

Noptel Oy - At the forefront of optical measurement techniques

Noptel

Founded in 1982, the Finnish company Noptel specializes in design and manufacture of innovative optoelectronic products comprising its technological know-how in the measurement of distance and position. Since 2011 Noptel Oy has been a subsidiary of FN Herstal. The company has strong focus on technology expertise. The company's core competence rely on know-how dedicated to exploit three opto-electronic measurement technologies, which are:

- Fast distance measurement based on laser pulse travel time (near field dynamic applications)
- Cumulative distance measurement based on laser pulse travel time (long-distance)
- Position and motion measurement (light beam position detection)

Main products:

- Fast Rangefinder devices (CM, CMP)
- Long distance Rangefinders (LRF)
- Displacement and alignment measurement devices (PSM)
- Pile driving dynamics measurement (PJS)
- Fire control unit (FCU)
- Shooting training devices, optical shooting



Laser Rangefinders for fast range finding

Noptel's R&D work has led to the design of laser rangefinder devices for determining e.g. forms of hot surfaces, dimensions of metal structures, flutter of paper web, maintenance of optical fibers, target recognition, range scanning, vehicle speed, camera triggering, etc. The technology has turned out to be very competitive both technically and economically in products, which require high speed, accuracy and reliability to enable distance measurement to natural objects (non co-operating target). The technology is especially effective in scanning laser applications and other fast measurements. Furthermore, the accuracy is good enough to meet the requirements of traditional surveying applications. In traffic control the sensors are utilized e.g. for fast and accurate camera triggering and for speed violation control.

Long distance Laser Rangefinders

Noptel's long distance laser rangefinders are based on the same pulsed time-of-flight technology as the fast rangefinders. However, the signal processing procedure differs remarkably, which allows measurement to poorly reflecting targets even up to 10-20 km with a simple diode laser. Noptel's technology is one of the most sophisticated globally and it has woken a lot of interest among the system integrators. These small size laser rangefinder modules are used as OEM units in demanding military applications as well as in many civilian systems and products. The units are available as open modules.



Displacement measurement technology

Displacement measurement technology allows non-contact measurement of tiny deviations from the reference line in both X and Y directions and it permits long operating distance up to several hundred meters. Position sensitive laser measurement devices based on this technology have been successfully applied for a wide range of deflection, swaying and displacement measurement applications at e.g. chimneys, bridges, towers and other metal constructions. Perhaps the most successful product in this field is a rail alignment device for a working machine in railway track maintenance. This device employs Noptel's own advanced laser beam hit point detection technique, which defines the position of the vehicle's track reinforcement mechanism rapidly and accurately.



Pile driving dynamics measurement

Displacement measurement technology is utilized successfully also for measuring the dynamics of the piles during the stroke. The device featuring non-contact measurement provides the displacement of a pile for each stroke and shows the dynamics of the stroke. That enables reliable evaluation of the correct pile position and seeking of possible faults in the pile. The most developed system for this type of pile driving control utilizing Noptel's technology is the PDM system provided by an Australian company.



Fire control unit

The most advanced and also the most complicated unit developed by Noptel until today is the Fire Control Unit for the grenade launchers. The unit measures the distance to the target, calculates the ballistics based on the given data and shows the elevation of the launcher in a visible and easy way. This helps the shooter to hit the target with a good accuracy.



Optoelectronic shooting training equipment

In the optical shooting training system the bullet of a conventional weapon is replaced by a harmless light beam, which hit point is measured with extreme accuracy. It is possible to use a continuous beam to monitor and record the whole aiming and shooting process in real time, allowing a full analysis of the shooter's performance. The immediate feedback received from each shot helps the shooter to efficiently improve his shooting skills. The computer, to which the whole system is connected, offers both the shooter and the trainer excellent tools to improve the effectiveness of the training.



Joint product development with the customer

A substantial proportion of Noptel's activities derives from design work in its own specialized field carried out for various industrial companies that usually arises out of a need to develop a measurement system for use in customer's own product, machine or process. It is obvious that the designed system has to fit its purpose absolutely precisely both in technical and economical sense. The design in such cases is usually based on an existing Noptel product or technology and the necessary redesign work and its conversion into a product can be accomplished quickly and without excessive work. However, often the customer's own contribution and applications know-how are the major elements on the emergence of the eventual product.

