

**In-Line Process Monitor Head****Stand Alone Monitor Head**

The SPAWR Laser Process Monitor, Patent #5,674,415, [and other(s) pending] is a non-intrusive device capable of real-time remote sensing of process penetration depth and quality. The monitor serves as an in-line real-time quality control monitor reducing scrap rate and production downtime. This device offers low-cost, simplicity in operation and ruggedness for the manufacturing environment.

Characteristics/Capabilities

Real time non-intrusive sensing of process quality changes for 100 Watt to Multi-Kilowatt laser processing systems. The monitor detects the following:

Weld Surface Quality

- Weld Penetration Depth 0.1mm
- Cladding Penetration and Thickness
- Occurrence of Process Spatter
- Direction of Motion relative to cover gas flow
- Presence of Surface Impurities, such as oil, rust, etc.

- Whether Cover Gas is ON or OFF
- Work Piece Alignment
- Surface Heat Treat/Transformation Hardening
- Quality of Laser Cut Surface
- Location of True Focus Spot

In-Line Integrated Monitor

Co-axial with high power beam
Recommended for production operations
Pre-aimed and insensitive to vibrations
Excellent reproducibility of data
Compact Size

Turn-Key In-Line Process Monitor System
SPAWR Cat. No. ILPM-TK

Stand Alone Monitor

Visible Diode Laser Aiming
Easily integrated with existing optics
Low cost addition to existing processing system
Flexibility
Diagnostic test, evaluation, and R&D applications

Turn-Key Stand-Alone Monitor System
SPAWR Cat. No. SAPM-TK

“Turn-Key” Systems include sensor head, 5-Meter signal cable, computer, Analysis Box and software (PC).

Pursuant to U.S. Patent #5,674,415 both systems identified above represent the minimum components that may be sold with each configuration.