PEOPLE FOCUSED
PERFORMANCE DRIVEN
EXPLORE FOUR EXAMPLES OF CUTTING EDGE WORKPLACE DESIGN
CONTENTS

4
The Tower at PNC Plaza, Pittsburgh, PA, USA

14
Shimoga Processing Centre, Shimoga, India

21
5 Broadgate, London, UK

28
GSK Headquarters, Pittsburgh, PA, USA

36
Our Workplace projects – where in the world?
INTRODUCING THE WORLD’S GREENEST OFFICE TOWER
THE TOWER
AT PNC PLAZA

LOCATION: Pittsburgh, PA, USA
CLIENT: PNC Financial Services Group
ARCHITECT: Gensler
Passive design, powerful results

The PNC Tower establishes two important milestones that will influence future commercial development across America – it is the only building in the country to have a fully automated double-skin facade, and one of the first high-rise structures to incorporate a solar chimney.

The double-skin facade ensures 92% of the interior spaces are illuminated by daylight year round, and works in tandem with the solar chimney to enable the building to rely solely on natural ventilation for almost half the year. As well as creating an exceptional environment for occupants, these features dramatically reduce the tower’s operating costs, and by doing so champion the economic and social value of passive design to the commercial sector.
ACTIVE SUPPORT SYSTEMS

The PNC Tower is able to operate passively for much of the year, but during both the height of summer and the depths of winter, active systems are required to maintain a comfortable environment for occupants. We integrated active chilled beams within the floor space to provide additional cooling to interiors on hot summer days. During the winter months, a dual-wheel energy recovery system uses the warm exhaust air leaving the building to heat cold air as it enters, while radiant panels in the facade provide highly efficient heating and mitigate unwanted heat loss to the outside.
PNC IN NUMBERS

From solar orientation to facade glazing, water fittings to light fixtures, every component of The PNC Tower has been specifically designed to improve its sustainability. This quick fact sheet shows the day-to-day difference this bespoke approach delivers, to people and the planet.

Vital statistics

- **800,000** square feet
- **2000** employees
- **495** ft in height to top
- **33** floors

Energy

We made a series of significant design improvements to the Tower that will enable it to use 50% less energy per year than a typical new office complex. This annual energy saving translates to:

- **x235** trips around the world in a Toyota Prius or **130,000** gallons of gasoline
- **77%** percent reduction in city water consumption compared to a typical new office tower
- **92%** portion of total floor area that is naturally lit (at an expanded illuminance level of 150 lux)
- **42%** proportion of the year the building will naturally ventilate
- **8** awards and industry accreditations received for the tower
THE TOWER AT PNC PLAZA | PITTSBURGH, PA, USA
Our Enginity solution for PNC Tower focussed on innovative technologies
Click to see the range of BuroHappold specialisms that collaborated to make the vision viable.
ENGINUITY™ PROCESS
INNOVATIVE WAYS TO BEAT THE HEAT
Home to several renowned higher education institutions, Shimoga is an academic hotspot that has no trouble attracting undergraduate students. With the economic hubs of Bangalore and Delhi offering more exciting career prospects, however, the city has struggled to retain its graduate talent. Our client, Xchanging Plc, aimed to change this by creating a contemporary office complex that provides an inspiring and dynamic work environment.

Cool solutions
With energy consumption a primary aim for our client, the BuroHappold team analysed the climate of Shimoga and then worked alongside the architect to devise integrated, low energy solutions that made use of the area’s natural resources. Our engineers used bespoke computational analysis and parametric modelling tools to assess large numbers of potential design options and develop strategies that would not only create excellent interior conditions, but also support modern interactive working practices.

Tangible results
By replacing traditional mechanical air conditioning with passive ventilation strategies, we provided Shimoga Processing Centre with a cost effective and resilient system that proves low energy design can be achieved even in extreme climatic conditions.
Atrium roof

The atrium roof acts as a giant wind catcher, and the atrium itself as lungs for the two wings of the building. As with all other glazed elements, the atrium skylight is only exposed to diffused light to reduce solar gain without compromising daylight harvesting. By incorporating a further opening in the atrium skylight, we were able to cross ventilate all interior spaces.

Brise soleil

As well as giving the centre a striking visual identity, these elements deflect direct sunlight to limit the unwanted effects of solar glare and heat gain. They also help channel the prevailing wind through the building.
ENGINUITY™ PROCESS

Our Enginuity solution for Shimoga focussed on passive design strategies. Click to see the range of BuroHappold specialisms that collaborated to make the vision viable.
A SUSTAINABLE INVESTMENT FOR UBS
5 BROADGATE

LOCATION: London, UK     CLIENT: British Land     ARCHITECT: Make
DISTINCTIVE AND DRAMATIC
TRACKING THE CARBON FOOTPRINT
TACKLING THE KEY CARBON HOT SPOTS

Our detailed assessment of the projected carbon footprint of 5 Broadgate throughout its lifecycle enabled us to identify four core structural modifications that would significantly reduce the embodied carbon of the building as a whole.
ENGINUITY™ PROCESS

Our Enginuity solution for 5 Broadgate focussed on sustainable structural design.
Click to see the range of BuroHappold specialisms that collaborated to make the vision viable.
ENGINUITY™ PROCESS

- Fire engineering
- Sustainability
- Acoustics
- Facade engineering
- Inclusive design
- Structural engineering

SITE, CAMPUS AND PORTFOLIO DEVELOPMENT

BUROHAPPOLD ENGINEERING WORKPLACE SECTOR PORTFOLIO
HEALTHY HEADQUARTERS FOR A PHARMACEUTICAL GIANT
GLAXOSMITHKLINE
AT 5 CRESCENT DRIVE

LOCATION: Philadelphia, PA, USA
CLIENT: Liberty Property Trust
ARCHITECT: Kendall/Heaton Associates and Robert A.M. Stern Architects
A WINNING WORKPLACE

GLAXOSMITHKLINE | PITTSBURGH, PA, USA
SUSTAINABLE DESIGN

GLAXOSMITHKLINE | PITTSBURGH, PA USA
ENGINUITY™ PROCESS

Our Enginuity solution for GSK focused on health, wellbeing and productivity.
Click to see the range of BuroHappold specialisms that collaborated to make the vision viable.
Sustainability Lighting
Fire engineering
Facade engineering
Building services engineering (MEP)

EFFICIENT AND GREEN DESIGN

EFFICIENCY™ PROCESS

Sustainability
Fire engineering
Lighting design
OUR WORKPLACE PROJECTS WORLDWIDE

CLICK TO REVIEW LINKED PROJECT INFORMATION
WE MAKE THE VISION VIABLE

CONTACT US

Andy Keelin, Director and Head of Commercial Sector | Email: andy.keelin@burohappold.com

www.burohappold.com

Copyright © 1976-2017 BuroHappold Engineering. All Rights Reserved