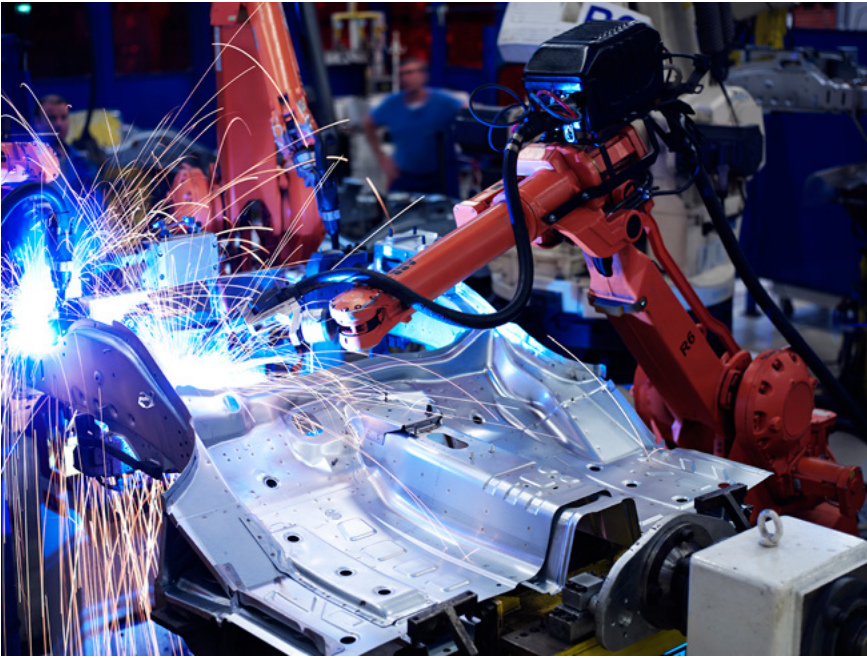


# TECHNICAL NOTE

## MEASURING HIGH POWERS WITH LOW POWER DETECTORS: A COST EFFECTIVE SOLUTION FOR END OF LINE APPLICATIONS



### THE CASE

In industrial fiber laser applications like welding and soldering, it is rarely useful to measure the power of a laser beam before the end of the line since problems can occur after the point of measurement, at almost any point along the path that the light follows before it reaches the processed material. It is therefore mandatory to use a non-intrusive method of measuring the laser output right at the final delivery optic.

### THE ISSUE

Usually, for the measurements of high laser powers (kilowatts), we recommend a product from our HP series of detectors, which is the most complete high power product line on the market. It can measure up to 25 kW and even more upon request. However, it requires water cooling to operate and it is a relatively expensive solution.

In the past few years, we were frequently questioned by some customers of the industrial market about the possibility of having a solution that would be more economical and that would require a somewhat less complicated installation.

Furthermore, with the Integra series, which combine a detector and a meter in one convenient product, the UP detectors can be directly connected to a PC for data logging and analysis. This is the most cost-effective and simplest solution of the market.

### THE SOLUTION

Gentec-EO's solution to this issue is to use a regular UP series power detector in single shot mode. It has the following characteristics:

- Low cost solution
- Measures a single pulse instead of doing a continuous measurement (laser must be set up appropriately)
- No water cooling required
- Possibility to program a feedback loop with a pre-established range of operation (Go-NoGo)



# TECHNICAL NOTE

## A REAL LIFE EXAMPLE

As an example, we have done this for a customer in the automotive industry. They had a 4 kW laser that was used for welding and that needed to be checked regularly. They did not want to make modifications to their setup in order to include a large HP detector with water cooling. We thus offered them a regular UP50N-40S-W9, which is a simple 40 W detector with a very strong absorber. It was then programmed to receive single bursts of 200 J in 50 msec (equivalent to an average power of 4 kW). The detector is used several times a day and does not interfere with the production yield. This was by far the best solution to their problem and it has been in use for years.



## THINGS TO REMEMBER

- Make high power measurements at the end of the beam delivery with a UP detector in energy mode (single shot mode).
- Easier to set up than an HP detector (no water cooling, smaller size).
- Significantly less expensive than an HP detector.

Contact your Gentec-EO representative for more information about using the UP detectors for high power measurements.