

CONTRIBUTING STAKEHOLDERS

Technical University of Delft



Aerospace Software and Technologies Institute

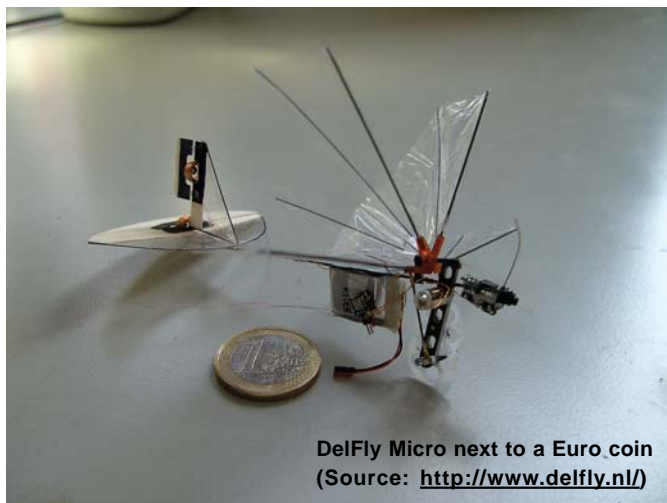
ASTI is a scientific research institute in the field of aerospace control and simulation. The goal of ASTI is to contribute to the innovative capacity and competitiveness of industries, institutes and services in the Dutch aerospace cluster. ASTI does so by conducting basic research and by implementing the resulting enabling technologies through applied research and development in software tools and products.

One of our prime areas of research concerns Micro Air Vehicles (MAVs). Especially well-known are our light-weight and small *ornithopters*, i.e., flapping wing MAVs. The *DelFly* project started as a student project in 2005, which resulted in a 50 cm (21.00 gr) wing span ornithopter. Subsequent developments led to the *DelFly II* in 2007, with a wing span of 28 cm (16.07 gr).

The *DelFly II*, shown below, has an incredibly large flying envelope: it can fly forwards with 7 m/s, it can hover, and it can even fly backwards with 1 m/s. The attitude of the *DelFly II* is passively stable. The latest version of the *DelFly* project was presented in July 2008: the *DelFly Micro*, a 10 cm wing span (3.07 gr) ornithopter equipped with a camera and transmitter. The long-term goal of the *DelFly*-project is to make tiny

autonomous robotic ornithopters. Therefore, every *DelFly* is equipped with a camera. Besides allowing us to perform observation tasks, this also allows experiments for autonomy in GPS-denied environments.

ASTI also investigates MAV-platforms for outdoor missions in which it is necessary to cover large distances in a small period of time, providing high-resolution imagery of the terrain. To facilitate commercial applications, we mainly focus on off-the-shelf foam aircraft, thereby reducing airframe costs and operation risks. The blunt nose, push propeller aircraft built from high energy absorbing Expanded Propylene foam not only protects the payload from impact and vibrations, but also considerably reduces possible damage to third parties in the unlikely event of total system failure. Together with our highly modular ground station with advanced computer vision software, these aircraft have been shown to perform a variety of tasks, ranging from search missions to digital elevation map construction and traffic monitoring. With these efforts for the application of light-weight MAVs, ASTI hopes to contribute to low-cost, ecologically friendly, and safe solutions for both the industry and government organizations. For more information, go to <http://www.lr.tudelft.nl/>



DelFly Micro next to a Euro coin
(Source: <http://www.delfly.nl/>)



Modified Easystar (Multiplex, USA) with pan-tilt camera for focusing on ground targets



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