

RWTH Technology

Adaptive supply air throttling for efficiency increase of exhaust air throttled pneumatic drives



Challenge

Pneumatic drives are widely used in automation and process technology due to their low complexity, high reliability and easy maintenance at low acquisition costs. However, there is potential for energy savings with a large number of pneumatic drives whose speed is adjusted by means of exhaust air throttling. Known solutions for exploiting the savings potential are often complex and expensive to implement, so that they cannot establish themselves sufficiently on the market.

Solution

The component claimed in the invention for influencing the speed of pneumatic cylinders initially has conventional exhaust air throttles, which, according to the state of the art, set the drive speed. The circuit also comprises an adaptive supply air throttle with a shut-off function, which pneumatic-mechanically regulates the air supply to the drive as required. This makes it possible to achieve significant compressed air savings in the partial load range, while system integration and speed adjustment are analogous to commercially available exhaust air throttles and consequently require no additional effort.

Advantages

- Efficiency increase of exhaust air throttled pneumatic drives
- No increase in system complexity
- Plug and play solution for energy savings in new and existing plants

Status

- Patent application(s) filed
- Development within the framework of a publicly funded project. Experimental proof of function will be provided by the end of 2022.
- RWTH Aachen University is looking for partners for patent exploitation

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Fields of application

Pneumatics

Keywords

#Efficiency; #Pneumatics; #Automation

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