PRIMES

LASER BEAM DIAGNOSTICS

Company Profile

The Company

For more than 30 years now, PRIMES has developed and produced systems for the characterization of industrially employed laser beams as used in the automotive industry, industrial machinery, additive manufacturing as well as R & D and laser manufacturing.

- Competence for beam diagnostics in the processing zone
- Systems for multi-kilowatt laser power and high densities
- More than 35 000 installed systems worldwide
- Owner operated business with approximately 140 employees, 35 of which in R & D
- Worldwide presence via subsidiary in Japan and global network of distributors

Our Strengths

“Being able to listen is half the battle.”
(Calvin Coolidge)

Systems for real production environments

- Robust, ready-to-use-systems for rough industrial environments
- Easy to integrate in production processes due to standardized interfaces

Competence

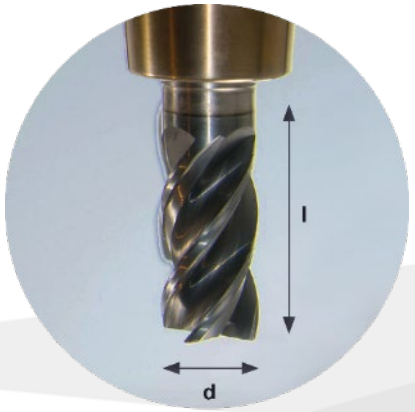
- Customer focus: worldwide personal consulting
- Complete hard- and software design in-house for optimal solutions
- Technological independence: devices for nearly all major laser and machine builders

Innovations

- 4-6 patents each year
- Extensive R & D network
- Partner for customer specific developments from idea to delivery

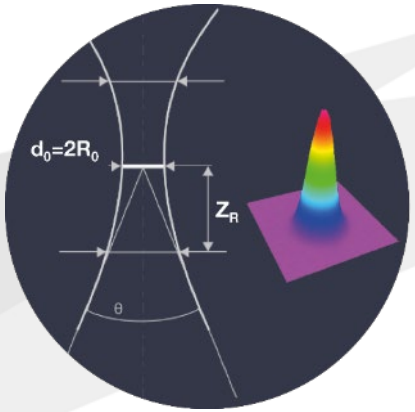
Why Beam Diagnostics
Quantification of Tool Properties of a Laser Beam

Milling Tool



- Feed rate & rotation speed
- Diameter
- Shaft length
- Edge steepness
- Edge sharpness

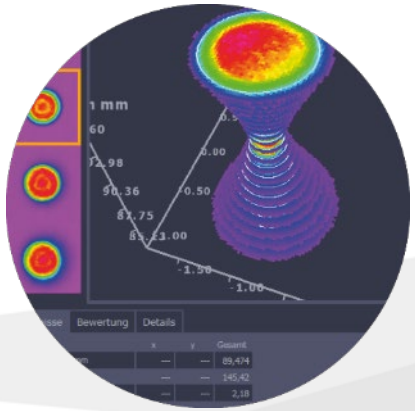
Laser Beam



- Power
- Beam diameter
- Rayleigh length
- Beam parameter product
- Power density distribution

Our Technologies
Analysis and Visualization of the Laser Beam as a “Tool”

Caustic

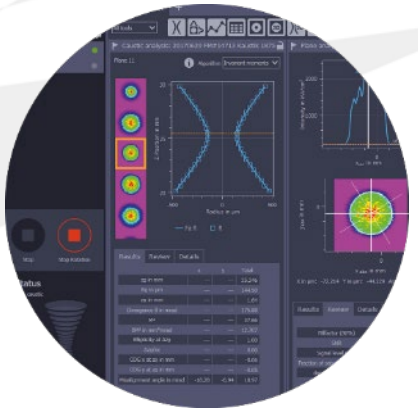


Analysis of the beam geometry to characterize the “tool shape”, measurement of the beam distribution to determine the “sharpness”

Power

Core parameter of any laser process, description of the “force” of the tool

Software



Visualization of the measurement results, saving and processing of measurement data, tools for analysis

Our Portfolio

Devices and Systems for the Laser Beam Analysis of all typical Laser Types

Power Measurement

From a compact mobile device to a system for continuous process monitoring up to 120 kW

Beam Analysis

Measurement of focused and unfocused laser radiation from free beam to direct fiber measurement

System Integration

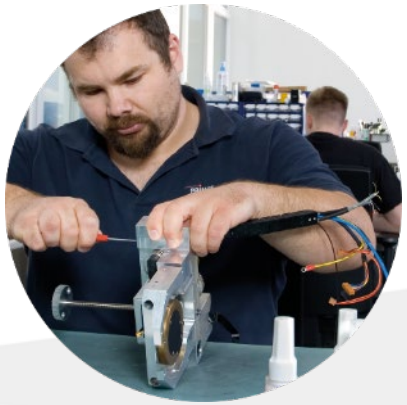
Systems for integration: robust, versatile and established in industrial production with industry standard interfaces

All-in-one-Systems

Combinations of systems for the comprehensive analysis of laser power and beam geometry

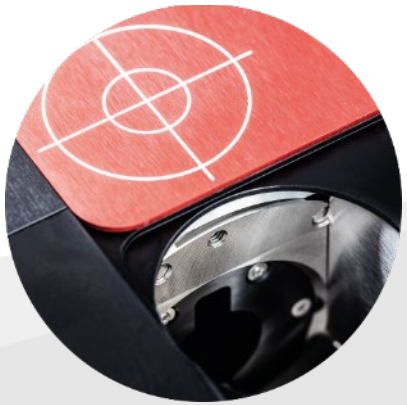
Product life cycle services and support

Device Service



Service and maintenance

Calibration



Precise device calibration, traceable standards, more than 20 beam sources for calibration under real process conditions

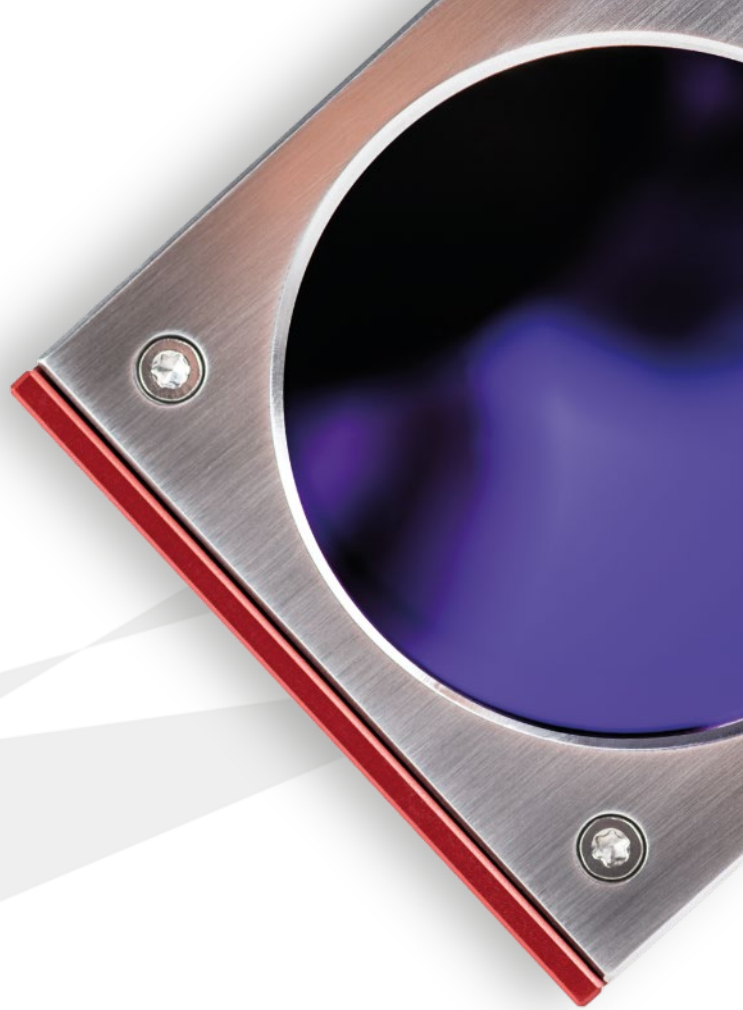
On-site Services

Commissioning, contract measurements, user training, support of process optimization

Technical Advice

System configuration, handling, interpretation of measurement results, support of process optimization

Advantages of Beam Diagnostics



Yield and uptime improvement by continuous tracking of production processes

- Focus shift
- Power loss
- Change in beam quality

Process control through characterization of the laser beam

- Power
- Propagation characteristics
- Focus parameters

Quality assurance thanks to preemptive trouble shooting

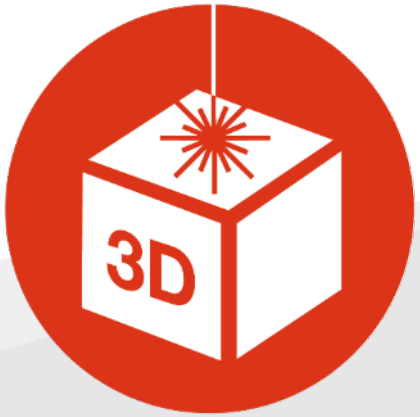
- Aberrations
- Contamination
- Misalignment

Markets

System Development

Focus analysis for precise results with the FocusMonitor FM+ and the MicroSpotMonitor MSM+

Additive Manufacturing

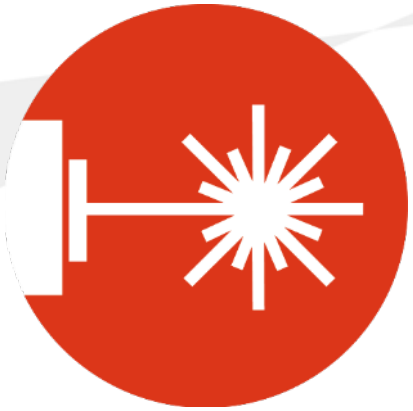


Laser beam measurement in the scanning field with the ScanfieldMonitor SFM and the Cube M

Automotive Industry

Process integrated power measurement and beam characterization with the PMM and the FPM

Laser Manufacturers



Comprehensive beam analysis with the LQM+ and the LaserDiagnosticsSoftware LDS

Strong with Innovation

“Nothing is more powerful than an idea at the right time.”
(Victor Hugo)

- **2024** I Accurate measurement of ultra high powers up to 120 kW: **Cube XT, PowerMonitor PM HP75**
- **2021** I Measurement of highest energy- and power densities: **MicroSpotMonitor MSM+**
- **2019** I A new dimension of raw beam measurement: **LaserQualityMonitor LQM+**
- **2019** I Focus analysis up to 50 MW/cm^2: **FocusMonitor FM+ HPD**
- **2018** I Measurement of the beam properties in the scanfield for Additive Manufacturing and Remote Welding: **ScanFieldMonitor SFM**
- **2017** I New device generation with new software: **FocusMonitor FM+, BeamMonitor BM+**
- **2016** I Ultra compact wireless power measurement: **Cube**
- **2010** I Power measurement with integrated field bus interface: **PowerMeasuringModule PMM**
- **2006** I Camera based measurement of the raw beam: **LaserQualityMonitor LQM**
- **2003** I Camera based beam diagnostics: **MicroSpotMonitor MSM**
- **2000** I Compact and mobile power measurement: **PocketMonitor PMT**
- **1995** I The first system for the analysis and visualization of a laser focus: **FocusMonitor FM**

Global Presence

PRIMES

“Changing the world through innovation.”
(Dr. Reinhard Kramer, CEO)

PRIMES GmbH | Max-Planck-Str. 2 | 64319 Pfungstadt | Germany | www.primes.de