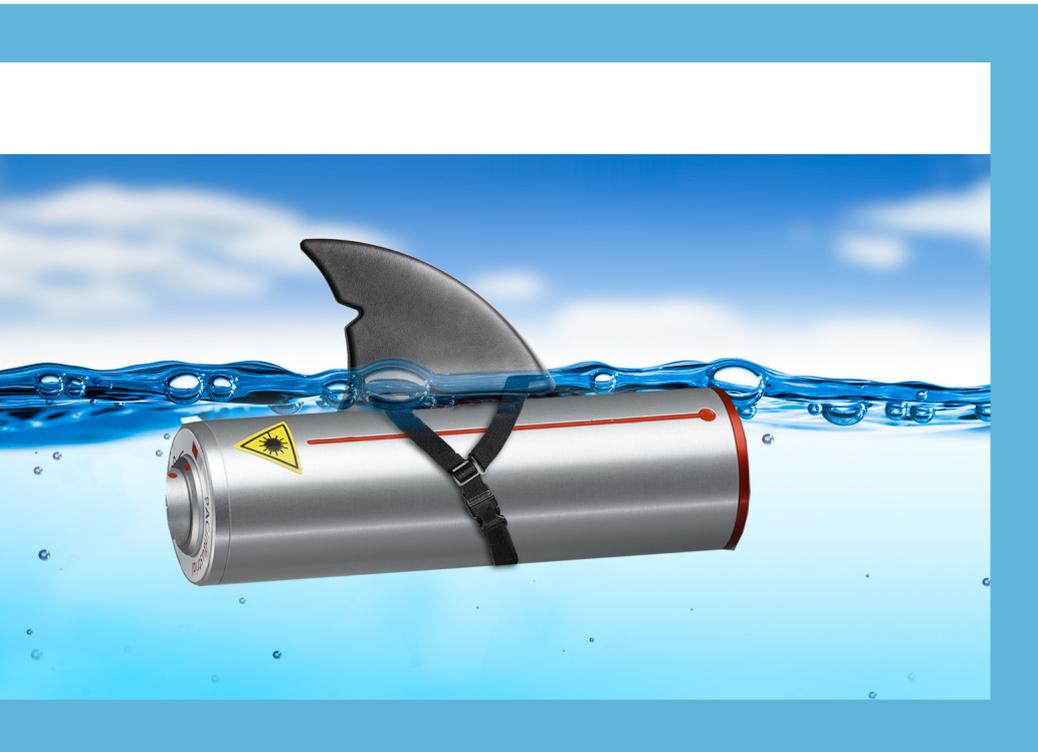


## The perfect shark fin:

# What is an autoamplitude, anyway? - Simply explained



*The term "autoamplitude" is inherent in the calibration of photothermal measurement methods.*

*While standard methods still require the user to determine the laser power manually in a time-consuming process, modern methods such as those used by OptiSense do not require this time-consuming procedure.*

### **How the photothermal measurement method works**

In photothermal coating thickness measurement, the surface of the coating is heated by a few degrees with a short, intense light pulse and then cools down again by dissipating the heat into deeper areas. On the one hand, this heating must be sufficiently high to obtain accurate and reproducible measured values, but on the other hand it must not be too strong, otherwise the coating can burn on the surface.

### **Autoamplitude simplifies calibrations**

The term "autoamplitude" is native to calibration in photothermal measurement methods. Generally, instruments are calibrated whenever the measurement conditions change. For example, the coating material, because more energy is needed for light paint colors than for dark ones. This principle of heat input can be very well illustrated with a white and a black car, both standing next to each other in the blazing sun: The dark car heats up much faster than the light-colored model. But it is not only the heat absorption of the colors that plays a role, but also the thickness of the coating: more energy is needed to measure thin coatings than thick ones.

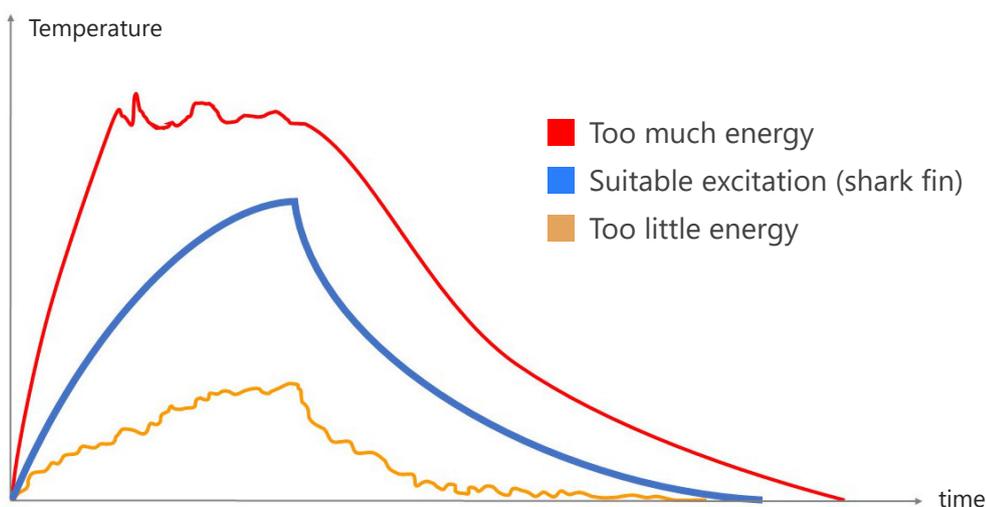
In conventional photothermal measurement methods, the energy input for the laser is adjusted by hand - sometimes with extremely unpleasant side effects: This is because when the measuring device is adjusted manually, inexperienced users sometimes set the energy output too high and thus burn the surface, as simply too much energy is projected onto the coating.

### **Automatic detection instead of time-consuming test series**

Wouldn't it therefore be ideal if it were possible to measure not only different coating thicknesses but also different colors with a single calibration? And do it all by itself, so to speak? To this end, OptiSense's state-of-the-art technology automatically evaluates and adjusts the laser power. Before each measurement, the laser analyzes the coating material in a fraction of a second, recognizes the coating thickness and how strongly it absorbs energy. For example, with specular coating as the material under test, the laser would detect that a lot of energy is needed to heat up this sample. After the analysis, the sensor transmits its power requirement to the control unit, the controller. This provides the laser with the exact amount of energy needed to heat the coating for the photothermal measurement, regardless of the coating thickness and color. This process is called autoamplitude.

### **The perfect shark fin**

If the measurement process is depicted graphically – with the x-axis as time and the y-axis as temperature – the result of the measurement is shown in the form of a shark fin.



### **The advantages of autoamplitude**

While standard methods still require the user to determine the laser power manually in a time-consuming process, modern methods such as those used by OptiSense

eliminate this laborious procedure. The user only specifies the total measurement duration and the number of measurements; thanks to the autoamplitude, the laser power is calculated automatically and then applies to all further measurements.

This saves an enormous amount of effort and thus time. In addition, thanks to Autoamplitude, larger coating thickness ranges can be measured. A manually specified, fixed laser power only applies to a certain range. Autoamplitude, on the other hand, adjusts automatically during each measurement process and thus allows the measurement of a much larger coating thickness range.

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