Precision Technology Group

RAISING THE STANDARD

Price and Feature Comparison of Fiber Laser vs Nd:YAG/Nd:YVO_4 (Lamp and Diode Pumped)

	20 Watt TEMoo Fiber Laser	**50-100 Watt Multimode** (Lamp or Diode) **20 Watt TEMoo Diode Nd:YAG Laser**
Laser System ▪ Laser ▪ Computer ▪ Software ▪ Power Supplies ▪ Q-switch RF Driver ▪ Scan Head ▪ Control Cards	**$47,500**	**$55,000 - $65,000**
Chiller	**$0**	**$5,000 - $8,000** (Replacement Required every 1 – 2 years)
Reliability MTBF(Mean Time Between Failure)	**50,000 to 100,000 Hours**	**500 to 1,000 Hours** (Lamp-pumped) **10,000 to 20,000 Hours** (Diode-pumped)
Consumables	**$0** Note: Fiber Laser Modules Can Be Repaired – Average Repair Costs Range from $1,000 to $5,000 USD	**$2,000 - $15,000** (Lamps - $100 each) (Diode Packs - $5,000 to $12,000 each)
Maintenance Downtime ▪ Lamp/Diode Replacements ▪ Flow Tube Replacements ▪ Crystal Replacements ▪ Filter Replacements ▪ Optical Alignment	**$0**	**$1,500 - $ 10,000** (Individual Results May Vary – Diode Pumped Systems Require Significant Training for Replacement Procedure)
Power Consumption (Two Eight Hour Shits Running 365 Days at $.04 kW)	**$39.71 Yearly** 170W an Hour	**$1,401.60 Yearly** 6 kW an Hour

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Maintenance	▪ **No Maintenance** ▪ **No Consumables** ▪ **No Cleaning or Aligning of Mirrors and/or** ▪ **Beam Path** ▪ **No Filters (Chiller)**	▪ **Optical Path requires often adjustments to optimize power output** ▪ **Periodic replacement of flash lamps, diode packs, and solid state crystals** ▪ **Extremely temperamental diode packs often require factory-trained technicians – takes several hours in many cases** ▪ **Cleaning, replacement and aligning of laser mirrors**
Power Efficiency	**Up to 50%** (20x Improvement)	**2-3%** (0.2% with 3x Nd:YAG)
Beam Quality	**Round, Concentric** **Near M2=1 (<1.05)**	**Not symmetric on both axes**
Spot Size	**Due to the excellent M2, spot size is 50% smaller than Nd:YAG. Requires less power for the same result in comparison with Nd:YAG system**	**Significantly bigger than the Fiber Laser. Requires more lasing power to achieve the same result**
Optical Path/Beam Path	**Flexible Cable** (up to 50m)	**Mirrors, Optical Path** Loss of beam quality and significant power drop-off with fiber delivery scan head system
Reliability	**100,000 Hrs MTBF**	**500-1,000 Hrs MTBF** (Lamp-pumped) **10,000-20,000 Hrs MTBF** (Diode-pumped)
Cooling	**Air Cooled**	**De-ionized (DI) Water**
Size	**19" Rack Mount Unit**	**Large Footprint**
Chiller	**No Chiller necessary up to 200 Watt Qswitched (pulsed) or CW**	**30x Watt to laser output power**

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