PRIMES

COMPETENCE IN **BEAM DIAGNOSTICS**

Company **Profile**

THE COMPANY

PRIMES is a leading company for laser beam diagnostics.

For 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 30 000 installed systems worldwide
- Owner operated business with approximately 130 employees, 32 of which in R & D
- Worldwide distribution via subsidiary in Japan and 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

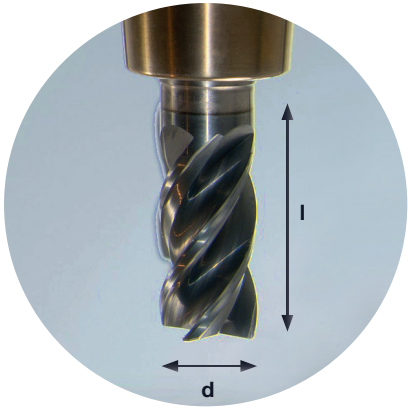
Innovations

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

WHY BEAM DIAGNOSTICS

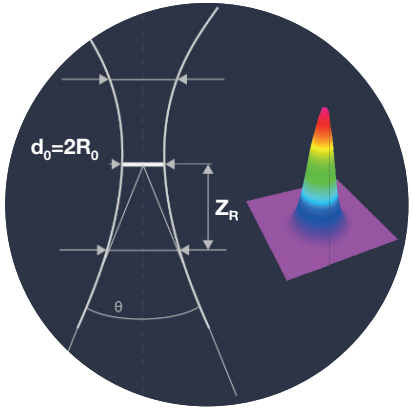
Quantification of tool properties of a laser beam

Milling Tool



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

Laser Beam

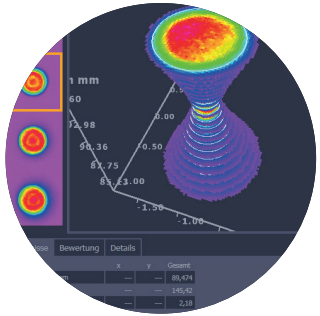


- Power
- Beam diameter
- Rayleigh length
- Beam parameter product
- Power density distribution

OUR TECHNOLOGIES

Analysis and visualization of the laser beam as a “tool”

Caustic

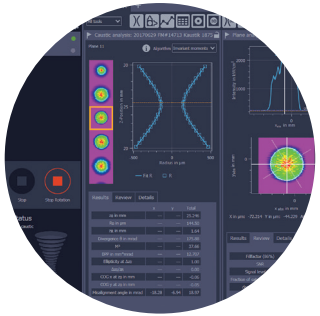


Analysis of the beam geometry to characterize the “tool shape”, measurement of the beam distribution to determine the “sharpness”

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

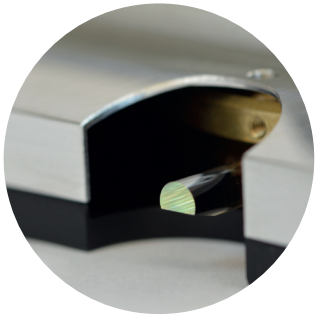
“Precision, capacity for innovation and passion for new proprietary solutions.”
(Dr. Thomas Umschlag, GM)

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 75 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, and more than 20 beam sources for calibration under real world conditions

On-site Services

Commissioning, contract measurements, user training

Technical Advice

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

ADVANTAGES OF BEAM DIAGNOSTICS

Yield and uptime improvement by continuous tracking of production processes

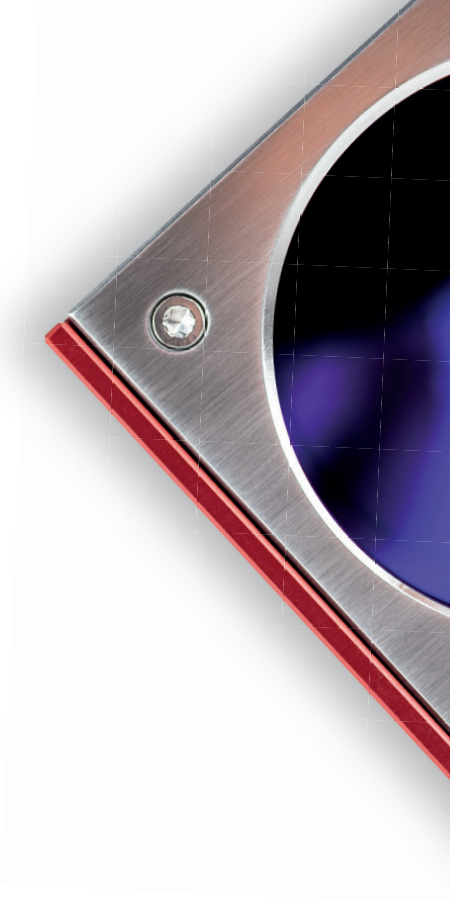
- Focus shift
- Power loss
- Change in beam quality

Process optimization by characterization of the laser beam

- Power
- Propagation characteristics
- Focus parameters

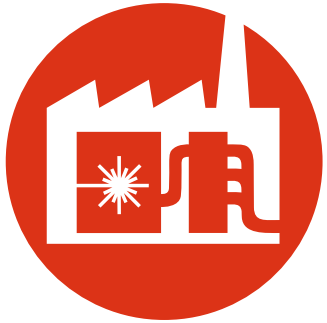
Quality assurance thanks to preemptive trouble shooting

- Aberrations
- Contamination
- Misalignment



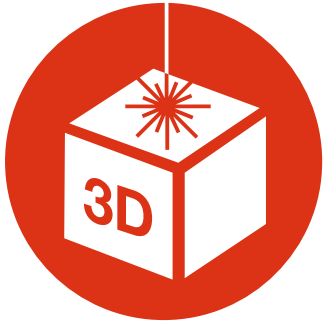
MARKETS

System Development



Focus analysis with the FocusMonitor FM+ for precise results

Additive Manufacturing

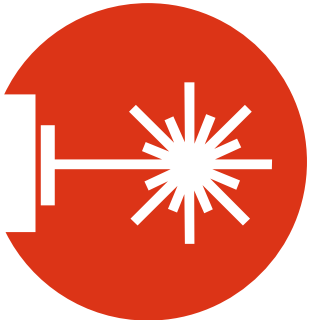


Laser beam measurement in the scanning field with the ScanFieldMonitor SFM and the Cube

Automotive Industry

Integrated power measurement for laser welding with the PowerMeasuringModule PMM and complete characterization with the FocusParameterMonitor FPM

Laser Manufacturers



Comprehensive beam analysis with the LaserQualityMonitor LQM+ and the LaserDiagnosticsSoftware LDS

STRONG WITH INNOVATION

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

1995 | The first system for the analysis and visualization of a laser focus: **FocusMonitor FM**

2000 | Compact and mobile power measurement: **PocketMonitor PMT**

2003 | Camera based beam diagnostics: **MicroSpotMonitor MSM**

2006 | Camera based measurement of the raw beam: **LaserQualityMonitor LQM**

2010 | Power measurement with integrated field bus interface: **PowerMeasuringModule PMM**

STRONG WITH INNOVATION

2016 | Ultra compact wireless power measurement: **Cube**

2017 | New device generation with new software:
FocusMonitor FM+, BeamMonitor BM+

2018 | Measurement of the beam properties in the scanfield for Additive Manufacturing and Remote Welding: **ScanFieldMonitor SFM**

2019 | Focus analysis up to 50 MW/cm^2: **FocusMonitor FM+ HPD**

2019 | A new dimension of raw beam measurement: **LaserQualityMonitor LQM+**

2021 | Measurement of highest energy- and power densities:
MicroSpotMonitor MSM+

2021 | Determination of the focal position in real time: **FocusTracker FT**

GLOBAL PRESENCE

- PRIMES Headquarter: R & D, Manufacturing, Sales, Service
- PRIMES Subsidiary: Sales, Service
- Distributors

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

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