### Selected experiments

**Flow around various drag and lift bodies HM 170.01 – HM 170.14**

- determining drag and lift coefficients
- two-component force sensor for measuring drag and lift forces included in HM 170
- visualisation of streamlines by using fog

**Force measurement on the drag body**

- $F_A$: lift force, $F_W$: drag force

**Demonstration of flutter**

**HM 170.20 Airfoil, spring-mounted**

- demonstrate flutter (self-excited vibrations)
- natural oscillation behaviour can be influenced by different spring settings

Air flows along an elastic system. Motion-controlled flow forces can cause vibrations with significant amplitudes in the elastic system. This instability phenomenon is called flutter. Flutter is crucial in the design of aircraft, bridges, chimneys and high-voltage power lines. This model is used to demonstrate the aerodynamic excitation of vibrations and instability. By using a stroboscope it is possible to observe the natural oscillation of the wing.

**Pressure distribution at the perimeter of a cylinder immersed in a flow**

**HM 170.23 Pressure distribution on a cylinder**

- record pressure distribution on the perimeter of the cylinder
- measuring the static pressure
- each pressure measuring point is equipped with a hose connection

**Comparison between measured and ideal pressure distribution when flowing around a cylinder**

1. measuring point
2. flow separation
3. turbulence

**In conjunction with the HM 170.50 16 tube manometers:**

- recording and display of the pressure distribution
- particularly clear display of the pressure distribution by the simultaneous measurement of all pressure measuring points with the tube manometers HM 170.50

**In conjunction with the electronic pressure measurement HM 170.55:**

- recording and display of the pressure distribution on a PC
- saving of measured values