



## Burn-in system for pulsed and cw operation of laser bars



Modular burn-in system for high-power diode lasers

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Subject to alterations in specifications and other technical information.

The Fraunhofer Institute for Laser Technology (ILT) offers customer specific burn-in systems for laser bars. Our business activities cover flexible burn-in systems especially designed for development purposes, e. g. allowing individual test parameters for each test channel and combined cw/pulsed power supplies, as well as cost efficient burn-in systems for use in the series production of laser bars.

### Example of a burn-in system developed at ILT

The burn-in system described in the following comprises of 20 test channels arranged on four levels in a single rack and connected by a CAN bus system.

Adaptor plates allow the adaption of the test channels to various heat sink geometries. Laser bars mounted to actively cooled as well as passively cooled heat sinks can be operated. The maximum operation temperature is 70°C.

For each test channel individual test parameters can be defined via a graphical user interface. The burn-in system acquires the following data in user-defined time intervals:

- laser output power (relative)
- operating current
- operating voltage
- cooling water / base temperature

All data are stored in a database and can be displayed online on the graphical user interface. The burn-in system permanently monitors all safety relevant functions. Using a web browser, observation of data and system status is also possible on a remote PC.

### Technical specifications

The burn-in system can be operated in different operation and test modes that can be combined individually for each test channel:

- Continuous wave (cw) operation: maximum current 150 A
- Pulsed operation: maximum current 200 A pulse width 100  $\mu$ s – 400  $\mu$ s duty cycle 1% - 50 %
- Switched operation (on/off cycles): maximum current 150 A switching frequency 0,1 – 10 Hz
- Constant current mode: The degradation of output power at constant current is determined.
- Constant power mode: By adjusting the operating current, the output power is kept constant.
- Characteristic (P-I-V) curves: Output power and voltage of the laser diode are measured as a function of the operating current.

### Customer specific options

The modular setup of the burn-in system allows the easy extension and adaption of the system according to customer requirements:

- Number of test channels (maximum of 64 channels per rack, depending on specifications)
- Maximum operation currents of up to 500 A
- Additional monitoring of the wavelength
- Customer specific user interface and database connection