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Lightweighting Medical Systems through Improved Laser Diode Design

Laser diode design can have a significant impact on system weight requirements, which affect ease of use, cost, treatment time and comfort for aesthetic and medical lasers. Here are three considerations when selecting a diode.

1. Operating Environment

The specifications of your laser system will depend on your performance requirements and operating limitations. These factors will also affect cost. Consider:

- □ Pulse length
- □ Power requirements
- □ Water flow
- □ Other utilities

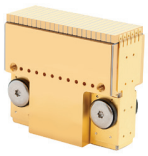
Many system integrators are designing for long pulse, up to 500 milliseconds, but this limits peak power. In use, most physicians find that patients cannot tolerate long pulse as well as shorter pulse/higher power. Over-specification can also unnecessarily increase system weight and cost.

Just because a certain power level or pulse length is available does not mean it will work well for your intended use. Consider, for example, operating twice as many laser diode bars at half the peak power per bar to reduce the size, weight and cost of the electrical cables supplying the hand piece. Speak with Lasertel to determine the design that will achieve the best price and performance.

2. Light Delivery

Lightweighting of handheld medical devices can greatly improve their usability. One way to reduce device size and weight is to use lightweight materials in the assembly. Another is to change how light is delivered, for example, by replacing larger optical components with smaller elements.

Waveguide choice also affects operating life. By decoupling feedback from light reflecting back from the patient's skin, system designers can improve reliability and decrease downtime.



T6
Fluid Cooled Diode

3. Wavelength

Laser diodes are a major component of many aesthetic laser systems, including those used for:

- □ Laser hair removal
- □ Wrinkle reduction
- □ Acne treatment
- □ Laser skin resurfacing
- □ Pigmented lesion removal
- □ Varicose vein removal

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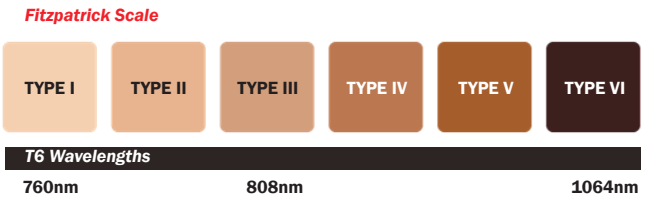
Today's innovative laser hair removal systems include multiple wavelengths to broaden the treatment range and minimize discomfort for a range of skin tones, as identified in the Fitzpatrick Scale.



In a single hand piece, Lasertel's T6 can cover the spectrum of the Fitzpatrick Scale.

Traditional approaches use single wavelength laser diode arrays and require the operator to change hand pieces to select the appropriate wavelength. Several hand pieces may be required to address the full range of skin types. Lasertel's T6 water cooled arrays offer multiple wavelengths in a single water cooled array to support treatment of multiple skin types with a single hand piece. Typical multi-wavelength arrays include 760nm, 808nm, and 1064nm wavelengths.

Lasertel Diode Solutions

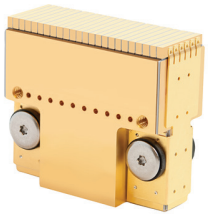
In addition to manufacturing the diode components, Lasertel can engineer systems and subsystems for:

- □ Optoacoustics / Photoacoustics
- □ Imaging
- □ Blood oxygenation monitoring
- □ Diode laser glucose meters
- □ Ophthalmic devices

T6

Lasertel's CW stack array packages are engineered to perform reliably in the most demanding environments.

- □ 760nm, 808nm, and 1064nm wavelengths in a single stack
- □ CW power to 2500W or QCW power to 25kW
- □ Compact utility interface
- □ No need for deionized water – reduced cost and maintenance
- □ Advanced beam conditioning
- □ Customizable to your specifications



Give our engineers a call to discuss your project.

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