

Planetarium Hamburg reopening with a new State of the Art Laser System by LOBO

LOBO supplies Laser System Solution for Planetarium Hamburg

On February the 14th 2017, after 18 months of reconstruction, the Planetarium Hamburg reopened its gates again. Prominent people like Hamburg's first mayor Mr. Olaf Scholz or the Senator of Culture Dr. Carsten Brosda were invited to marvel the inside of the Planetarium. "We the people of Hamburg don't like to act up but we like to have theaters. This beautiful old water tower is our biggest sky opera." stated Scholz. With a budget of almost 10 million Euros the star theater has been completely modernized and equipped with the latest technology.



The center piece – the laser- and multimedia technology – has been provided and installed by LOBO in record time just a few weeks before the reopening.

With one of the biggest and most modern show laser systems on the planet, LOBO is creating magical moments and an unforgettable 360-degree experience under the star dome. For one, this high-tech laser system consists of the optically pumped ultra-bright sparks® laser series – the brightest laser system on the planet.

With the laser modules in the basic colors Red / Green / Cyan / Blue,



over 16 mio. colors can be generated by means of intelligent color mixing. Those modules are mounted in the so called sparks® PowerDeck and con-

nected with the laser projectors inside the star dome via fiber optics.

The sparks® PowerDeck is a very special novelty – a laser light server, that

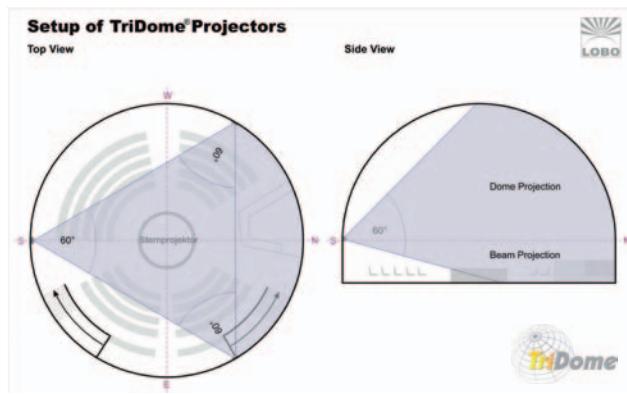


sparks® PowerDeck ultra bright Laser System

provides enough slots for up to eight optically pumped ultra bright sparks® laser modules. The common typical problem of dust contamination on the optics does not occur with the PowerDeck. This is because LOBO separated the air stream inside the PowerDeck, (necessary for cooling the lasers) from

the optical components. An additional benefit of the PowerDeck is the individual and easy extensibility. The PowerDeck works trouble-free from a room next door, leaving the sensitive dome acoustics void of distracting background noises. The special situation at the Planetarium Hamburg: The size of

the intended PowerDeck hosting room was quite small for the usual horizontal positioning of the device. Therefore the ambitious LOBO engineers designed a frame that allowed a vertical positioning of the PowerDeck.



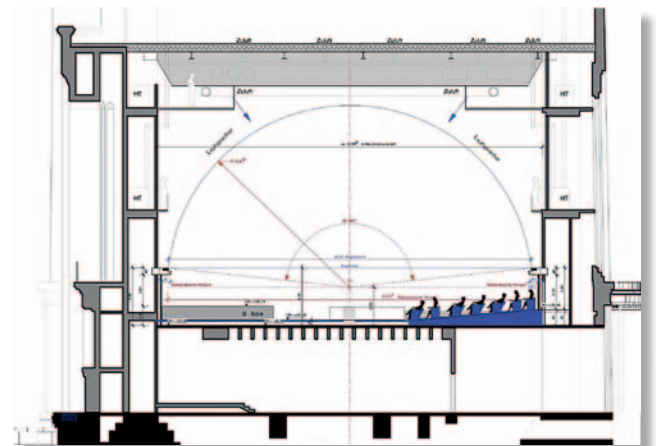
The sophisticated LOBO TriDome® system generates spectacular, high-precision and genuine 360-degree-real full-dome projections. This TriDome® system does not merely create less disturbing picture transitions, it also provides a highly increased show experience. The system consists of three laser projectors which are mounted at a angle of 120° with respect to each other at the horizon of the dome. With the application of a sophisticated real time geometric correction



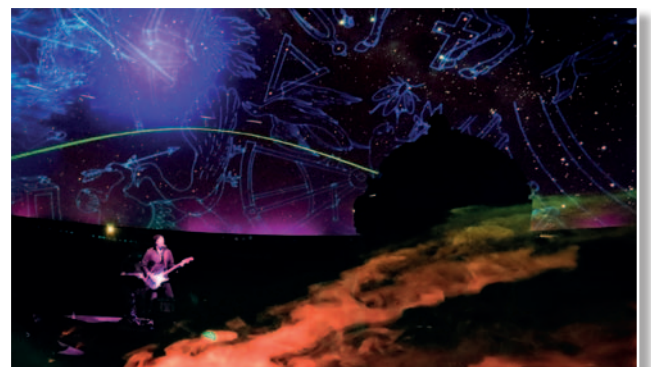
and a new kind of digital projectors, this method is presently the only technical solution which offers the necessary precision for seamlessly overlaying pictures of the star projectors as well as the All Dome video projection systems. In addition to that, the same projectors are in the position to generate impressive three-dimensional beam spectacles which abduct the spectators into a world created by laser light.

“By means of the TriDome technology, coordinate systems

become precise, i.e. matching to celestial bodies in form of a network of parallels and meridians displayed onto the dome. An ideal media for the training of astronavigation and for a comprehensive and didactical correct explanation of important motions of our earth in the universe. Sceneries always dreamed of can be realized now – the view from the earth’s core through a “transparent earth”, the outlines of the continents and cities assigned to the corresponding



zenith stars is projected absolutely matching with the stars of the Zeiss planetarium projectors and other full-dome projections. Everybody can imagine which enchanting sceneries could be created with laser graphics following precisely the star constellations, the supporting lines and the stories of different constellations without appearing blurred or diffuse. This could be animating for children, theater performances and for scientific simulations.” said Thomas W. Kraupe, Consultant, Astrophysicist and Director of Planetarium Hamburg.



Additional laser projectors are positioned inside the dome.

Two of them are on full-motion robotic arms which can also be lifted up pneumatically on demand. They are used to create beam effects that appear especially three-dimensional. Laser Projection Robots probably are one of the most spectacular ways to stage laser performances in close reach of the audience. The look of the robot and its multi-dimensional movements, combined with



projection robot ROB-1



laser projectors on two full-motion robotic arms © Planetarium Hamburg / Fotografenwerk Hamburg

the advantages of being able to project in all directions, adds an innovative touch to product displays or to didactic installations, such as for example in planetariums.

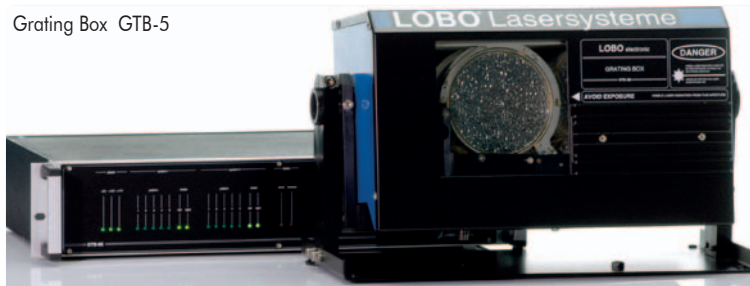
The Projection Robots are fed externally with laser light by means of glass fibers and can also be mounted on pneumatic lifts or linear drives.

Two further laser projectors, fiber-supplied Grating Boxes, are placed in the dome, one at the north side and one at the south side of the dome. For fiber-supplied systems, the projector housing itself can be reduced to a very compact size. The Grating

Box is a very special unit of its kind, equipped with a grating effects section which allows manifold modifications of scanned graphics by means of effect gratings.

Unequaled by LOBO's competition the Grating Box features 10 **frameless** transmission gratings, hence no dark spot interruptions. The Gratings are swiveled within less than 0,5 s into scanned graphics by means of linear-magnet catapult drives, equipped with a noise-reducing shock absorbing system.

Grating Box GTB-5



A continuously adjustable bidirectional rotation of grating disks driven by two independent motor systems, allowing the combination of up to two grating effects simultaneously, ensures most phantastic effects and turns the box into a quite unique piece of technology.



The Grating Box has an external mount for glass fiber input coupler, equipped with a dust-protective antireflective input window. The angle adjustment mechanism around the optical axis allows the installation in any position. Another feature of the laser system in the Planetarium is LOBO's LACON-5® programing- and control unit. LACON-5® works with a realtime-optimized UNIX-system with micro kernel structure, as it is frequently used in safety-critical applications, such as cash dispensers or space craft control systems. "Blue Screens" and unpredictable drops in the system performance familiar from conventional PCs are void. A completely modularized hard-

ware concept with almost unlimited extensibilities, a digital data control developed in cooperation with the European Community as well as an open software solution, which can be operated intuitively, characterize this system. This hybrid parallel multiprocessor Laser- and Multimedia Workstation is the central command management unit of the entire laser installation, and additionally, all laser shows can directly be programmed on it. Again, the signal distances were easily overcome with LOBO's standard optical signal transmission by Digital Data Link DDL-2®, spiced up with its system inherent safety logic and its ability to remote access to all connected DDL-2® devices. It was just

the perfect option for overcoming long distance signal carriage, contrary to copper cable solutions.

But the LACON-5® is capable of even more: very often, the controller orchestrates entire multimedia shows with fire- and water effects, fog generators, lighting and sound etc.

So the Planetarium now is perfectly set-up for the coming future – not just architecturally, but also on technical level. It provides a much more breathtaking star experience than ever before.

So, a visit is highly recommended to every space- and multimedia enthusiast.