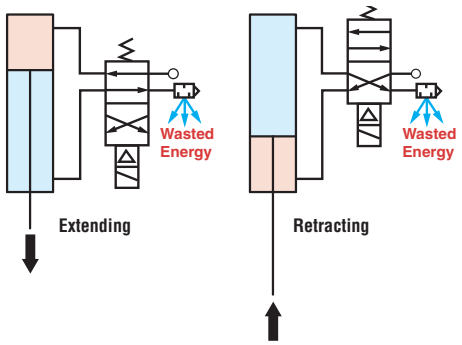
The PHD ERDP Remote Drive; An Innovation in Pneumatic Electrification

Introduction

Series ERDP Remote Drive represents a forward step in the electrification of pneumatic actuators, offering a point-of-use alternative that addresses the energy inefficiencies and limitations of traditional pneumatic systems.

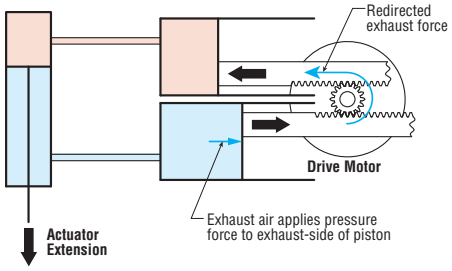
The traditional pneumatic system exhausts air through meter-out flow restrictors for velocity control. The exhausted air contains stored energy, in the same manner as a tank of compressed air contains stored energy which can be used to power an actuator or air motor. Exhausting the air from the actuator discards this stored energy.

TRADITIONAL SYSTEM



By replacing the solenoids with the Electronic Remote Drive, the exhaust flow is directed to one port of the ERDP which provides the necessary resistance for velocity control. But, instead of consuming energy, the ERDP uses the energy stored in the air exhausted in a traditional system, to assist in driving the actuator as shown in the figure below. Reversing the electric drive reverses the process.

ELECTRONIC REMOTE DRIVE



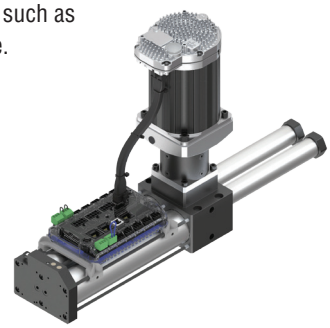
Unlike traditional systems where air is exhausted during each actuation cycle, the ERDP Remote Drive operates within a closed fluidic system. This allows for the recovery of energy on the exhaust side of the piston, which is redirected to compress air on the intake side. As a result, the energy required for compression is recovered during the following expansion cycle, improving overall system efficiency.

Applications

The ERDP Remote Drive is ideal for applications transitioning from pneumatic to electric systems, particularly where energy efficiency and reduced environmental impact are critical. Pneumatic actuators are smaller, weigh less, and deliver more force than electric counterparts, providing an ideal alternative solution. The Remote Drive is especially well-suited for:

- Mobile robots, where compressed air is not readily available
- Lightweight applications such as robot arms, where the added weight of an integrated motor is undesirable
- Multi-actuator systems, where one motor can control multiple actuators via integrated valves
- Non-industrial applications, such as medical, food, and beverage.

MECHANICS WITH PRE-INSTALLED MOTOR



New Line Expansions

The PHD Air On Demand Solutions lineup include two innovative new products: the **Series ERPP Pneumatic Pump** and the **Series ERVG Vacuum Generator**.

These solutions provide flexible alternatives to traditional pneumatic systems—ideal for environments where central air is unavailable or impractical.

Series ERDP – Electrically powers pneumatic actuators in a closed-loop system.

Series ERPP – Generates on-demand compressed air up to 87 psi (6 bar) for open-loop pneumatic systems.

Series ERVG – Produces vacuum up to 24 inHg (-80 kPa) for suction and pick-up applications.

- Integrated and Ready to Use
- Quiet and Efficient
- Compact and Customizable

Conclusion

The PHD ERDP Remote Drive is a versatile and energy-efficient solution that addresses the limitations of traditional pneumatic actuators. Its innovative design reduces energy waste, increases operational flexibility, and offers a path forward for industries seeking to reduce their carbon footprint and improve efficiency in automation systems.

For more information, please contact PHD, Inc. or visit our website for technical documentation and sales inquiries.

1/26

phd Empowering Automation

PHD, Inc.
9009 Clubridge Drive
Fort Wayne, Indiana 46809
Ph (260) 747-6151
phdinc.com • phdinfo@phdinc.com

PHD Europe
Zum Carl-Alexander-Park 6
52499 Baesweiler, Germany
Tel. +49 (0)2401-619 77 0
phdinc.com • info@PHDinEurope.com