ADAPTIVE FACADES 2016
HAMBURG

HCU HafenCity Universität Hamburg

Training School Guide

Lectures, PhD Reports, Workshop: 12th - 17th September 2016

HCU | HafenCity Universität Hamburg

HafenCity University Hamburg
Überseealle 16
20457 Hamburg, Germany
Prof. Dr.-Ing Frank Wellershoff

In Cooperation with / Supported by:

cost
EUROPEAN COOPERATION IN SCIENCE AND TECHNOLOGY

COST TU1403
fn/Adaptive facades network

As a part of the German/Brazilian research cooperation Novas Parceiras „Energy efficient retrofitting of buildings in Brazil“

cooperação alemã
DEUTSCHE ZUSAMMENARBEIT
giz
DAAD Deutscher Akademischer Austausch Dienst German Academic Exchange Service
CAPES
Ministério da Educação
Ministério da Ciência, Tecnologia e Inovação
GOVERNO FEDERAL BRASIL PÁTRIA EDUCADORA

Brief Introduction

COST Action “Adaptive Facade Systems”
Summer School at HCU, 12–17.09.2016

Modern building envelopes are high-tech components that must meet several requirements and limitations considering architecture/planning and structural performance, energy efficiency and indoor environmental quality, buildability and value. As a result, building envelope design has become a separate discipline, where building envelope engineers collaborate with other members of the design team in order to develop a facade that meets various requirements and constraints.

This next generation of facades (or building envelopes) consists of multifunctional and highly adaptive systems. A physical separator between the interior and exterior environment (i.e. the building envelope) is able to change its functions, features and behaviour over time in response to transient performance requirements and boundary conditions in order to improve the overall building performance.

The basic knowledge, required to design an adaptive facade, will be presented in the first half of the summer school. In the second half of the summer school this knowledge will be applied in a workshop, where groups of students are considered to create conceptually designed adaptive facades for given boundary conditions. International experts from the EU and Brazil will give the lectures and guide the workshop.

Architectural Engineering and REAP Master students from the HCU and PhD students from the EU and Brazil are welcomed to participate in this summer school.
Based on the results of the summer school, the HCU students will prepare a final analysis of their conceptual design in a sketchbook format.
More detailed information on:
http://www.cost.eu/COST_Actions/tud/TU1403

Organizing committee

Prof. Dr.-Ing. Frank Wellershoff
Mobile: +49 (0)152 / 33 61 54 58
Room: 3.106

Dipl.-Ing. Roman Baudisch
Mobile: +49 (0)176 / 72 71 57 03
Room: 2.007

M.Sc. Matthias Friedrich
Mobile: +49 (0)176 / 70 55 96 41
Room: 3.106

M.Sc. Matija Posavec
Mobile: +49 (0)151 / 28 78 32 00
Room: 3.106

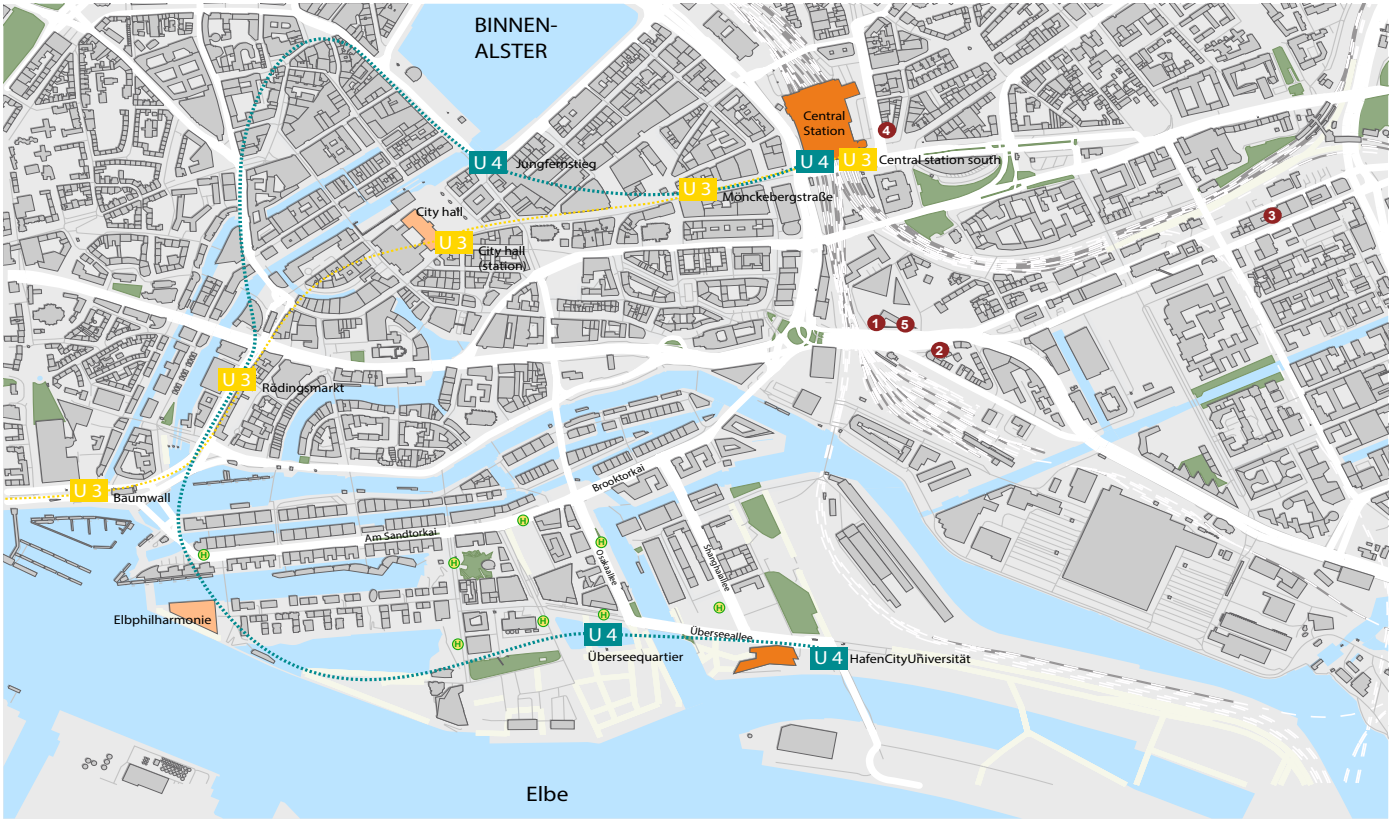
Margarita Jünemann
Mobile: +
Room: 2.007

Hotel recommendations

1	Ibis Budget Hamburg City	Amsinckstraße 1, 20097 Hamburg Tel.: (+49)40/271434620
2	A&O Hamburg Hauptbahnhof	Amsinckstraße 2-10, 20097 Hamburg Tel.: (+49)40/64421045600
3	A&O Hamburg City	Spaldingstraße 160 20097 Hamburg Tel.: (+49)40/11298-4000
4	Generator Hostel Hamburg	Steintorplatz 3, 20099 Hamburg Tel.: (+49)40/226358460
5	IBIS Hamburg City	Amsinckstraße 3, 22769 Hamburg Tel.: (+49)40/807915820
6	IBIS Hamburg Alster Centrum	Holzdamm 4-12 +16, 20099 Hamburg Tel (+49)40/248290

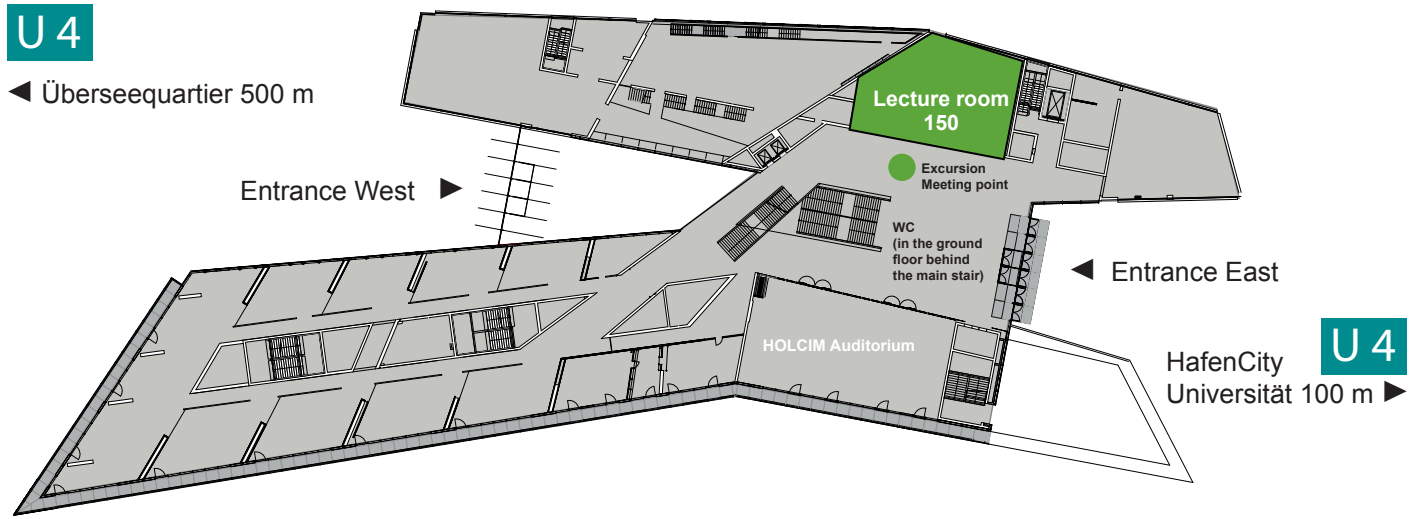
For location details ,
check the map ->

Hamburg Map

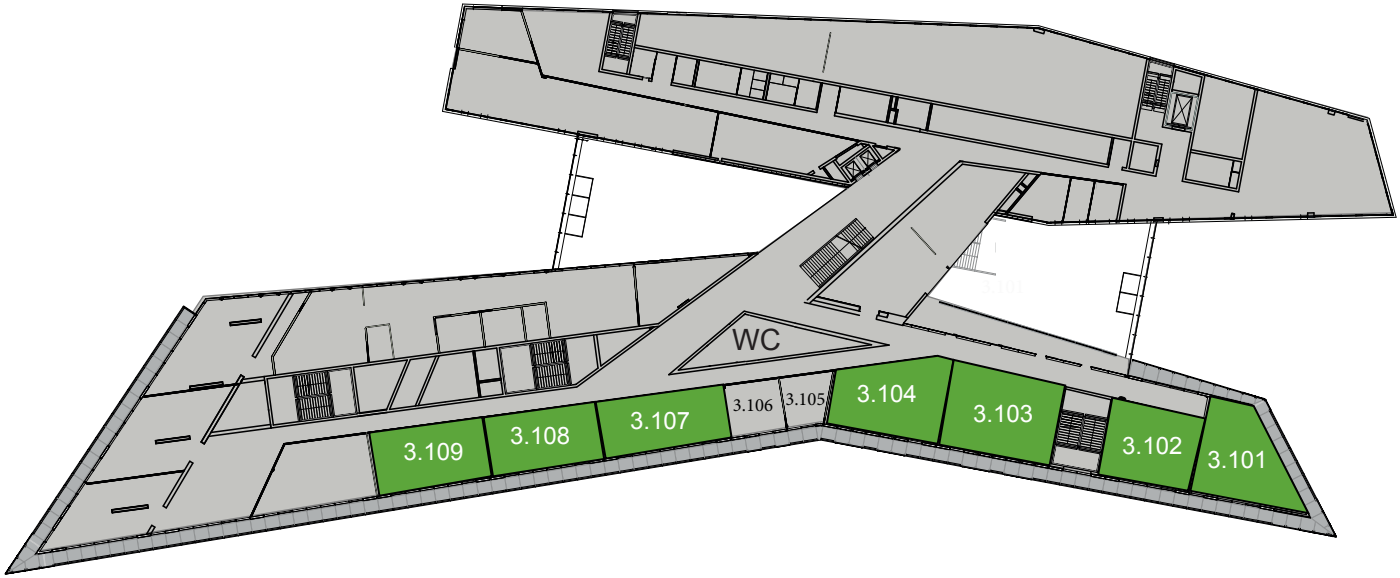

BINNEN-
ALSTER
Central Station
U 4
Jungfernstieg
U 3
Mönckebergstraße
U 4
U 3
Central station south
City hall
U 3
City hall (station)
U 3
Rödingsmarkt
U 3
Baumwall
Brooktorkai
Am Sandtorkai
Elbphilharmonie
U 4
Überseequartier
Überseeallee
U 4
HafenCityUniversität
Elbe

HafenCity University Plans

1st floor



3rd floor



Other material

Registration Desk: Foyer, 1st floor

Internet Access

Members of universities or institutions affiliated to Eduroam have access to the internet via Eduroam at the conference venue.

Meeting point for excursions

The meeting point for excursions is at the infopoint in the foyer.

Taxi-Phone +49 40 22 11 22

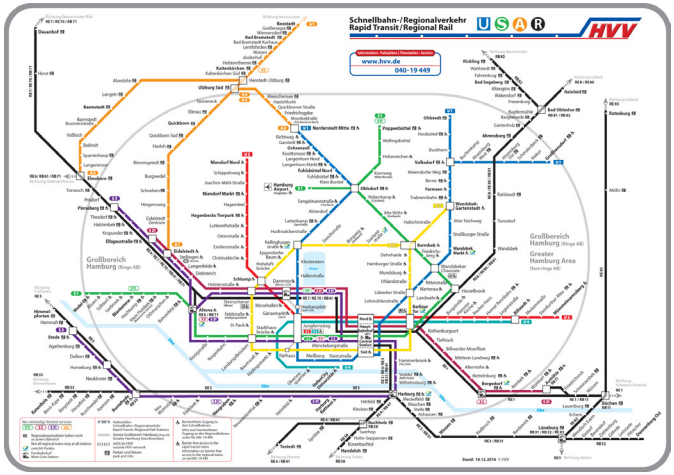
Important phone numbers

Fire department and ambulance:	112
Police:	110

Public transport

We are organizing week-tickets for every applicant which one receives within the Welcome package on the first day. The public transport in Hamburg has both trains and busses. As shown in the location map (General information) the HafenCity can be achieved by U4 within 12 minutes from main station or by bus 112 from the bus stop Spitalerstraße within 20 minutes.
For more information check online: www.hvv.de/en
Be aware that the bus lines 30 until 39 are express busses. Travelling with these busses is subjected to a supplement for all passengers (also with your week-ticket).

For more connections check the following map:



Schedule of lectures and workshop

Background of Participants		30 - 40 PhD students by COST action (potentially 30 with Grant from COST Action) 10 PhD students by DAAD + CAPES; 6 from HCU + 4 from Brazil / Uni Campinas 5 HCU Master students from 2 Master Courses (Architectural Engineering + Resource Efficiency in Architecture and Planing)					
Time		**Monday 12.09.2016**	**Tuesday 13.09.2016**	**Wednesday 14.09.2016**	**Thursday 15.09.2016**	**Friday 16.09.2016**	**Saturday 17.09.2016**
Morning	8:30 - 9:00	**Registration Foyer Entrance East**					
	9:00 - 10:00	**N.N. (WG 1) Lecture room 150**	**Chiara Bedon (WG 2) Lecture Room 150**	**Albert Castell (WG 2) Lecture Room 150**	**N.N. Labaki; Fernandes; Vatavuk; Wellershoff; Seminar Rooms 3rd Floor**	**N.N. Labaki; Fernandes; Vatavuk; Wellershoff; Seminar Rooms 3rd Floor**	**N.N. Labaki; Fernandes; Vatavuk; Wellershoff; Seminar Rooms 3rd Floor**
		WG1.1 Introduction to adaptives facades: General introduction, History of adaptivity in Facades and windows, Definitions, The adaptive façade survey	WG 2.1 (Structures subgroup) Identify structural, fire and safety façade performances where adaptive technologies are useful. Life-cycle cost assessment related to the structure / structural costs	**WG 2.2 & 2.4 evaluate current simulation methods, Identify lack of knowledge, perspective for new simulation tools.**			
	10:15 - 11:15	**N.N. (WG 1) Lecture room 150**	**Christian Struck (WG 3) Lecture Room 150**	**Jerome Le Dreau (WG 2) Lecture Room 150**			
		WG1.2 state of the art of adaptive facades	Adaptive Facade System Design Process	WG 2.1 Map out performance metrics and requirements for adaptive Facade, WG2.3 & 2.5 Experimental procedures and metrics + Experimental mock-up	**Workshop "Adaptive Facade Design for a new Building in Hamburg" Working in Groups**	**Workshop "Adaptive Facade Design for a new Building in Hamburg" Working in Groups**	**Workshop "Adaptive Facade Design for a new Building in Hamburg" Working in Groups**
	11:30 - 12:30	**N.N. (WG 1) Lecture room 150**	**Christian Struck (WG 3) Lecture Room 150**	**Frank Wellershoff (WG 3) Lecture Room 150**			
		WG1.3 Design of adaptive facades - Lessons learned from survey case studies	Adaptive Facade System Performance Analysis	Adaptive Facade System Performace Measuring Adaptive Facade System Occupant Behaviour			
Afternoon	14:00 - 18:00	**PHD progress reports and feedback/discussion Lecture Room 150**	**Excursion to IBA Building and other adaptive facades**	**Workshop introduction lectures: Definition of scope of work and boundary conditions Lecture Room 150**			**Final public presentations 13:00 - 15:00 Foyer Entrance East**
Evening	(20:00 - ??)	**Welcome Dinner Mensa**		**Afterwork Barbecue Mensa Terrace**		**Party Confidential Location**	**Fairwell 15:00 to 17:00 Foyer Entrace East**

Social events

Welcome Dinner

On Monday we invite you to a Welcome Dinner inside the HafenCity University mensa. A variety of food and drinks will be available.

Location: HCU Hamburg Mensa
Date: Monday, 12.09.2016
Time: 8 pm until 11 pm
Food: Buffet
Drinks: Included

Afterwork - Barbecue

On Wednesday evening we organize a Barbecue on the terrace in front of the HafenCity University. We are looking forward to your visit and invite you to relax, eat and chat with your collegues.

Location: HCU Hamburg Mensa Terrace
Date: Wednesday, 14.09.2016
Time: 8 pm until 10 pm
Food: Barbecue with veg.alternatives
Drinks: Included

Party

Hamburg has a vibrant nightlife. We provide you the possibility to discover the nightlife together. Enthusiasts are meeting on friday at 8pm in the University and thena we are heading towards the city.

Location: Confidential
Meetingpoint: HCU Foyer 1st floor at 8 pm
Date: Friday, 16.09.2016
Time: 8 pm until open end
Drinks: 2 Vouchers included

Fairwell

On Saturday, the official fairwell takes place after the final presentation which goes from 1pm to 3pm.

Location: HCU Holcim Auditorium
Date: Saturday, 17.09.2016
Time: 3 pm until 5 pm

Facade Guide - Hamburg

HafenCity - Along the Elbe River - Historical Center

HafenCity is a quarter in the centre of Hamburg and one of Europe's greatest inner-city urban developments. On its east side it accomodates the new building of HafenCity University.
The area offers an opportunity to experience a variety of recently finished buildings with innovative facade designs.
Moreover, the city offers a lot of attractive locations for having a great walk along interesting facade envelopes and city sights.
A recommended possibility is to leave the HafenCity on the west end, next to the Elbphilharmonie, and to pass by the pier of the sightseeing boats where one has a great view towards the harbour. After a short walk towards the famous fish-market one will discover refurbished warehouses and attractive new office buildings along the Elb River.
This area is also called the "String of Pearls at the Elb River" due to the exposed location and a direct view on the Elb river.
Another option, after you left the HafenCity at the Elbphilharmonie, is to go in north-east direction to the Deichstraße. Along the Nikolaifleet one will discover the oldest houses of the historic center of Hamburg, which survived also the big fire of 1842.
These projects provide a small insight into the diversity of attractive spots located in and around Hamburg. Even so we hope this Guide provides you with some ideas for creating memorable experiences, while discovering the cultural value of Hamburg.






Elbphilharmonie

Address:	HafenCity, Platz der Deutschen Einheit 1
Architects & planners:	Herzog & de Meuron Architekten und Ingenieure Höhler + Partner Architekten und Ingenieure
Completion:	2017?
Facade:	Unitized curtain wall, freeform Decorative Glass Unit (DGU), chrome printing
Short describtion:	The Elbphilharmonie is the new concert hall in the HafenCity quarter of Hamburg. The glass facade consists of 1,100 individual freeform curved window panels, with pattern of chrome points individually printed for each panel. Together with a sun protection layer the solar heat gain of the building is significantly reduced. The complex system of glass layers creates a unique visual effect caused by the density of chrome points decreasing from the frame to the centre of the windows.

Unilever-Haus

Address:	HafenCity, Am Strandkai 1
Architects & planners:	Behnisch Architekten, Stuttgart
Completion:	2009
Facade:	Double-layer façade, ETFE-Foil
Short describtion:	The new Unilever headquarter building for Germany, Austria and Switzerland is located right by the Elbe River, prominently positioned in Hamburg's HafenCity. The thermal layer of the façade is nearly fully glazed with the possibility to open elements. The second layer protects the inner skin from highest wind loads and reduces the solar heat gain of the building. The outer layer is made of a flexible ETFE foil. All façade details were customized for this project.

CC01 Commercial Center HafenCity

Address:	HafenCity, Großer Grasbrook 9
Architects & planners:	Baumschlager Eberle ZT GmbH, Lochau (AT)
Completion:	2011
Facade:	Double-layer facade, glass lamellas, low iron glass
Short describtion:	The new CC01 Commercial Centre HafenCity is situated between the taller buildings of Grasbrook and the smaller residential houses of the Dalmannkai. The thermal layer of the facade is fully glazed and offers the possibility to open elements. A secondary layer of vertically scaled glass lamellas made of low iron glass is added to reduce the direct solar heat gain of the building by 14%. Additionally the secondary layer is coated with a self-cleaning layer on the outside which increases the maintenance periods significantly.

Office Building at Fischmarket

Address:	Pinnasberg 45
Architects & planners:	SPENGLER · WIESCHOLEK Architekten Stadtplaner
Completion:	2005
Facade:	Glass panel façade, Exterior shutter shading-system
Short describtion:	The building houses offices and shops and is designed with two different façade types on a straight cubage. The façade facing to the north is a glass facade with enamelled abstract ivy pattern facing the public square between the building and “Dock 47”. The thermal layer of the facade facing to the west is mainly glazed but a second layer is added which has a delicate large scaled shutter system that enables the configuration of the façade towards the best room comfort with regard to direct solar heat gain, glare protection and the visual connection to the fish market.

Atelier and lofts in the “Stadtlagerhaus”

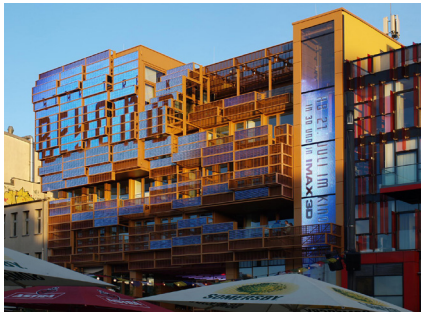
Address:	Große Elbstrasse 27
Architects & planners:	Alsop & Strömer Architects
Completion:	2001
Facade:	Adapted steel-balconies with a glass facade
Short describtion:	The city warehouse of 1880 was reanimated by refurbishing the ground floors and adding additional 4 floors with adapted steel balconies. The balconies remind of the original chest balconies of the former mill and provide additional space for the flats in the upper floors. On the outside of the balconies an additional layer of glass panels was added to protect the balconies against wind and rain.

Holzhafen West

Address:	Große Elbstrasse 59
Architects & planners:	Kees Christiaanse
Completion:	2013
Facade:	Steel-cable facade
Short describtion:	The office building architecturally reminds of a traditional Hamburg warehouse. It is located directly on at the Elbe with views towards of the harbour of Hamburg. Three wings are grouped around courtyards open terrace and provide plenty of light in the offices. The thermal layer in front of one courtyard is designed as a steel cable façade to provide high transparency. The façade is a few meters recessed under the upper floor in order to reduce the direct solar heat gain during the summer.

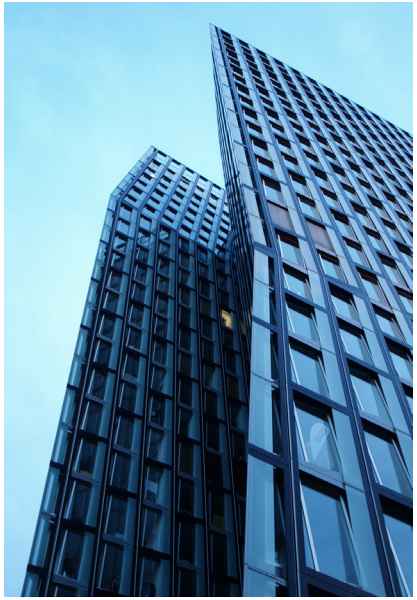
Office building at the Elbe

Address:	Neumühlen 17
Architects & planners:	Antonio Citterio and Partners
Completion:	2001
Facade:	Wooden-curtain wall façade with horizontal exterior shading slab elements
Short describtion:	The building is placed directly at the pearl chain of new houses along the Elbe River and it accommodates an Auditorium, a restaurant and public places in the ground floor. The thermal layer of the upper floors offers the ability for natural ventilation. The façade is designed with wooden frames which have a deeper and thicker frame than aluminium or PVC. The resulting pattern was used to integrate an exterior shading system consisting of horizontal concrete slab elements which emphasized the horizontality of the building.



Klubhaus St.Pauli

Address:	Spielbudenplatz 21/ 22
Architects & planners:	akyol kamps : bbp architekten
Completion:	2015
Facade:	Media facade
Short describtion:	The St. Pauli clubhouse accommodates a variety of music clubs, restaurants and offices on the upper floors. The projected media facade of the Clubhouse St Pauli offers Hamburg's entertainment district an extraordinary spectacle of artistic light and video installations. This building is a pioneering landmark and a new attraction for the citizens and visitors of the city.



Dancing Towers

Address:	Reeperbahn 1
Architects & planners:	BRT Architects LLP
Completion:	2012
Facade:	Aluminium Single Skin Facade
Short describtion:	The commercial office building houses visually appears as two towers with a height of 75 m and 85 m which seem like they are dancing. Their kinked façades, made of aluminium and glass, are bent at different angles and pick up the dynamic of the two towers. The individual units are inclined at different angles to each other and the inner façade is rotated to the outer façade, so that the façade appears to swing around the “Tanzende Türme”. The two towers are inclined towards each other and kinked at differing heights which results in an inclination of the primary façade of approximately 7 degrees - from an inclination of 10 degrees overhead glazing would be necessary. A total of 16 different inclinations had to be considered for the façade construction. These inclinations in particular create the impression of the dancing towers.

Chilehaus

Address:	Fischertwiete 2
Architects & planners:	Fritz Höger
Year of construction:	1922 - 1924
Facade:	Historic facade of Bockhorner clincer bricks with decorative ceramic elements
Short describtion:	It is an exceptional example of the 1920s Brick Expressionism style of architecture. The Chilehaus building is famed for its roof, which reminds of a ship's prow, and the facades, which meet at a very sharp angle at the corner of the Pumpen- and Niedern-strasse. The building has been built with the use of 4.8 million dark Oldenburg bricks.

Alte Post

Address:	Große Bleichen 30
Architects & planners:	Alexis de Chateauneuf
Completion:	1848
Facade:	historic red brick facade with sandstone elements in Round-arch style (Rundbogenstil)
Short describtion:	The cultural monument was built in the style of Tuscan Renais-sance with arches of sandstone shortly after the big fire and was finished already 1847. Initially the building accomodated the first central post office of Hamburg. The historic building was reno-vated the first time in the 1970s, restored and furnished with Hamburg's first shopping-passage.

Seven Sisters

Address:	Deichstraße 37
Architects & planners:	unknown
Completion:	17th and 18th centuries
Facade:	historic timber framing facade

Short describtion: Located at the Nikolaifleet one can experience the last existing ensemble of historic residential buildings in Hamburg. The timber-framed houses were built during the 17th and 18th centuries and also survived the Great Fire of 1842 and the destruction of the Second World War.