

## MENTAL FORCE

Company: Coherent

Location: Dubai, UAE

A new multimedia show called Mental Force was a major talking point when shown at the 2013 annual conference of the International Laser Display Association (ILDA) which was hosted at LOBO's headquarters in Aalen, Germany. Mental Force is one of the most ambitious and most complex productions ever created by LOBO Studios; it is the first show to combine Hollywood-grade computer animated images, sophisticated composites of sci-fi worlds with green screen recordings, and dazzling laser elements, all tightly integrated into a unified audiovisual experience. Even seasoned laser artists and other industry veterans were left spellbound watching this next-generation multimedia show, which will soon be featured at several amusement parks in Japan.

Before Mental Force, creators of high power computer animated video have often omitted laser effects their productions. And conversely, creators of laser shows have at most incorporated animated video in a somewhat rudimentary manner; yes these shows incorporated lasers images and computer graphic images, but they did not include images and effects that combined these technologies. The reason is historic. Original laser light displays simply involved projecting a laser beam on to a flat screen or domed ceiling. Patterns and effects were created by either rapidly modulating and scanning the beam, or passing it through lumia. The latter are textured glass or plastic filters which cause visually interesting distortions. Light shows then branched out with 3D atmospheric effects where the entire length of the laser beam can be seen by projecting it through theatrical fog or pyrotechnic smoke. It was soon realised that with fast scanning projectors and the appropriate control hardware, static and animated images could be created on all types of surfaces including the ever popular water screen, using one or more laser spots. Chris Ward was a key industry pioneer in this development of laser animated graphics; he enabled the widespread and straightforward use of these laser animations by means of a plug-in for regular 3D animation software. Many laserists still use this approach today because it is undoubtedly the simplest, most economical method of creation laser animations. And at first it even enabled some primitive combination of lasers with video. For example, Chris used the technology to outline parts of video images using lasers. However, this plug-in convenience eventually turned out to be a double-edged sword; it lowered the barrier for laser animation but at the same time limited the complexity of this animation. This was unfortunate as the limited colour palette of early lasers was finally being expanded by the availability of modern solid state devices at multiple wavelengths across the visible spectrum, particularly those based on optically pumped semiconductor laser (OPSL) technology such as the Coherent Taipan series of lasers.

In this context, one of the authors (AH) remembered a conversation over a decade ago with Chris Ward about combining lasers with video graphics. It seemed to AH that the use of lasers when combining them with video, had to provide a significant additional "wow" value in terms of amazing the viewers and clients, so that they would be willing to pay for the additional use of lasers in these shows. On the other hand, if lasers could only be used for minor image enhancement, then the impressive developments in video complexity (e.g. 3D, virtual reality) and brightness meant that the incremental benefit of lasers could not justify the cost. Indeed, Chris' company and several others eventually abandoned the use of lasers altogether and focused on computer animated video only.

At LOBO we took a different approach. We wanted to take full advantage of the new vivid colours from OPSL technology and go far beyond the constraints of the simple plug-in laser graphics card to create advances in laser effects that would be seen by the typical non-technical viewer as just as impressive as state-of-the-art animated video effects. Moreover, we wanted to then combine the laser and video effects in a way that would produce unique shows that justified the additional hardware and software. We recognized that this would take major efforts in both technology and creative implementation.

Mental Force is really the first true result of this effort which has taken almost 10 years of research and development, using the latest video software / hardware and new, brighter lasers with providing increased colour versatility. This innovative show relies on high resolution computer animated video and a single LOBO Sparks laser projector. The entire show is programmed, controlled and coordinated

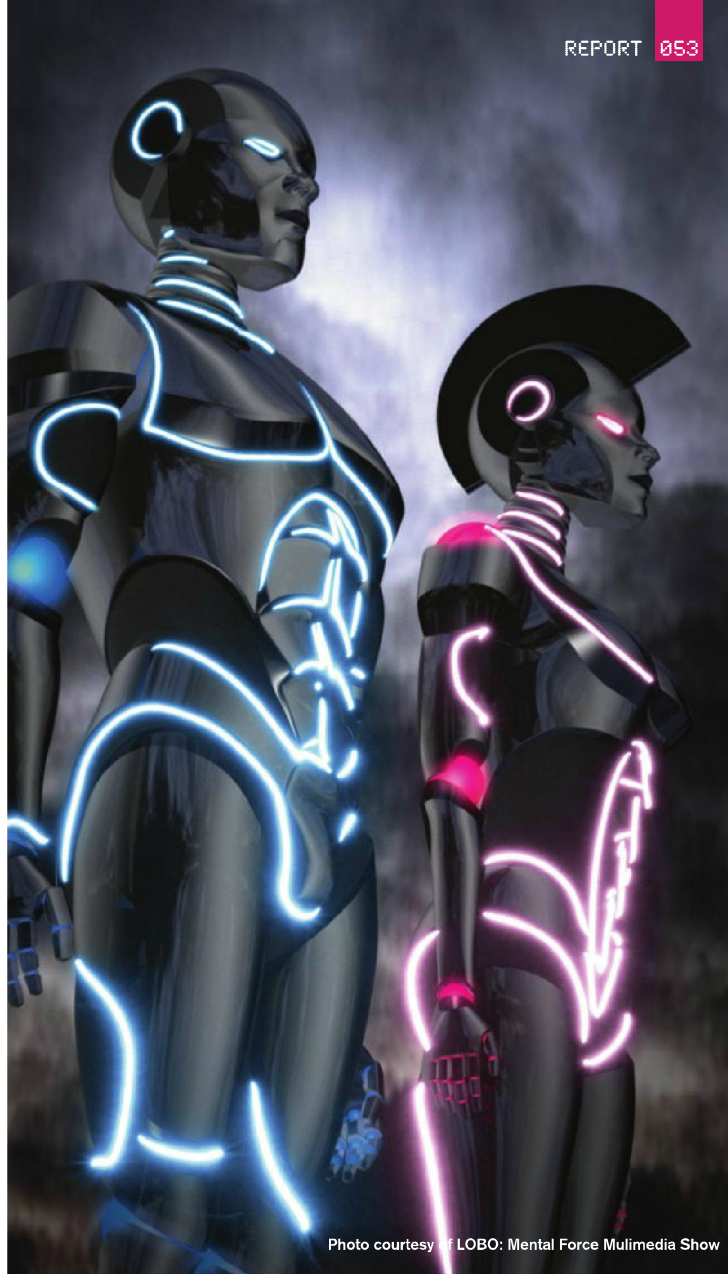


Photo courtesy of LOBO: Mental Force Multimedia Show

using a LACON-5 laser workstation.

The Sparks laser projector is a modular workhorse projector that can be configured with several lasers. Red, green and blue are the most common combination, but an extra red laser is often included to compensate for the weaker eye response in the red, and sometimes one of the new colours provided by OPSL technology such as a yellow laser at a wavelength of 577nm. Nearly all the projectors we use at LOBO (including in Mental Force) incorporate the Taipan series of lasers from Coherent. They provide the brightness and range of colours that are essential to add wow value to today's high power video. In addition, they produce a narrow beam with superior pointing direction enabling precise registration between video and laser images with no possibility of jitter or blurr for the viewers. And lastly, these reliable all solid state lasers are very efficient with low power consumption, minimising the carbon footprint of shows like Mental Force. To summarise, the authors believe that Mental Force represents a new direction in multimedia light shows, where the creative team use the latest capabilities of computer animated video and combine these with a new generation of laser effects to deliver a result that any viewer will readily see is far superior to using just one of these technologies alone. Based on early feedback from industry insiders and target audiences, we expect the success of Mental Force will spawn a new generation of such shows, following the long tradition in our industry of meeting the evolving expectations of Generation X viewers through continuous innovation in light show entertainment.

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