

## Weather or not, our PSDs measure

TMI's new generation wind sensor (Patent Pending) based on SiTek PSD

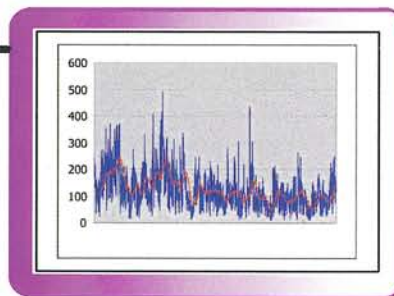
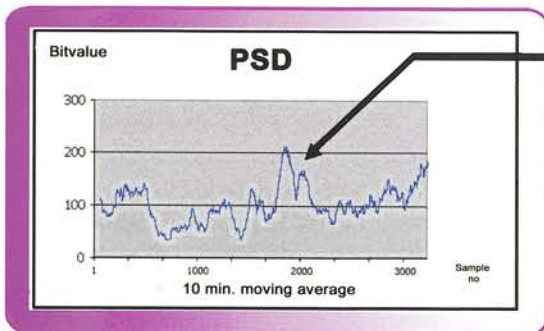
In 1998 Trondheim Maritime Instrumentation (TMI) started the development of a new type of anemometer (wind sensor) based on SiTek's 2L10 PSD. The project was sponsored by the Norwegian Research Council, and the project time was stipulated to 3 years. The main purpose was to construct a sensor with practically no moving parts and an excellent dynamic range. Ordinary cup anemometers suffer from rapid wear during severe weather conditions resulting in high maintenance costs and also fail to give reliable wind data during strong hurricanes. More modern anemometers which use ultrasound also tend to give unreliable data when strong winds occur together with heavy precipitation. Sub zero conditions also cause significant problems in many locations.

The TMI wind sensor prototype was tested in autumn 2001 and showed no limitations with respect to these problems. The sensor has now been tested under extreme weather conditions for approximately half a year (winter season) in Trondheim, Norway; and the preliminary results are outstanding. SiTek's 2L10 PSD was the natural choice for TMI due to its durability under such weather conditions. In addition to a good resolution in the lower end of the scale, the sensor can measure with very high accuracy at much higher wind speeds than any sensor on the commercial market. The sensor has no moving parts (except for the stick which moves appr. 5 mm at high wind speeds - see diagram). We were also very satisfied with the time response. Within 0.1 second the sensor goes from maximum to zero without any overshoot. This indicates that the material chosen for the flex element is perfectly suitable. This material also holds the performance over a wide temperature range, and according to manufacturer specifications it has a lifespan of 50 years (no ageing due to ultraviolet radiation or weather).



No wind vane is needed since the sensor measures the X- and Y- component of the wind vector. The housing of the sensor comprises all the electronics needed for signal analysis and communication with external equipment. Different protocols and analysis are provided depending on customers' needs. A principle drawing of the sensor is shown above and some data from the prototype tests is given in the charts below.

The wind sensor will now go through a final stage of extensive testing in co-operation with the Norwegian Meteorological Office. It will be launched on the commercial market in the next few months.



Data recorded autumn 2001

