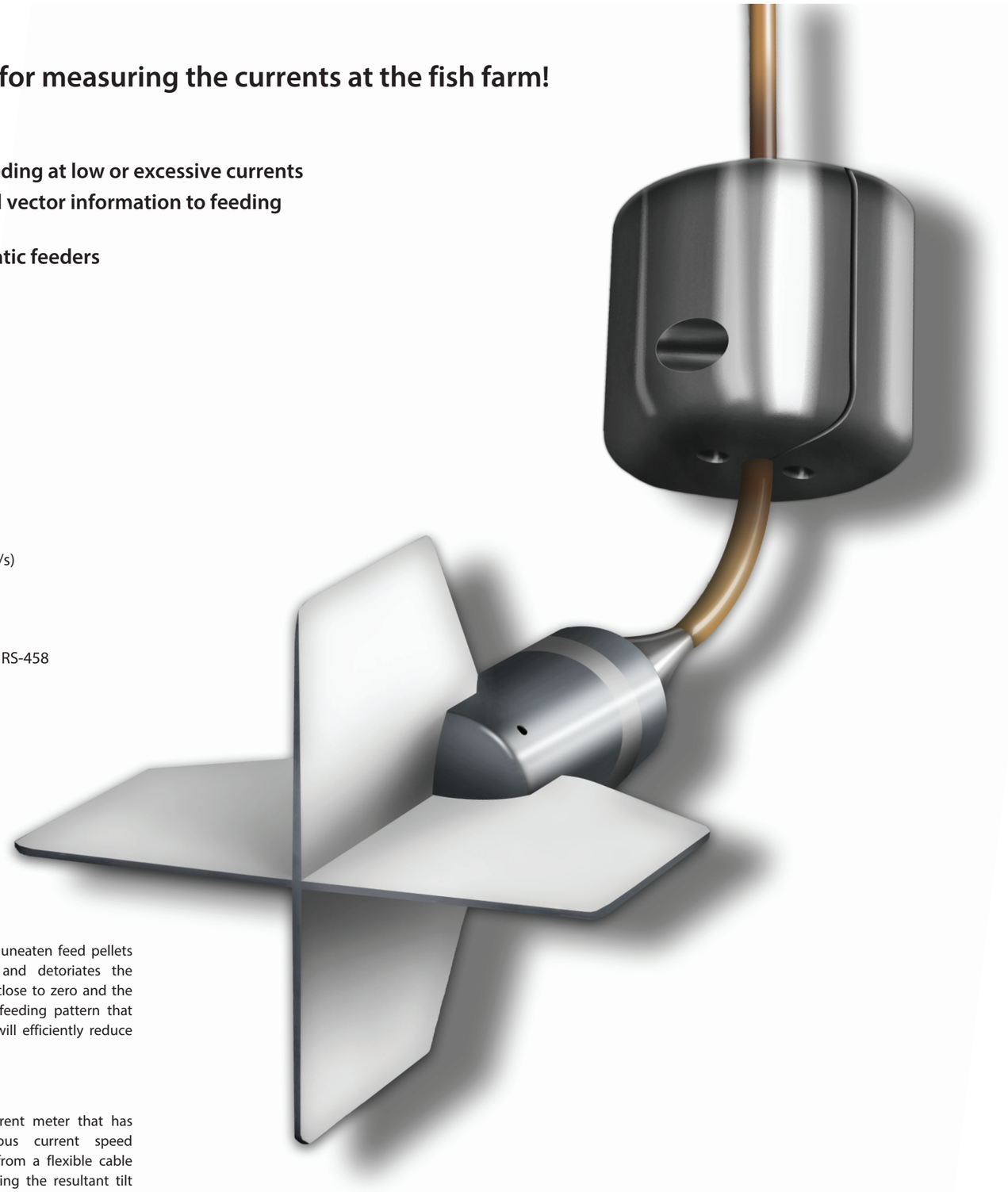
FeedFlow

ALVESTAD

Pendulum current meter for measuring the currents at the fish farm!

- **Stops feed waste caused by feeding at low or excessive currents**
- **Supplies continuous speed and vector information to feeding controllers**
- **Ready interfaced for all automatic feeders**
- **Non moving sensor elements**
- **4-20 mA signal output**
- **Support for ModBus (TCP/RTU)**
- **Resistant to biofouling**
- **Robust and reliable**
- **IP68**



Specifications

Range flow:	0–100 cm/s (+/- 2 cm/s)
Range angle:	0-360° (+/- 5°)
Voltage:	12 VDC (max 14VDC).
Power cons.	<500mA.
Signal interface:	ModBus TCP, RS-232, RS-458
	4-20mA (only flow).
Update frequency:	5 seconds.

Feed waste steals from your profit!

Too strong current leads to in a large number of uneaten feed pellets leaving the pen. This increases feeding costs and detoriates the environment. Feeding when the current speed is close to zero and the fish appetite is low has the same net effect. A feeding pattern that automatically adapts to the actual current speed will efficiently reduce the feed waste.

Feedflow is a robust and reliable pendulum current meter that has been specially designed to supply continuous current speed information. The instrument hangs in the water from a flexible cable end and measures the water velocity by converting the resultant tilt angle to an equivalent current speed.

How Feedflow works

Feedflow measures the current speed by determining the combined strength of the moving water`s horizontally acting drag forces and the vertically acting gravitational force. (Fig. 1) In practical use instrument hangs in the actual fish pen from a flexible cable that extends from a vertically mounted tube. At zero current speed the drag forces will be zero, and the instrument will hang vertically in the water. When the current speed increases, the horizontal drag forces increase in strength pulling the instrument an angle off the vertical line. The stronger current speed, the larger tilt angle. A built in tilt meter determines the angle, and the instrument microprocessor calculates the current speed from the measured tilt angle and from a calibration equation. The flow data is presented in real time via an interface (4-20 mA electric current loop signal or ModBus TCP / RTU).

Mechanical design

Fig 2 shows the basic mechanical design. The instrument is arrow shaped using 4 fins for steering and drag amplification. It hangs in a flexible cable end from a vertically mounted metal tube. Sensitivity and current speed range depend on the instrument size and weight.

Electronic design

The measuring and processing components can be seen on the horizontally mounted card inside the instrument. Digital tilt signals from the sensor are continuously received by the microprocessor and converted to flow values. In addition angle values is presented in degrees with magnetic north as origin.

Fig 1:
The work of Feedflow

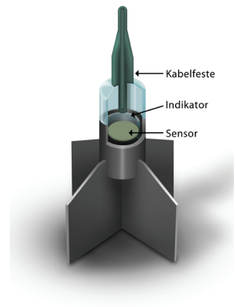


Fig 2:
Basic mechanical design