**How does it work?**

Light enters the Hornet through a fiber. The beam is focused through a LightMachinery fluid jet polished etalon to produce very high dispersion in the vertical axis with sub 30pm resolution. Followed by a grating to cross disperse overlapping orders in the horizontal direction to produce a 2D spectrum of the input light, the resulting pattern is imaged onto the CCD detector, software unwraps the spectrum to produce an ultra high resolution spectrum of the input light.

<table>
<thead>
<tr>
<th>Features</th>
<th>Benefits</th>
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<tr>
<td>Wavelength range: 50nm anywhere in the visible or NIR, or the full visible</td>
<td>Average range-over-resolution ratio up to 13000</td>
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<td>&lt;30pm resolution</td>
<td>Can measure spectrums of both CW and pulsed sources</td>
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<td>Fiber coupled</td>
<td>Fast, real-time measurement (up to 10Hz)</td>
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<td>Simple USB interface</td>
<td>Compact. Easy to calibrate</td>
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<td>LabView Divers</td>
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<td>No moving parts</td>
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<td>Can be triggered externally</td>
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**Sometimes you need something special!**

If you have a need for a custom spectrometer do not hesitate to contact us to discuss the various parameters and trade-offs! Michelsons, VIPAs, etalons, gratings, polarizing, non-polarizing, field widened, single mode, cemented, optically contacted (epoxy free bonded), hexagonal, square, small (1mm), large (45mm), UV, visible, IR. Material selection, camera selection, software, coating design, modeling of phase & polarization, mechanical design, process development, quality planning, glass shaping and polishing, optical contacting, cementing and finally testing, testing and testing.

LightMachinery have made a lot of variants but the possibilities and unique requirements are endless, of course that’s what makes it so interesting and challenging to work on these projects. Ask a question!
Not just any welding laser!

With fiber-coupled diode lasers from Laserline, the laser beam with a power of up to 50 kW is transferred to the workpiece through optical fiber. Depending on the actual laser power, Laserline uses optical fibers of 100 μm to 2000 μm in diameter. Diode lasers provide a particularly effective and compact heat source that can be adapted to a wide range of applications by means of add-on components and specialized optics.

Welding Optics:
Because Laserline’s welding optics can be configured flexibly they can be adjusted to different process requirements and boundary conditions, allowing for process results that meet the highest quality demands. Additionally, in case of difficult process conditions, sensors for seam tracking or process monitoring can be integrated.

Different spot geometries possible
Welding with wire feeder and seam tracking
Typical applications: thermal conduction welding & deep welding of metals & non-metals
Additional components: Cross-jet, CMOS camera, welding monitor, inert gas nozzles, pressure stick / pressure roller

Heat conducting welding:
Gentle material processing, excellent seam qualities, no rework – high efficiency!

The process
Heat conduction welding is characterized by low exposure depths of maximal one millimeter, and is mainly used for joining sheets with low material thickness. With heat conduction welding, the laser melts the sheets along the intended joint. The melts of the joint partners merge together and then cool off to the actual welding seam. Thus, hose connections can be realized more quickly and with lower material distortion than with usual welding methods. Additionally, smooth and pore-free welding seams are created that do not need any post-processing. This makes heat conduction welding, especially in visible areas, the method of choice.

Diode lasers’ process advantage:
Laserline’s diode lasers optimize heat conduction welding in a number of ways. The uniform power output and homogeneous intensity distribution (top-hat beam profile) guarantee excellent seam qualities and high process stability. Additionally, there are enormous economical advantages: with a lifetime of more than 30,000 operating hours, in addition to high efficiency and low maintenance effort, Laserline’s diode lasers are clearly superior to other available beam sources.

Keyhole welding:
Smooth and clean welding seams – high stability in rough environments – extremely calm molten pool

The process
With keyhole welding, the material is processed with very high beam intensities. Different to heat conduction welding, a metal vapor is here created in addition to the metal melt that partially displaces the melt and leads to the creation of a vapor capillary (keyhole). The method is characterized by high process speed. The heat-affected zone is always limited, and so the material distortion is accordingly low. What remains is a narrow, evenly structured welding seam with a depth gauge that is often bigger than its width.

The process advantages of the diode laser
A big plus of Laserline’s diode lasers is the calm molten pool that minimizes the amount of metal splashes on the workpiece and laser optic, leading to smoother and cleaner welding seams. With a protection class of IP54, the lasers guarantee (even without the protecting enclosures) process stability in tough application environments. High electrical efficiency of up to 50% and robust technology make Laserline’s systems a reliable and very economical tool for keyhole welding. Designed to last more than 30,000 operation hours, very durable, low maintenance.

WHAT’S IN MY INBOX?
If you enjoy a cool glass of Riesling you are in luck! It has been the star of the 2017 KPMG Sydney Royal Wine Show winning lots of awards. Make sure you don’t miss out – look for the 2017 RieslingFreak No 3 Clare Valley Riesling from John Hughes Wines – and enjoy!