systems, and as a component of the ecosystem of industrial air conditioning systems.

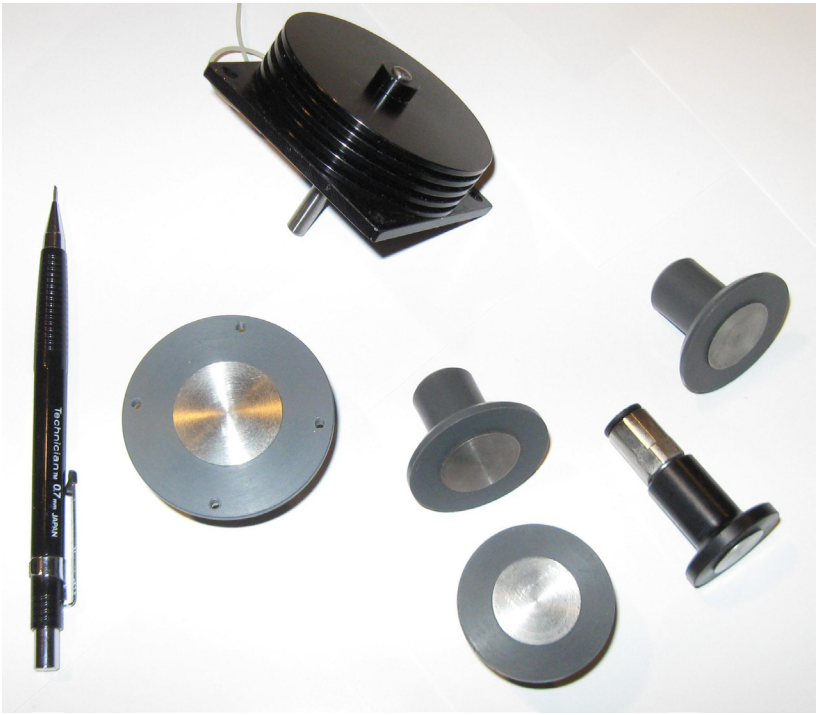

Figure 1. The figure shows various configurations and actuation dimensions of aerodynamic non-contact grippers, which can also perform the functions of foam generators and vortex generators

Thus, as a rule, the specified technical system includes aerodynamic grippers, stepper piezoelectric motors, and aerodynamic noise suppressors possessing functions of full dynamic regeneration of compressed air flows.

Let us consider the basic gripping method implemented by an aerodynamic gripping device.

Method and Device for Gripping and Transporting Flat Disk-Shaped Objects.