

German firm creates bionic birds

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Credit: Festo

Some might say it's for the birds.

But the latest creation from German robotics company Festo promises not only literal flights of fancy, but quite promising [real-world applications](#) down the road as well.

The company unveiled a video of a stunningly lifelike fleet of robo-birds that glide through the air with guidance from an ultra-sideband radio system.

Festo has been an innovator of miniaturized [robotic devices](#) for years. They have manufactured robotic seagulls, jellyfish, butterflies and kangaroos.

Their latest creation, the BionicSwift, improves upon earlier robotic avian efforts by featuring ultra-lightweight construction using artificial feathers.

Each of the five swallows weighs 42 grams. They each are powered by three tiny motors for direction, lift and descent. Their wingspan extends to 26 inches.

Artificial lamellae and quill are designed to replicate realistic motion. When the BionicSwift models rise, the lamellae bunch up to help provide lift. When they descend, they fan out to allow air to pass through. They can glide gracefully, make [sharp turns](#) and fly in loops.

"The intelligent interaction of motors and mechanics allows the frequency of the wing beat and the elevator's angle of attack to be precisely adjusted for the various maneuvers," according to a report on the BionicSwift on Festo's web site.

The birds carry a 6 gram battery and they are guided by GPS sensors located throughout the enclosed flying area. The birds follow a preprogrammed [flight](#) path, but if an unexpected factor arises, such as a gust of air, radio communication enables instantaneous flight rerouting.

Festo's designers see future applications: "The intelligent networking of flight objects and GPS routing makes for a 3-D navigation system that could be used in the networked factory of the future," they said. "The precise localization of the flow of materials and goods could, for example, improve process sequences and foresee bottlenecks. Moreover, autonomous flying robots could be used to transport materials, for

instance, and thus optimize the use of space within a factory with their flight corridors.

For now, miniaturized batteries allow for only seven minutes of flying time.

Festo debuted another robot recently. The BionicMobileAssistant is a one-legged—or one-wheeled, to be more precise—robot that swivels on a ball allowing it to easily move in any direction.

It consists of three basic components: an [robotic arm](#), a mobile base and a highly maneuverable electronic hand, which has more than a hundred embedded sensors that allow it to sense density and intelligently grasp, with appropriate pressure, various objects and then transport and release them without damage.

The DynaArm can lift up to 17 pounds. At its tip is the BionicSoftHand 2.0, the followup to the original hand version released last year. It contains several cameras and 113 tactile sensors.

More information: www.festo.com/group/en/cms/13787.htm
www.festo.com/us/en/e/about-fe...onicswift-id_326830/

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