

**Contents of this issue**

- [Liekki's presence at upcoming tradeshows](#)
- [Announcement of extended Liekki 20/125 product family at CLEO 2007](#)
- [Announcement of new features for Liekki Application Designer v4.0 at LASER. World of Photonics 2007](#)
- [Gamma radiation effects in Liekki ytterbium doped fibers](#)
- [Online purchase feature available on www.liekki.com soon](#)
- [Liekki continues to built its professional team](#)
- [Liekki offers several interesting bachelor's, master's, licentiate or doctoral thesis topics](#)

**Introduction**

Welcome to the April 2007 edition of our newsletter.

As usual Liekki has a number of important activities we would like to make you aware of. Specifically, this newsletter is highlighting:

- ◆ [Liekki's presence at upcoming tradeshows](#)
- ◆ [Announcement of extended Liekki 20/125 product family at CLEO 2007](#)
- ◆ [Announcement of new features for Liekki Application Designer v4.0 at LASER. World of Photonics 2007](#)
- ◆ [Gamma radiation effects in Liekki ytterbium doped fibers](#)
- ◆ [Online purchase feature available on www.liekki.com soon](#)
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As always, we would appreciate your feedback so that we can better serve you.

Sincerely,

Bill Willson  
Vice President, Marketing and Sales  
Phone: +1 301 706 0315  
Email: [william.willson@liekki.com](mailto:william.willson@liekki.com)



**Liekki's presence at upcoming tradeshows**

Liekki will be present at the following upcoming conferences and exhibitions:

- ◆ **CLEO/QUELS 2007**, Baltimore, MD, US, May 6 - 11, Booth #1247  
To schedule a meeting please contact William Willson (mobile: +1 301 706 0315, email: [william.willson@liekki.com](mailto:william.willson@liekki.com))
- ◆ **LASER. World of Photonics 2007** Munich, Germany, June 18 - 21, Booth #B2.460  
To schedule a meeting please contact Dr. Etienne Friedrich (mobile: +358 400 299 408, email: [etienne.friedrich@liekki.com](mailto:etienne.friedrich@liekki.com))

We will be ready to present our standard offerings of the most highly doped **erbium fibers** and **ytterbium fibers** in the industry; our approach to **low photodarkening fibers**; our **optical engines modules**; our design software, **Liekki Application Designer**; as well as our complimentary products such as **passive fibers**, **fiber Bragg gratings**, **combiners**, pump dumps and **end caps**.

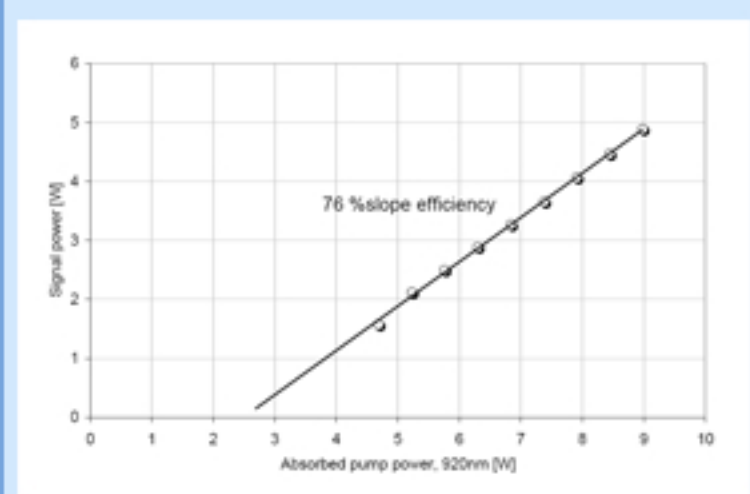
For more detailed information please refer to our website [www.liekki.com](http://www.liekki.com).

**Also don't miss our presentation at LASER. World of Photonics 2007:**  
Please see our presentation "Fiber laser performance and economics - Status and trend for low power, high power, pulsed lasers" at the 8th International Laser Marketplace on Wednesday, June 20th, held in conjunction with LASER. World of Photonics 2007. Presenter: Dr. Per Stenius.

[Back to top](#)



Pic. 1: Liekki Yb1200-20/125DC-PM fiber



Pic. 2: Typical power conversion efficiency of Liekki's Yb1200-20/125DC-PM fiber

**Announcement of extended Liekki 20/125 product family at CLEO 2007**

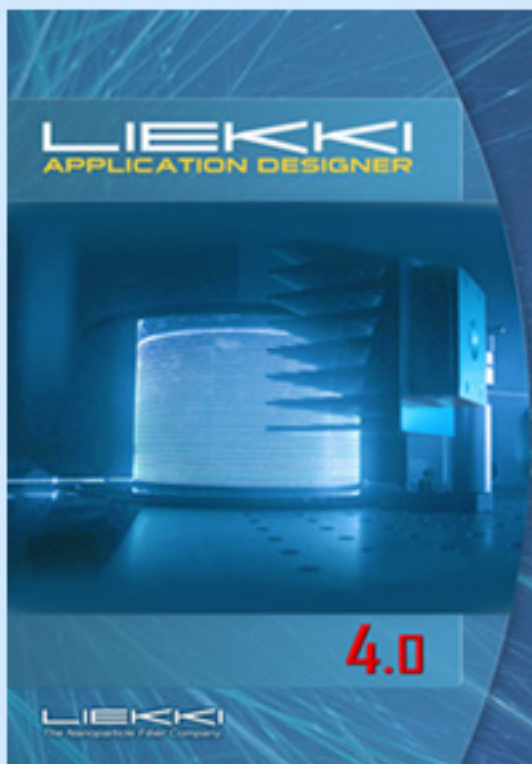
Liekki offers a broad line of products for fiber lasers and amplifiers supporting a 20 micron core and 125 micron cladding geometry. The highly doped **ytterbium fiber** with its extremely high pump absorption, high power conversion efficiency, polarization preservation and large mode area provides excellent amplification of pulses with durations ranging from nanoseconds to femtoseconds. High-power pulses are typically used in material processing and micromachining. The fiber is available as polarization maintaining and non-polarization maintaining fiber.

The **Yb1200-20/125DC-PM** fiber features a unique combination of a highly doped, 20 µm diameter core, a large core-to-cladding ratio, and an efficient round cladding shape. These features result in a cladding pump absorption of 6.8dB/m at 920nm rising to as much as 29dB/m for absorption near the peak at around 976nm, enabling use of very short active fiber lengths. Applications using this fiber benefit from high extractable energy and excellent beam quality. The use of standard 125µm cladding diameter is another advantage, broadening the fiber's usability, for example, with standard telecom fiber stripping, splicing, and connectorization equipment.

The active fibers are supported by **passive relay and delivery fibers**, **pump and signal combiners** and **fiber Bragg gratings** manufactured with our passive fibers. These complementary products are mode matched to the active fibers to minimize splicing and coupling losses.

Liekki will be showcasing these products and its full line of passive and active fibers, optical engine modules and design software at the upcoming Conference on Lasers and Electro-Optics (CLEO) 2007, May 8th to May 10th, at the Liekki booth number 1247.

[Back to top](#)



**Announcement of new features for Liekki Application Designer v4.0 at LASER. World of Photonics 2007**

We are pleased to announce the new set of features for our Liekki Application Designer (LAD) v4.0. LAD is a versatile design tool for high power applications providing a strong platform for simulating and optimizing fiber amplifiers, amplify spontaneous emission (ASE) sources, and fiber laser systems. The design software is based on precise algorithms that account for all the reflections in the system - especially crucial for accurate laser and ASE light source simulations. The software also accurately simulates large mode area and highly doped fibers.

LAD v4.0, which will be launched in October 2007, is an upgrade for our current design software **LAD v3.3** and offers a series of new features and add-ons:

**New LAD v4.0 features**

- ◆ **LAD wizards**  
LAD v4.0 will include wizards that allow to create designs and to run simulations through a windows based step-by-step approach. This feature will enable the user to quickly check the most common designs by answering some basic questions. LAD wizards will be available for erbium-doped fiber amplifiers (EDFA), ytterbium-doped fiber amplifiers (YDFA), ytterbium-doped fiber lasers (YDFL) and ASE sources. More wizards can be added on request.
- ◆ **Optimization tool**  
LAD v4.0 will allow to optimize a design parameter for a specified target. For instance, to obtain the optimum fiber length for a given gain.
- ◆ **Multimode analysis of coiled fibers**  
LAD v4.0 will include a multimode analysis of coiled fibers that allows to calculate the propagation effects of higher order modes in coiled fibers. This enables the evaluation of optimum bending radius for certain higher order mode discrimination and beam quality.
- ◆ **Variable step size in transient analysis**  
LAD v4.0 will allow to simulate low repetition pulsed lasers by setting a short time step to describe the pulse and long time step for the period between the pulses.

**Useful add-ons in LAD v4.0**

- ◆ **Concentration conversion table**  
LAD v4.0 will include a concentration conversion table which allows to see the dopant concentration in various formats, such as mol weight or ppm.
- ◆ **Splice loss estimations**  
LAD v4.0 will evaluate the connection loss between fibers based on the fiber characteristics. In addition, information from the **Liekki EasySplice software** (splicer recipes) will be included.
- ◆ **Mode field and cutoff calculation**  
LAD v4.0 will allow to calculate the mode field and cutoff wavelength. This will offer full fiber design capability.

As soon as the Liekki Application Designer v4.0 has been launched, a free 28 days **evaluation license** will be available for download on our website. The design software is available through our **sales support** and our **agents and distributors**.

We will be showcasing the Liekki Application Designer v4.0 and our full line of passive and active fibers as well as optical engine modules at the upcoming LASER. World of Photonics 2007, June 18th to June 21st, at the Liekki booth number B2.460.

[Back to top](#)

**Gamma radiation effects in Liekki ytterbium doped fibers**

The joint paper "Gamma Radiation Effects in Yb-Doped Optical Fiber" by the University of Arizona, USA, Sandia National Laboratories, USA, and Liekki Corporation, Finland, presented at Photonics West 2007 explores and quantifies the effects of relatively high levels of gamma radiation on Liekki **ytterbium fibers**. The paper details a testing protocol for determining the application of doped fibers in a low-earth-orbit space environment. Specifically, the increased spectral transmittance losses of a group of ytterbium fibers were measured as a function gamma photon exposure rates.

The results indicate that Liekki **ytterbium fibers** exhibit reasonable resistance to gamma exposures typically of a 5-year, low-earth-orbit environment. The authors speculate that this radiation resistance might be due to Liekki's **Direct Nanoparticle Deposition (DND)** technology, which typically produces more uniform profiles, thus effectively dissipating energy faster and preventing the formation of color centers.

**To view the full paper, please click below.**  
[Gamma radiation effects in Yb-doped optical fiber](#)  
B. P. Fox, Z. V. Schneider and K. Simmons-Potter, University of Arizona and W. J. Thomes, Jr. Meister, D. C. Meister, R. P. Bamba and D. A. V. Kliner, Sandia National Laboratories and M. J. Söderlund, Liekki Corporation

[Back to top](#)

**Online purchase feature available on www.liekki.com soon**

After the implementation of our new website in the end of 2006, we are currently adding an online purchase feature to further improve our customer service.

Within our new online purchase feature our customers will soon be able to order our Liekki active and passive fibers and fiber components, optical engine modules and design software through [www.liekki.com](http://www.liekki.com) quickly and conveniently.

The online purchase feature is intended for small orders of our most common Liekki products. For large or custom orders we prompt our online customers to continue to contact our **sales support** for more information or to request a quote for the required products and services.

We are developing our purchase feature to make it as convenient as possible for our customers to quickly place small orders of our most common Liekki products.

For more information, please contact Sabine Doms, Manager Marketing and PR (mobile: +358 50 912 6955, email: [sabine.doms@liekki.com](mailto:sabine.doms@liekki.com)).

[Back to top](#)

**Liekki continues to built its professional team**

Due to its rapid growth Liekki has strengthened its professional team in order to guarantee continuous improvement and development as well as excellent customer service.

- ◆ **Dr. Andrey Grishchenko, Senior Process Engineer**  
Andrey has over 20 years experience in fiber optics. He has previously been working for companies such as Lekon Ltd, Latvia, Transtech Photonics Ltd, China, and the National University of Singapore.
- ◆ **Jijo Paul, Senior Process Engineer**  
Jijo has 9 years experience in fiber fiber manufacturing. Before joining Liekki as Senior Process Engineer he has been working for Sterlite Optical Technologies Ltd, India.
- ◆ **Mathieu Saracco, Laboratory Engineer**  
Mathieu has studied at the School of Engineering in Caen, France and finished his master degree in 2003. Previously he has been working for AMEC SPIE, France, Southern Photonics, New Zealand and FOGALE nanotech, France.
- ◆ **Michael Bestler, Intern**  
Michael is studying Physics Engineering with emphasis in Optics Engineering at the University of Applied Sciences in Berlin, Germany. He will support the Liekki fiber team.

Furthermore several Operators and Trainees have joined Liekki to support our production and product development team.

[Back to top](#)

**Liekki offers several interesting bachelor's, master's, licentiate or doctoral thesis topics**

Liekki offers several interesting bachelor's, master's, licentiate or doctoral thesis topics to students in photonics, optics, metrology, process control and manufacturing automation.

For more information please visit the **Career page** of our website.

[Back to top](#)