



Movotec provides an important contribution to ergonomic working conditions

Suspa, the manufacturer of adjustment systems provides answers and solutions to questions of ergonomics. In the process, the Franconian company benefits from its key technologies, which are used in applications such as automatically extending and retracting spoiler systems of renowned automobile manufacturers. This basic knowledge is also utilized in the Movotec technology. Designed as a lifting and lowering system, Movotec is also suitable for ergonomic work environments in a wide variety of applications.

In its annual statement for 2014, the German Federal Institute for Occupational Safety and Health (BAUA) reported 543.4 million days of inability to work in the German economy. A total of 37,742 employees called in sick. This is the equivalent of 1.5 million years of lost production and profit. The economic damage is immense.

Nearly one-third of the population suffers from back pain

The BAUA report identifies muscular-skeletal ailments as primary cause of this situation. Nearly one-third of 100 people surveyed suffer from joint or back pain and other muscular-skeletal pain. In 2014 this was 31.3 out of 100 people. This is predominantly due to physiological postural deformity. It is caused by repeated unidirectional movements and a lack of ergonomically designed work equipment. How can we change these unfavorable conditions?

The physical workload can be reduced and "assisting systems" can aid people in the work. This has a direct and positive effect on productivity. An ergonomic work environment makes it possible for employees to individually adapt or optimize their working conditions. This is especially the case, for instance, when the height or angle of work surfaces can be adjusted, and when they are given a damping, power-assisting and overall relieving effect.

SUSPA produced components for such "assisting systems". This involves hydraulic, pneumatic or electromechanical lifting and lowering systems that are used in heavy industry, food production, health care and food service applications. Adjustable and adaptation to various boundary conditions and different physical-constitutional requirements of the person



are central aspects in the ergonomically-oriented efforts of SUSPA for these solutions. One of these "assisting systems" is Movotec. It stands out with its intelligent ergonomics and thoroughly considered accessories and enables the use of different technologies for a broadly diversified range of applications.

Ergonomic "forces"

Movotec solutions operate predominantly in vertical adjustment ranges and are primarily installed in industrial applications. The technology has been available as a hydraulic lifting system and now as an electro-mechanical lifting system for the past year and a half. Both variants are capable of reliably moving heavy loads and are especially well-suited for an ergonomic work environment.

A Movotec hydraulic cylinder moves loads with a force of up to 1,360 N. The Spindle Motor System (SMS) provides a force of 1,500 N in the push direction and 750 in the pull direction per cylinder. Both systems can move up to eight legs (cascading) in order to move large loads (Movotec hydraulic, max. 11,340 N and SMS, max. 12,000 N).

The electro-hydraulic and electro-mechanical SMS versions both raise and lower objects with a travel speed of 8 millimeters per second. All systems are operated via a central control unit. While the SMS system has one spindle with upstream motor unit per leg, the raising and lowering of the hydraulic system is controlled via a pump.

However, both systems still have a place in the right applications. For example, it may be necessary to ensure the operation of the Movotec in case of a power failure. This may be the case due to special safety regulations. The electro-hydraulic system could then be bypassed with a hand crank.

The hydraulic system and the electro-mechanical SMS solution can both be installed as a retrofitted system. They can be retrofitted to provide an ergonomic work environment to replace previously static work environments in industrial applications where individual adaptation of the equipment was not possible.

Installation as a "retrofitted set" is simple and requires minimal time resources, wherein a hydraulic system requires somewhat more work. The advantages of the electro-mechanical SMS stand out here. The system can be understood as "plug and play". Some requirements



must be observed for installation of the Movotec hydraulic system in order to enable correct operation. The free flow of oil to all positions must be ensured, in particular. Therefore, installation of the SMS system also requires less time, because power cables are connected instead.

Ergonomics = Variability + Flexibility = Movotec

Movotec hydraulic and Movotec SMS offer impressive variability in the ergonomic environment. They are available in stroke lengths of 150, 200, 300 and 400 millimeters. An additional strength is the flexibility. Both systems can be integrated into a wide range of applications. This is made possible with an extensive catalog of components and accessories.

The Movotec hydraulic system has been used for many years and grown to meet various requirements in applications. Therefore, different systems for connection and additional components were developed over time. The hydraulic Movotec system offers an impressive variety of features. Bolt-on, corner-leg and ATU profiles expand the range of Movotec applications and provide a number of adaptation possibilities from an ergonomic perspective. Existing or new applications can also be retrofitted with Movotec or Movotec SMS with the bolt-on profile.

The "Corner Leg" system is an aluminum profile with a T-channel in which the hydraulic "innards" – in other words, the lines, cylinder and pump – are integrated. The Corner Leg functions like framework. It converts the hydraulic Movotec system into a turnkey component. Therefore, it is also extremely well-suited for industrial use.

The aluminum subframe, ATU, consists of "telescoping" profiles in which the hydraulics were already installed in cylinders – e.g. table legs. The strength of this solution: it can be optionally expanded and delivered with feet, panels and bracing (exclusively for the work surface) to provide a finished table. Therefore, this solution is especially well-suited for a modern workstation.

Simple operation

Movotec and Movotec SMS are characterized by simple operation. They fulfill ergonomic criteria that help people design work environment customized to their specific physical constitution. This prevents postural deformity and has a relieving and offloading effect for the muscular-skeletal system with repetitive movements. Unergonomic working conditions, which are often prevalent in conveyor belt production, are thereby prevented to the extent that unfavorable posture must no longer be assumed, providing a relieving and relaxing effect.



Physiological damage in the back, which is doubtlessly the most common reason for ailments of the muscular-skeletal system, are minimized and improved operational efficiency can be expected. At the same time, the productivity and motivation of individual employees increase. This is possible by means of a crank or electric motor. Movotec SMS and hydraulic systems offer a high degree of ergonomic comfort, because they both raise and lower work surfaces with continuous variability.

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Image caption: The Movotec Spindle Motor System (SMS) is a comfortable alternative to



hydraulic systems. It enables continuously variable height adjustment of work benches in an ergonomic work environment. *Figure: © Suspa GmbH*



Image caption: SMS or hydraulic: Movotec adapts to the employee's physical constitution and ensures ergonomic work at different heights. *Figure: © Suspa GmbH*



Image caption: Ergonomic work with extendable table legs.
Figure: © Suspa GmbH



Image caption: Movotec also provides ergonomics for retrofitting. With the bolt-on profile, Suspa provides intelligent accessories for the Spindle Motor System (SMS) and the hydraulic system. Now previously static work environments can become ergonomic. Figure: © Suspa GmbH



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