

# 风景园林

Landscape Architecture



专题：数字技术与风景园林

Special: Digital Technology and Landscape Architecture

十字架海角地中海俱乐部景观修复

Tudela-Culip (Club Med) Restoration Project in 'Cap de

Creus' Cape

神奇玉米屋

Tourner autour du Ried

01/2013

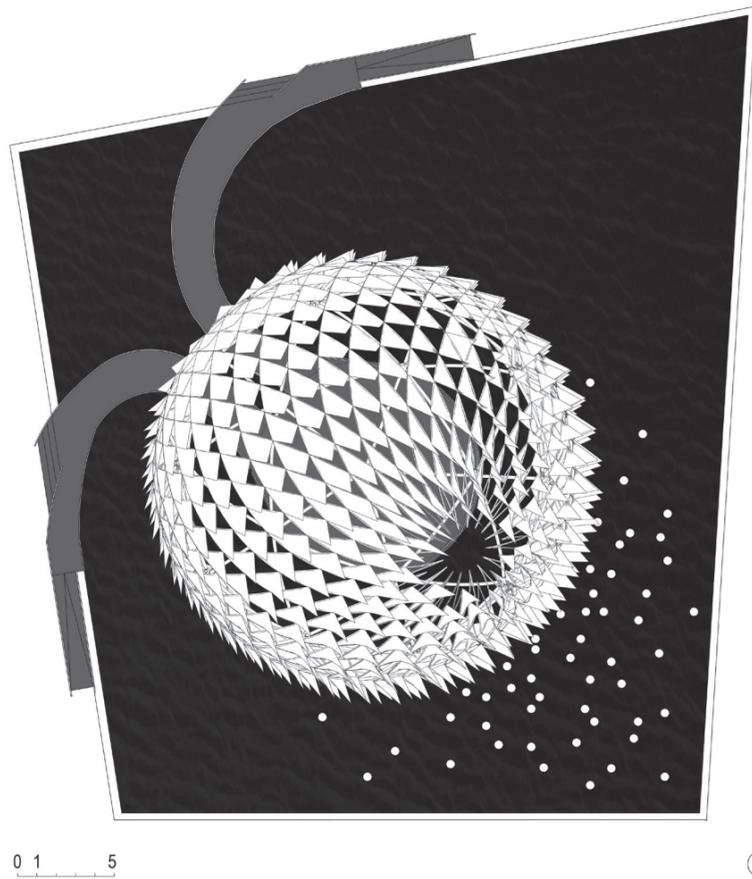


图01



图02 万灯喜月剖面图

Fig.02 Golden Moon Section

图03 万灯喜月立视图

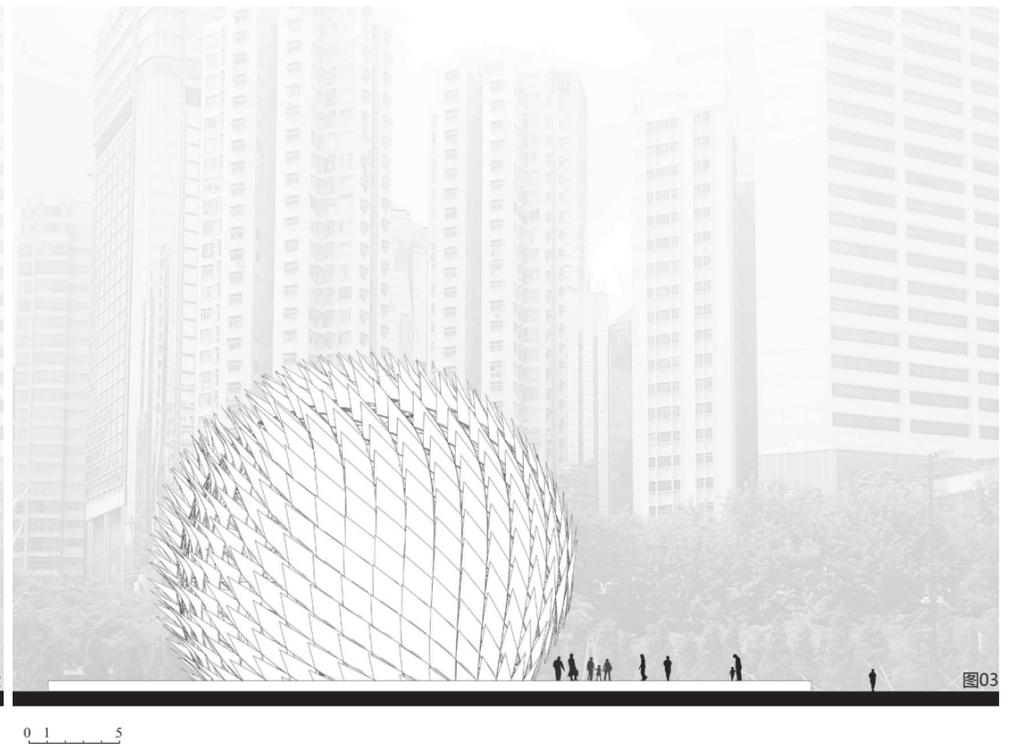
Fig.03 Golden Moon Elevation

图04 万灯喜月远景照

Fig.04 Golden Moon Distant View

图04 万灯喜月远景照

Fig.04 Golden Moon Distant View



## 万灯喜月(2012,香港)

### Golden Moon (2012, Hong Kong)

万灯喜月是一个探索如何将香港独有的建筑传统和技艺与现代设计技术相结合继而创造出引人入胜的公共活动空间的临时性建筑。万灯喜月在香港旅游发展局主办的2012中秋彩灯大观园设计比赛中荣获金奖并在香港维多利亚公园进行了为期6天的展览。

万灯喜月重温了中国传统灯笼概念并使人直接联想到嫦娥的传说——这两个元素都有着浓厚的中秋节氛围。此项目以嫦娥和后羿于月圆之夜团圆的爱情故事为蓝本，构建了高6层楼，包覆抽象的炽热火焰色彩及图案的大型圆月灯笼来寓意这对夫妻团聚之时的炽热情感。灯笼置于水平如镜的水面上，可容纳150人进入，置身其中可以体验到极佳的声音和灯光效果。

传统制作灯笼的材料，如透光布料、金

属线和竹条被重新演绎。轻钢球顶为灯笼的主体结构并且是电脑计算出的竹格的基础。竹格由香港独特的竹棚技术搭建，因此该项目即由传统工艺与现代精准科技合作而成，准确地安装和弯曲竹条形成网格包裹轻钢球顶。网格上覆以如焰似火的弹力布并全部用LED灯光点亮。

竹格和火焰由电脑计算密铺模式，达到球体横轴一致，末端多变的效果。渐进的变化结合俯冲和充满活力的曲线使空间更加活泼生动。通过将包裹的网格轴倾斜而非垂直，使圆顶拥有不对称的方向性。设计师将圆球的纵轴倾斜，并以纵轴末端为入口，吸引参观者进入其中，之后沿着网格的切线和向量走出。黑色涂漆钢结构的顶部使用了8种颜色饱满的弹力布用以表现绚烂的火焰。由

倾斜的底部至顶端，色彩从象牙黄色渐变为强烈的橙色，再到红色和深红波尔多。明快的色彩及多变的几何组合更加烘托出夜色光影下美轮美奂的仙境氛围。

万灯喜月的建造基于探索“建筑简约性”，即用最简洁的方式建造复杂的几何和空间。在这项研究中设计师战略性地将数字设计技术，如计算机编程或数控加工与传统手工和基本材料相结合。项目中，独特的几何体由程序性的计算机建模设计而出：斜肋构架包裹的球体根据斐波纳契数列计算和密铺，之后以特别设计的编码制作出简洁的图纸让工匠能够清晰地明白钢架及竹棚之间的结合点。图纸中考虑了传统竹棚建造的公差。此外，独特的“火焰”弹力布的应用种数由470种减少至10种不同的可以延展和适应

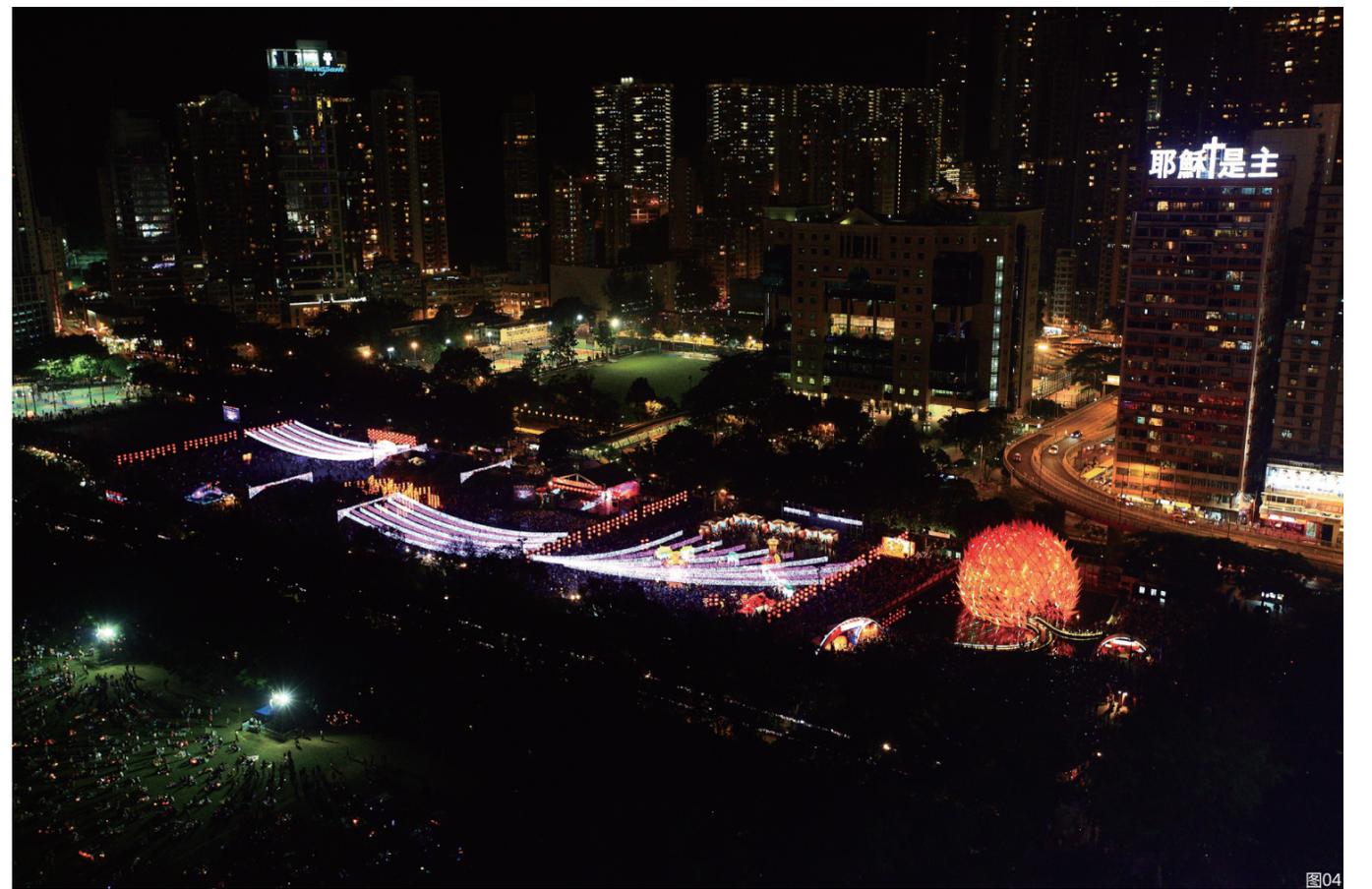


图04

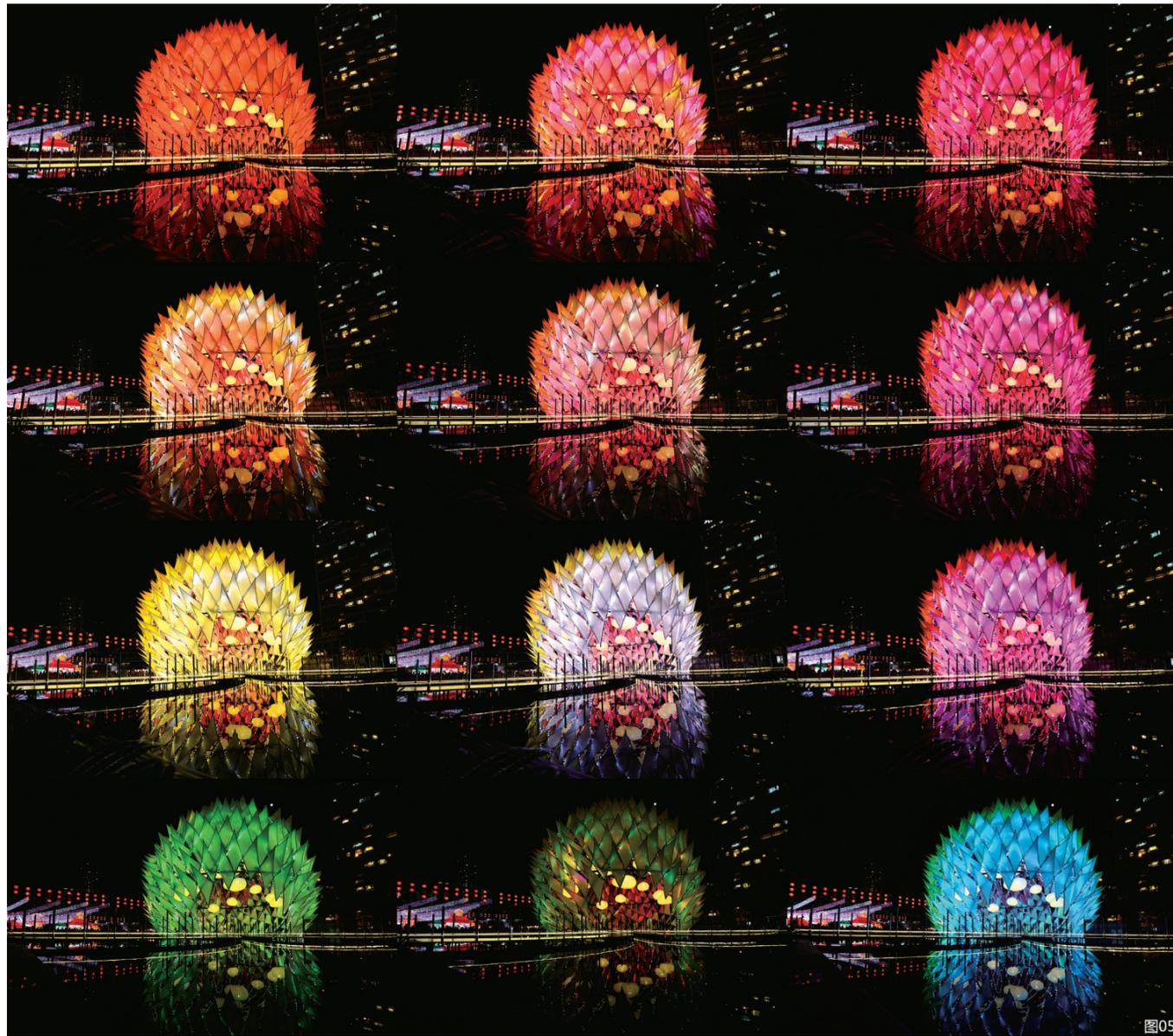


图05

各种条件的布料。所有的细节和施工步骤确保了在这个高6层楼的建筑可用短短11天的时间快速建成。为使项目在有限的时间内成功完成，在最初阶段就要和工匠进行良好而密切的沟通。项目各方都需要放弃先入为主的建筑方法和熟悉的施工技术，因为数字和现实世界都需要一个新的设计和建筑。该项目体现出另一种数字化设计的方式，可将现实中如时间有限、低预算、低精度、人的灵活性和特殊的创造性等条件构建成一个更为人性化的环境。

万灯喜月在夜晚向公众开放，无论观者置身于展馆何处都可以享受到无与伦比的声

光表演。灯光秀包括一首预先精心编排的3分钟主曲目，每15分钟播放一次并与一首12分钟间奏曲相交替。3分钟的节目中，大部分灯光设计都适合远观，远望万灯喜月就像是一个孤立的存在。在圆顶内这些图案变得更加抽象，带领人们进入另一个由声光和色彩创造的世界。12分钟间奏曲使用了非线性、非重复性色彩模式，生成类似于自然界中的鱼群或鸟群植绒图案，营造出展馆鲜活的印象，为游览者带来多样的精彩体验。

万灯喜月仅用11天就建造完成，展示出通过将最先进的数字化设计技术与传统的手工艺结合，复杂的几何体可以用最简单的方

式高速低成本地建造。它通过扎根于现实的实践重新审视了数字化设计。在2012年中秋节为期6天的展览时限内，万灯喜月以卓越的空间、结构、色彩、质感及灯光得到了近50万人的光临及赞赏。

竞赛设计：高仕棠 (Kristof Crolla of LEAD) 及 亚当·芬格尔特 (Adam Fingrut)

项目位置：香港维多利亚公园1号足球场

展览时间：2012年9月27日至2012年10月2日

项目管理：LEAD, www.l-e-a-d.pro

项目管理团队：LEAD高仕棠、赛思田·德拉葛兰治、丹尼斯·郭、肯尼思·张和陈伊莎以及尼古拉斯·伯纳、克里斯·李 (安斯罗佩德茨事务所) 宝琳娜·刘 (APT工程咨询有限公司)

施工团队：致峰建筑有限公司 (主承包商), Fonkwang

Development Ltd. & 广州广船国际股份有限公司(钢材), Wing Yick Scaffolders (竹棚), Wings Design Production Ltd. (布料), LED 艺术设计工作室 (LED灯)

灯光及音乐设计：LED 艺术设计工作室

影片链接：

官方视频：[http://www.youtube.com/watch?v=t\\_W-O7EiiHuk&feature=relmfu](http://www.youtube.com/watch?v=t_W-O7EiiHuk&feature=relmfu)

幕后制作：<http://www.youtube.com/watch?v=2GPN1gEPZ8g>

撰文：LEAD

翻译：杜婉秋

图片来源：图01-03由LEAD提供；图04，图09由 凯文·吴 (Kevin Ng) 拍摄提供；图05-06，图08由格兰迪·刘 (Grandy Lui) 拍摄提供；图07由帕诺·卡罗洛鲍罗斯拍摄提供

The Golden Moon is a temporary architectural structure that explores how Hong Kong's unique building traditions and craftsmanship can be combined with contemporary design techniques in the creation of a highly expressive and captivating public event space. It is the 2012 Gold Award winning entry for the Lantern Wonderland design competition organised by the Hong Kong Tourism Board for the Mid-Autumn Festival and was on display for 6 days in Hong Kong's Victoria Park.

The Golden Moon revisits the concept of a Chinese lantern and makes a direct link to the legend of Chang'e, the Moon Goddess of Immortality-two elements strongly associated with the Mid-Autumn Festival. According to the romantic story Chang'e lives on the moon, away from her husband Houyi who lives on earth. The couple can only meet on the night of the Mid-Autumn Festival when the moon is at its fullest and most beautiful. To symbolise the passionate love burning between the reunited couple that day, the 6-storey-high, spherical moon lantern is clad with abstracted flames in fiery colours and patterns. The lantern is placed in a reflection pool and is made large enough for up to 150 people to enter and be fully immersed in the sound and light experience.

Traditional materials for making lanterns, such as translucent fabric, metal wire and bamboo, have been translated to a large scale. A light-weight steel geodesic dome forms the pavilion's primary structure and is the basis for a computer-generated grid wrapped around it. This grid is materialised through a secondary structure from bamboo. For this, Hong Kong's traditional bamboo scaffolding techniques were used-a high-speed, instinctive way of building scaffoldings for e.g. the city's many skyscrapers. This highly intuitive and imprecise craft was merged with exact digital design technology to accurately install and bend the bamboo sticks into a grid wrapping the steel dome. This grid was then clad with stretch fabric flames, all lit up by animated LED lights.

The bamboo and flames follow a pattern based



图05 灯光秀

Fig.05 Light show

图06 入口夜景

Fig.06 Entrance by night

图06



图07

on an algorithm for sphere panellisation that produces purity and repetition around the equator and imperfection and approximation at the poles. This gradual change, combined with the swooping and energetic curves that define the geometry, creates a very dynamic space that draws spectator's view up towards the tip. By putting the axis of this cladding grid not vertical but under an angle, the dome gets an asymmetric directionality. This motion is reinforced by the entrance which is placed along this tilted axis to draw people into the sphere and where they get swept away along the grid's tangents and vectors. The colouration of the pavilion amplifies this effect of submergence in a light wonderland. On top of the black painted steel structure, which forms a neutral base, eight different, saturated colours of stretch fabric are used for the flames. The colours gradually range from ivory and yellow to intense orange, red and deep bordeaux. The brightest colours are used at the tilted base whereas the darkest colours are used at the pole where they, together with the more scrambled geometry, make the pattern disintegrate into the black night sky.

The Golden Moon builds up on research into "building simplicity", the building of complex geometry and space using the simplest of means. In this research we strategically combine digital design techniques, such as computer programming or CNC fabrication, with traditional crafts and basic materials. In this project procedural modelling techniques were used to control the production of the unique geometry: a sphere that is wrapped with a diagrid according to a Fibonacci sequence that produces order along the equator and randomness at the poles. Code was used for the production of simple drawings that would allow the labour force to mark up intersections between the steel structure and bamboo easily. These drawings took traditional bamboo scaffolding construction detailing into consideration in the definition of installation tolerances. Optimisation scripts were finally used to reduce the amount of unique stretch-fabric "flames" from 470 different units to 10 different types that could stretch and adapt to the various conditions in which they were applied. All details and construction procedures were devised to allow for a high-speed production as only 11 days of onsite



图08

construction were available for this 6-storey-high pavilion. To bring the project to a successful end within the limited time available, a very close conversation with the craftsmen was required from the beginning. Preconceptions of building methods and familiar construction techniques had to be abandoned by all parties as both the digital and the material world demanded a new design and building set-up to be devised. This project shows an alternative way for digital design to be materialised into a more humane environment with real-world conditions like limited time frames, low budgets, minimal precision but human flexibility, creativity and ad-hoc inventiveness.

The Golden Moon was opened to the public in the evening and displayed a sound and light spectacle visible both from inside and outside the pavilion. Around 150 people could walk through the lantern simultaneously. The light show consisted of a main, fully pre-choreographed show that plays for 3 minutes every 15 minutes and was alternated with a 12 min intermezzo. For the 3 minute show large scale patterns had been designed specifically to be comprehensive from a distance from where the dome can be seen as an isolated

object. Inside the dome these patterns became more abstract and submerged people into an alternative world of sound, light and colour creates. The 12 minute intermezzo was developed using non-linear, non-repeating colour patterns from "agents" or "boids" that generate flocking patterns similar to those found in nature in schools of fish or flocks of birds. This was done to give the pavilion the impression of being alive and create variety of the user experience throughout the evening.

The Golden Moon was built in only 11 days and shows how, through a combination of state-of-the-art digital design technology and traditional hand craftsmanship, complex geometry can be built at high speed and low cost with the simplest of means. It rethinks the premise of digital design by anchoring the paradigm in a strong materiality. With nearly 500,000 visitors during its 6-day lifespan, the pavilion used its dynamic space, structure, colour, texture and light to trigger a sensuous response from visitors of 2012's Mid-Autumn Festival.

Competition Design: Kristof Crolla of LEAD & Adam Fingrut  
Location: Victoria Park, Football Pitch 1, Hong Kong S.A.R.

Opening Dates: 27 September 2012 to 2 October 2012  
Project Management: Laboratory for Explorative Architecture & Design Ltd. [www.l-e-a-d.pro](http://www.l-e-a-d.pro)  
Project Management Team: Kristof Crolla, Sebastien Delagrangue, Dannes Kok, Kenneth Cheung and Yi Sa Chan of LEAD, and Nicholas Benner, Chris Lee (Anthropods Associates Ltd.), Paulina Lau (APT Engineering Consultant Ltd.)  
Construction: Free Form Construction Co. Ltd. (Main Contractor), Fonkwang Development Ltd. & Guangzhou Shipyard Company Ltd. (Steel), Wing Yick Scaffolders (Bamboo), Wings Design Production Ltd. (Fabric), LED Artist (LED)  
Light & Sound Design: LED Artist  
Video Links:  
Official video: [http://www.youtube.com/watch?v=t\\_W-07EiHuk&feature=relmfu](http://www.youtube.com/watch?v=t_W-07EiHuk&feature=relmfu)  
The Making Of-video: <http://www.youtube.com/watch?v=2GPN1gEPZ8g>  
Text: LEAD  
Translation: DU Wan-qiu  
Photo Credit: Fig.01-03LEAD; Fig.04, Fig.09 Kevin Ng; Fig.05-06, Fig.08 Grandy Lui; Fig.07 Pano Kalogeropoulos

图07 白天室内透视图

Fig.07 Interior perspective by day

图08 夜晚室内透视图

Fig.08 Interior perspective by night