

新加坡 灯光设计，同时 “照”顾功能和 环保

Singapore

Lighting solution illuminates
no trade-offs between
functionality and sustainability

效果良好又环保的灯光解决方案是很难在场景复杂的工作环境找到的。通过精心的统筹安排和与各有关方的通力合作沟通，渣打银行办事处员工最终可以享受到舒适和可以提高效率的工作环境

图1：咖啡厅和学习中心的接待处

Picture 1: Cafe and Learning Centre reception

Effective yet environmentally conscious lighting solutions for an enriched workplace may seem hard to find. With innovative planning and close collaboration between the design consultants and various stakeholders, Standard Chartered Bank has accomplished satisfying workplace design results for its Singapore offices

As part of Standard Chartered Bank's consolidation of their Singapore premises, "Standard Chartered @ Changi" is a recently-completed built-to-suit facility that houses approximately 2000 staff within 225,000 square foot of new office space over six levels. The new workplace has been widely acclaimed as the Bank's new design standard in terms of sensitivity to its branding, space planning principles, design principles and addressing agile work practice. A specific set of colors and cultural references are applied per floor to give a strong sense of identity to each. This re-enforces and complements the diverse and inclusive culture of the Bank.

Interior and lighting design concept

The client, Standard Chartered Bank, defined "interaction and collaboration" as key design principles for their new premises with the aim of enhancing the working and learning experience. The Australian design company, Woodhead, addressed this by providing planning which enhances communication within and across business units, promoting meetings and ensuring a more collaborative and connected team environment. To translate it into lighting terms, the lighting designer needed to review all base-building areas and ensure that the general "open-plan" office lighting would provide high-comfort, glare-free, optimal conditions for corporate workplace and meet the energy and sustainability levels. The desired result was achieved by using a mixture of lighting techniques, such as

orientation points, creating vertical brightness to special wall treatments such as graphic panels.

Interchange hubs

The lighting consultant International Lighting Architects Bureau (iLAB) blended the interior with the outside environment, to provide a 'sense' of the outdoors (picture 3) in this area and give the worker a sense of relief from the open plan office. To achieve the desired effect, the designer "blended" the ceilings at the glass façade area with the bright outdoor sky and placed diffuse back-lit ceiling panels with 6500K daylight colour fluorescent lamps. These high-brightness daylight light-panels are more dense near the façade and gradually decrease in number the deeper into the interior they get (picture 2).



2



3

图2: 非洲主题的互动港湾

图3: 互动港湾, 非正式会议和工作区域

Picture 2: Interchange hub on Africa-themed floor

Picture 3: Interchange hub, informal meeting team hub and alternate workplace

作为渣打银行办公地点的合并项目的一部分, 由原有的12个不同的地点合并成2个。其中之一的“Standard Chartered @ Changi”商业园区的一幢6层高, 225,000公尺的写字楼被选为渣打银行2000名员工新的工作地点。新的办公楼体现了渣打对内部品牌管理、空间筹划原则、设计原则和灵活工作空间全新的设计标准。其中特色之一的是每一楼层都被设计师安排了一套颜色来界定出很强的视觉身份。

室内和灯光设计

渣打银行要求设计师以“互动和合作”为新写字楼主要的设计原则, 从而提高工作和学习效率。本项目的室内设计公司是来自澳大利亚的 Woodhead, 通过促进跨部门的交流, 灵活的临时会议和紧密的团队环境来回应客户的要求。另一方面, 设计师还客

户要求在办公场所的多种内饰元素上, 强调了银行的国际化文化。灯光设计师把客户的要求转换成灯光设计的语言和手法, 需要全面地评估一层的基本建筑结构从而确保“开放式”办公区域具有舒适、无眩光、最优化、节能及环保的照明。设计师所用的手法主要有横向延伸, 纵向点亮特殊墙面图画等。

互动港湾

在互动港湾, 职员可以舒服的坐下开展各种讨论。灯光设计事务所 iLAB 融合了室内外的环境来制造一种室外的感受(图3), 用以舒缓职员在办公区的紧张情绪。设计师将玻璃窗部分明亮的天空和天花上分散式的背照日光灯(6500 K)“搅拌”在一起。这些荧光灯板所发出的光在玻璃窗附近强一些, 向室内逐渐变弱(图2)。

开放式办公区域和会议室

渣打银行的办公区域的“国际标准”是开放式办公区域的桌面照度至少要有400勒克斯。这是通过使用索恩的内置低亮度的反射凹槽结合 OSRAM T5荧光灯来实现的。日照的眩光是写字楼面对的另一问题。日光的控制主要通过手动的窗帘或者路创的日光感应器来实现的。在夜间, 办公区域是由路创的双重科技(红外线及超声波)动态感应器控制, 在较少人使用办公室时尽可能减少光和能源的浪费。

小型会议室的玻璃墙能提升办公区域的通透感而且将统一的光效延续到会议室(图4)。视频会议室的灯光场景共有4个, 其中最复杂的要数视频会议场景了。它不仅要求室内全面拥有高亮度的垂直照明, 从站立的头高到坐着的头高都需要有足够的亮度以确保摄像头可以清楚地“读”到面部特征及表情。“想要

Open plan workplaces and meeting rooms

Standard Chartered's 'Global Standard' for open-plan office is 400 lux minimum at desk level. This was achieved with Thorn Lighting recessed troffers with low-brightness reflectors and high output T5 fluorescent lamps from OSRAM. Glare from daylight is another issue for office building. During the day, daylight is controlled mainly by shades operated manually and in some cases via daylight sensors. During the night, open plan office areas are controlled via Lutron's dual-technology (Infrared + Ultrasonic) occupancy sensor to minimize light and power wastage when office-use or occupancy is lower. The transparency of the meeting room glass walls gives a strong sense of openness to the workplace while making it

easy to 'blend' and maintain similar lighting effect throughout (picture 4). There are four different 'scenes' in the lighting system control in the Video-Conference Meeting Rooms to dim the light if needed. The most complex one is for Video Conferencing. This scene requires a high level of 'vertical-brightness' across the whole room, from 'standing' head-height down to 'sitting' head-height to ensure the cameras 'read' facial features and expressions clearly. "For this to happen successfully it is very important that the surrounding walls and vertical screen brightness are within the same 'brightness-zone', for example, of a similar luminance (usually below 1:5 ratio with 1:3 ratio our target)," explained Kevin Sturrock, Principle Director from iLAB. To achieve this, iLAB has further

advised the client and the interior designer on the best wall finish types; table surface colors and worked closely with the AV consultants to minimize reflections on the giant screens used. All lamps are 3500K with good color rendering (Ra 90+). The Lutron GRAFIK 7000 centralized lighting control system has made such interchange of scenes possible with just a touch of button on the wall-mounted keypads. All buttons on the keypads are engraved with scene names. This system also includes occupancy sensors and daylight sensors. Together with the AV system, it can save energy by turning off all the lights when the room is not in use and to dim the lights when there is abundant sunlight.



到达这样的目标，最重要的是周围的墙面和垂直的照度，通常情况下比例小于1.5，以1.3 为我们的目标”来自 iLAB 的灯光顾问凯文·斯特罗克这样解释到。为了达到预期的效果，斯特罗克还进一步向客户和室内设计师提出例如墙面的最终效果和桌面颜色方面的建议，并与 AV 顾问紧密合作以减少大屏幕上的反光。所有的灯具具有3500K 的色温和良好的显色性（Ra 90+）。路创的 GRAFIK 7000集中式照明控制系统可以实现些场景的切换，只需一按墙控器。为了确保用户按到正确的按钮，所有的按钮都刻有场景名称。这个系统亦包含日光感应器及动态感应器，与 AV 系统相协调运作，整个系统可以通过当房间无人使用时会自动关灯，当阳光充足时则调暗室内的灯光等措施来节约能源。



咖啡厅和餐厅

为这些休憩的场所，设计师想要创造一种“亲切好客”的感受，使用了更具装饰性质的带有可调光节能灯的节能吊灯（图5）和白色3000K 的 LED 下射灯。内置的 T5荧光灯在特制的暗槽提供了连贯、无影、无热点的线形光，并为地面和座位高度的空间提供了30%的所需亮度（图1）。GRAFIK 7000 灯光控制系统可以因应户外日照度而调节室内灯光，为咖啡厅提供舒适的照明。

持续发展

渣打银行从项目开始至终致力于为员工提供环保的设计及最理想的照明环境。研究证实适当地引入日光，再加上在合适的亮度下工作，员工的生产力可大幅提高。使得 Standard Chartered @ Changi 的主楼已被新加坡建筑及建设局（BCA）授予环保白金绿标证书（Environmental Platinum Green Mark Certification）。本项目已正在申请美国 LEED 的金牌证书。总而言之，这个项目精心策划的照明设计及控制解决方案可算是环保及高效率工作环境的示范。■

项目信息 Project Information

项目名称 Project Name:	渣打银行（新加坡） Standard Chartered Bank, Singapore
室内设计 Interior Design Consultant:	Woodhead, www.woodhead.com.au
灯光设计师 Lighting Specialist:	凯文·斯特罗克 Kevin Sturrock
灯光设计室 Architectural Lighting Design Consultant:	International Lighting Architects Bureau, www.ilab.ac
灯光控制系统 Lighting Control System:	路创 GRAFIK 7000 集中式灯光控制系统 Lutron GRAFIK 7000 centralized lighting control system www.lutron.com

Café and cafeteria

As break-out spaces and places for casual gatherings, the designer wanted a more ‘hospitality’ feel in the café and cafeteria. More decorative and pendant lights (picture 5) were introduced with lighting sources such as dimmable CFL for the pendants and white 3000K LEDs down lighting. Concealed T5 fluorescent lamps were used in specially designed coves to create continuous, shadowless, hotspot-free linear light-spread, which provides 30% of the required luminance level at floor and bench level (picture 1). The GRAFIK 7000 lighting control system was set to respond to the natural light levels outside and provide pleasant levels suitable for café-dining and informal meetings.

Sustainability

It was clear throughout the process that Standard Chartered Bank was committed from the inception of the project to provide their staff with an environmentally responsive design and the best lighting environment. It has been proven that with the right light level and proper harvesting of daylight, employees’ productivity can increase substantially. No wonder why the base building for Standard Chartered @ Changi has already been awarded the Environmental Platinum Green Mark Certification from the Building & Construction Authority of Singapore. An application for LEED Gold Certification is in process and is anticipated for the Interior Fit-out of the building. To conclude, the well-thought lighting design and control solution of this project is a good demonstration of no trade-offs between functionality and sustainability. ■

图4：一个典型的开放式办公区域和会议室

图5：员工小憩的休憩区和轻松的工作环境

图6：六层的员工餐厅

Picture 4: Open plan workspace and meeting room on typical work floor

Picture 5: Staff break out lounge and alternate workspace

Picture 6: Cafeteria on the 6th floor