



News Release

**Getting to grips with the adaptive gripper DHDG**  
Bionic adaptive gripper sorts bulbs and chocolate eggs

**Media Contact:**  
Marketingmgr@us.festo.com

**Learning from nature – built for nature: with the adaptive gripper DHDG from Festo fruit, bulbs or pressure-sensitive food can be handled quickly and reliably. This is thanks to the so-called “Fin Ray effect” which is based on the design of the tail fins of fish.**

**HAUPPAUGE, NY, September 26, 2011** — If tulip bulbs and soft chocolate eggs are gripped with conventional metal grippers or vacuum functions, the result is a high level of loss and damage. This goes against the grain of the two central objectives of automation technology: speed and quality.

**Just like the human hand**

The bionic adaptive gripper, on the other hand, is light and flexible. It consists of a pneumatic actuator in the form of a bellows and three gripper fingers arranged in the Fin Ray pattern of the tail fin of a fish. The basic structure is made up of two flexible bands that meet at one end to form a triangle. Intermediate stays are connected to the bands at

**Festo Corporation**

395 Moreland Road  
P.O. Box 18023  
Hauppauge, NY 11788  
Tel: 631.435.0800  
Fax: 631.231.9215  
[www.festo.com/usa](http://www.festo.com/usa)

regular intervals by articulated joints. This flexible design enables the gripper fingers to adapt to the shape of a work piece when pressure is applied laterally – just like a human hand, but much faster.

### **Sorting chocolate eggs**

This bionic gripper operates on the same principle in a sorting station for chocolate eggs. The gripper fingers fully enclose the chocolate eggs without crushing them or damaging the aluminium wrapping. “The flexible design of the adaptive gripper DHDG even allows the chocolate eggs to be gripped if they are leaning to one side or are incorrectly positioned,” explains engineer Federico Nardone of the Italian system integrator FluidoDinamica.

The proportional pneumatic valve VPPM ensures that the pressure is correct; this allows individual acceleration and pressure ramps to be applied. The variable flow rates provided by these proportional valves allow the cylinder pressures to be adapted to a given production or sorting process. Everything is connected to the robotic controller CMXR which controls the Tripod robotic handling unit. The Tripod moves the adaptive gripper DHDG quickly towards the chocolate eggs. “This type of robot is ideal for handling light loads at high speeds,” adds Nardone.

### **90 percent lighter**

The adaptive gripper DHDG is manufactured using selective laser sintering. In this process, successive layers of polyamide powder of a thickness of just .00394 inches (0.1 mm) are applied and allowed to harden to form a solid component. This reduces the weight acting on the tool carrier by no less than 90 percent compared with a conventional metal gripper. This means that the adaptive gripper DHDG is able to grip and transport work pieces in a very energy-efficient way.

### **Gripping bulbs**

The advantages of these lightweight and adaptive bionic grippers are also exploited by Total Systems, a Dutch company producing machines and systems for handling flowers and bulbs. The adaptive gripper DHDG became available at just the right time as the company was developing a new machine for sorting bulbs and uses the gripper to sort the bulbs according to size and quality. The adaptive gripper now carries out the work that was previously done laboriously and less efficiently by human hands.

For sales information, call Festo at 800-993-3786 and visit [www.festo.com/us](http://www.festo.com/us).

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[For the following images click here](#)

Festo press photo Interpack\_0211\_DHDG\_1.tif

*Photo:*



*Caption:*

Sorting chocolate eggs: the flexible design of the adaptive gripper DHDG even allows the chocolate eggs to be gripped if they are leaning to one side or are incorrectly positioned. (Photo: Festo)

Festo press photo Interpack\_0211\_DHDG\_2.tif

*Photo:*

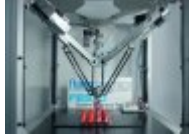


*Caption:*

Festo's gentle adaptive gripper DHDG: the gripper fingers fully enclose the chocolate eggs without crushing them or damaging the aluminium wrapping. (Photo: Festo)

Festo press photo Interpack\_0211\_DHDG\_3.tif

*Photo:*



*Caption:* Tripod with robotic controller CMXR and proportional pneumatic valve VPPM: an ideal type of robot for handling light loads at high speeds. (Photo: Festo)

*Photo:* Festo press photo Interpack\_0211\_DHDG\_4.tif



*Caption:* Sorting bulbs according to size and quality: the adaptive gripper DHDG is much more efficient than human hands. (Photo: Festo)

*Photo:* Festo press photo Interpack\_0211\_DHDG\_5.tif



*Caption:* Adaptive gripping: a Festo proportional pneumatic valve VPPM ensures that the pressure exerted by the gripper fingers of the adaptive gripper DHDG is correct. (Photo: Festo)

Festo press photo Interpack\_0211\_DHDG\_6.tif

*Photo:*



*Caption:*

Energy-efficient: thanks to the fact that it is manufactured using selective laser sintering, an adaptive gripper DHDG is 90 percent lighter than a conventional metal gripper. (Photo: Festo)

**Media Contact:**

Journalists write to the Festo Marketing Manager [marketingmgr@us.festo.com](mailto:marketingmgr@us.festo.com) for additional information and access to high resolution images.