Curtain Walling and Façades
Czech Republic

An Introduction into Skanska’s Façade Business
This brochure has been created as an introduction and informative guide. It is aimed at all our colleagues within Skanska’s Business Units.
Introduction

Milan Nocar
Executive Vice President, Skanska Czech Republic

“It is important for Skanska to have reliable partners for the most critical and high risk packages for their construction projects.”

Skanska Curtain Walling and Façades
The only façade manufacturer within the Skanska Group, originally established in 1993, based in Prague 9 – Horní Počernice. We are based in a modern building complex that combines Administration, Logistics, Design and Production premises of 3600 m². We also have permission to expand our production plant to an additional 1300 m² should our workload increase. Our main goal is to create a workspace that is safe, effective, functional and environmentally friendly.

Sectors
On each occasion, the purpose of the building defines which specific requirements the façade must meet. Through more than 20 years of experience we have cooperated with clients from all the various construction sectors.

International Experience
We have been building our relationships with Skansa’s other European Business Units since 2010. Throughout that time we have built and maintained trustful relationships with Skansa Norway, Sweden, Poland and Romania. All Skanska Business Units have different laws, legislation and ways of working which we have had to adjust to. We have enjoyed this challenge and feel we have successfully adapted to entering into new markets. Our key for building trustful relationships is our open approach and willingness to help with any complications arising from the project.
Our passion for façades

Bringing the architectural ideas alive is what we are passionate about the most. I am proud of being a part of the team and having the opportunity to participate in the story of Skanska Curtain Walling and Façades.

Our façade branch is the only curtain walling manufacturer within the Skanska Group. The reason why we are running this specific skill under Skanska Czech Republic is very simple: it is bringing our Business Unit a really strong competitive advantage. I'm proud that we are still growing our business and all our completed projects are perceived as the best in class in our local markets. Achieving a stable position in our local market is giving us the confidence to extend our activities also to other BUs, where we have been collecting experience for the past five years. Consequently this growth is also improving our revenues and therefore profit has increased in the past five years.

All of what we’re doing is strongly based on Skanska’s core values and I really appreciate our dedicated team, open mindset, innovative approach and strive for constant improvements of all our processes, for our way of working. We have gathered plenty of experiences about differences in cultures, habits, technical standards, legal requirements and way of working. This all – I can confirm – makes us stronger and brings us closer to achieving our target: to be perceived as the best in class façade partner not only locally in the Czech Republic and Slovakia, but across all the Skanska BUs in Europe.

In recent years we have significantly increased the volume of our work. Great progress has been made in the efficiency of logistics and operations in our factory. We have managed to introduce 3D modelling in the design stage, we are using software for communication between designers and production and we have also introduced bar codes for material tracking. Our products help our clients in reaching the LEED, EPD and LCA certifications.

Our future lies in the curtain walling elements. These special and customized products require having adequate knowledge and technological equipment; intensively reflect advanced manufacturing, information technology and new trends in materials. We’re working to expand the use of 3D modelling and support the development of BIM applications.

In all cases our business is built on people – on their health and safety, but also on their happiness, satisfaction and constant professional development. Creativity, professionalism, team work and sharing of knowledge are the key drivers helping us reaching and achieving our goals.

We are looking forward to showing you our capabilities by cooperating on future projects. Should there be any such opportunity we are always here for you.

Yours Faithfully,

Jan Houdek

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The People
Skanska Curtain Walling and Façades has built a reliable team of professional, trustful and experienced people, who are supported, encouraged and trained to be the very best in their field. We currently have 130 direct employees within the business. This includes 5 senior management, 30 designers, 30 support staff, 35 production staff and 30 site staff. We also have around 60 members of staff who are available on a temporary basis.

At least 60% of our staff have been with the branch for more than ten years, providing a wealth of knowledge and experience allowing Skanska to consistently provide façade solutions that push the boundaries of design.

Skanska Curtain Walling and Façades actively encourages development in all their staff. This has been a key factor in our high staff retention rate that we have actively supported staff with a variety of training opportunities including university and college courses along with a number of other training options to assist in their roles and development.

Performance
- stable balance sheet in the sector within the Czech Republic
- growing annual revenue since 2010, reaching €22m in 2014

Targeted Revenue Distribution
- Skanska International BUs
- Skanska Home BU
- Local Clients

Skanska Curtain Walling and Façades Performance

![Graph showing annual turnover from 2007 to 2014]
Our Core Priorities

Health and Safety
As with all Skanska Operating Units, we share and live by the same values and code of conduct. Therefore we target zero accidents, whereby the safety of our personnel as well as subcontractors, suppliers and general public is ensured at and around our projects. It is our number one principle to plan each activity and everything we do in order to create a safe working environment and to build the safety awareness in all our employees. Our site operatives regularly receive site safety awards from working on Skanska projects.

Client Satisfaction
A unique element to Skanska Curtain Walling and Façades is that we have only one international client, whom we are dedicated to:

We strive to serve Skanska as a valid asset when it comes to problem-solving, solution-finding and reliable deliveries in the field we understand the most – Curtain Walling and Façades. We offer to all our clients a very honest and open approach, which has helped us in building strong and trustful relationships across the Skanska Business Units.

Quality
The Quality of our products is in accordance with ISO 9001. Our system of quality control consists of four stages:

1. At the suppliers
2. After material delivery to Skanska Curtain Walling and Façades
3. During and after production
4. On site after delivery and during installation

Sustainability
Processes in our production and installation are set according to ISO 14001. Our software for tracking exact material consumption and material waste for each project allows us to certify our products with Environmental Product Declarations (EPD) and Life Cycle Assessments (LCA). In 2014 Skanska Curtain Walling and Façades was awarded as a ‘Leader in Sustainability’ by organisation ‘The TOP Responsible Company’ in the Czech Republic.
Our Way of Working

The following pages will take you through our processes step by step.
As professional and experienced curtain walling and façade designers, we aim to be involved in the design process as early as possible. Being involved early enables greater opportunities for Value Engineering in the project and for finding the best technical solution that will suit our client’s vision and budget.

Open and Trustful approach
Building trustful relationships is crucial for our business. Our way of building trustful relationships with clients is based on truly open approach in all phases of the project. Open and honest communication helped us to establish strong relationships with our colleagues in Skanska CDE, Skanska Sweden, Norway, Poland and Romania.

Tender Phase
It is common practice in the tender phase for Skanska Curtain Walling and Façades to not only provide offer for original design for the tender documentation, but also to provide possible design options for improving either safety during installation, quality throughout the façade lifetime and/or material used and its environmental impact. Examples:

Green Towers Wroclaw:
The original design considered standard stick-partition façade. Early involvement of Skanska Curtain Walling and Façades allowed changes to the design and the whole concept was modified into unitized curtain walling. Benefits of this solution resulted in shortening the time for installation, reducing risks on site through lowering the number of workers on site and eliminating usage of scaffolding.

Malmö Live:
The original façade design for this project considered using ceramic tiles on a wooden frame which would be completed on site. Being involved early, Skanska Curtain Walling and Façades completely changed the design into curtain walling elements with a customized aluminium support structure for the ceramic tiles preassembled in our production facility. This enabled a cost-effective alternative and provided reliable structural performance. Using this solution we were able to reduce assembly time, costs for both sides and improve logistics.
Having the initial design concept agreed, our in-house team of designers prepare the complete design package covering structural, thermal and fire resistance analysis, detailed documentation and 3D visualisations.

Our in-house design department consists of 7 Chief Designers, 3 members in 3D Team, 2 members of CNC Team, 2 Specialists and 15 Designers.

Each Chief Designer works closely with the project delivery team who are ultimately responsible for the completion of each contract. Designers, specialists and the 3D team support each Chief Designer and their projects. The CNC team is responsible for the programming of machining and preparing data for production.

Martin Dimmer
Head of Design and Engineering

“Value engineering in ‘One Skanska’ is our tool for successful cooperation and client satisfaction.”

We take pride in our professional designers, who in the early stage of the project, always find the best solution for our clients. As a head of design and engineering, I lead my team to prepare each design with regard to improving not only statics, material optimization and time spent with installation, but even more importantly the health and safety on sites as well as in our production.

The use of BIM to standardise processes and 3D modelling is already expected to be mandatory for all UK government projects by 2016. It is also expected to be required in other EU countries in the next 10 years. We have experience from projects in Norway, Sweden, Poland and Czech Republic. We are able to extend all BIM processes and requirements with designers from our current team.

**Software we use:**
- **Autodesk AutoCAD** for drawing plans, sections, elevations and details
- **Autodesk Inventor** for 3D modelling of modular façades, sheets and recurring components and for communication between Designers and Production (logistics, automation of machining and assembly of elements)
- **Autodesk Revit** and **Navisworks** for BIM designing
- **Elusoft EluCAD** for programming of CNC machines
- **Logikal** for estimating costs of aluminium materials, designing, ordering and machining curtain walling elements, stick façades, windows and doors
- **Flixo** for thermal analysis
- **Nemetschek Scia Engineer** for structural analysis
After having all the documentation approved with the client and their architects, our logistics team is now able to get involved. Designers provide the team with all the quantities and material optimization for all components to be ordered. The aim in this phase of the project is to plan the flow of the material deliveries, ‘Just in Time’ production and transportation in order to keep the agreed time schedules and stay in the budget. Quality control throughout the whole process is an inseparable part of the activities performed by the logistics teams.

Zdeněk Demuth
Head of Production and Logistics

“Precise planning of logistics is 80% of success in projects.”

As a head of the logistics team I always lead my people to precision, open communication and to respond early to all arising situations. I always insist on sharing experiences and providing as much support as possible both in order to achieve continuous development of my team.

Project Management

Part of embracing the communication between internal processes (design, logistics, production and assembly teams) and the client is Project Management. All the project managers in Skanska Curtain Walling and Façades have enjoyed many years of experience from different positions within the business. Key responsibilities of Project Managers include:
- Open and regular communication with the client and their representatives
- Coordination and Scheduling of processes in accordance with the requirements from site
- Budget and Cash Flow control

IS LOP

Our software ‘IS LOP’ is used for communication between; designers issuing documentation, logistics team ordering material, production team and the assembly team on site. It was developed internally by Head of Production and Logistics, Zdenek Demuth and is able to capture every single piece of material, every hour of production and every product used, this enables us to record every supplier on the system. IS LOP is helping us to control the waste material in projects and to keep track of the exact amount of material used in the project which is very important for EPD and LCA certification of our products.
Mock-Up

Before starting the full production, a mock-up is produced and presented for every project to the client and their representatives to make sure the design is understood correctly between both sides. The mock-up can be presented either in the Skanska Curtain Walling and Façades production hall in Prague or on site. The main purpose in this phase of a project is to be ‘Right First Time’ once we arrive on site with the first elements to install.

Testing

When required, testing of the curtain walling element is also performed in this phase of the project. Recent testing of our products was made in Institut für Fenstertechnik (ift) in Rosenheim, Germany. A full report can be provided upon request.

- **EN 12153:2000-06**
  Curtain walling – Air permeability – Test method

- **EN 1026:2000-06**
  Windows and doors – Air permeability – Test method

- **EN 12155:2000-06**
  Curtain walling – Watertightness – Laboratory test under static pressure

- **EN 1027:2000-06**
  Windows and doors – Watertightness – Test method

- **EN 12179:2000-06**
  Curtain walling – Resistance to wind load – Test method

- **EN 13050:2011-09**
  Curtain walling – Watertightness – Laboratory test under dynamic condition of air pressure

- **EN 14019:2004-06**
  Curtain walling – Impact resistance – Performance requirements
Based in Prague, Czech Republic, Skanska produces curtain walls, stick façades, windows and doors within its modern 3600 m² production facility with an unlimited possibility to expand when required by the project. Having our own production facility allows us to control the quality of the products, speed of manufacturing and distribution to our client all in a safe and ethical environment.

**Façade prefabrication**
The most frequent and preferred product manufactured in the Skanska Curtain Walling and Façades production facility are unitised curtain walling elements. The main advantages with this type of façade prefabrication include:

- Greater and easier quality control
- Faster assembly on site
- Cost reductions through LEAN manufacturing

**Key Advantages**
One of the key advantages Skanska Curtain Walling and Façades has over our main competitors is that for unitised systems in like for like modern European countries our production costs in the Czech Republic can be up to 60% lower than when compared in a competitive market. This has been recognised internationally in which 60% of Skanska’s European business units now regularly use Skanska for their façade packages with 90% using Skanska on a consultancy basis.

**Facilities**
The production facility at Skanska uses state-of-the-art facilities including three CNC machines, cutting machines, press brakes, assembly machinery and two bridge cranes. This is all run using the latest software by our trained experts. This in turns ensures that there is an efficient speed of delivery and reduced amount of time spent on site.

Our facility in Prague welcomes visitors from around the business and we will be happy to give any Skanska Business a guided tour of both the production facility and the design office regarding any potential façade packages being considered. Should you wish to arrange a visit please contact our Business Development Manager Iva Janoušková on +420 739 501 756 or Iva.Janouskova@skanska.cz
Skanska Curtain Walling and Façades uses foldable steel cages for transportation of façades to their projects. Each cage can load up to 8 unitised curtain walling elements. Transportation is then handled by one of our approved subcontractors using their articulated vehicles, which normally carries 3 cages. One vehicle therefore carries up to 24 elements, approx. 240 sqm of curtain walls.

In order to reduce the carbon footprint, Skanska Curtain Walling and Façades developed their own foldable cages, which when unloaded on site are folded and transported back to the production hall in Prague. The folding system allows us to stack 9 cages on one vehicle; therefore we are able to reduce the number of returning vehicles three times. E.g. for 3 vehicles bringing 9 cages (72 elements) to site we only need 1 vehicle to return the cages.

Each project however is specific and requires different types of deliveries. We pride ourselves on being flexible and always helpful in finding new solutions for the client. An example can be seen in our current project Biomedicum, Sweden, where the installation is carried out from each floor and all material is transported in wooden boxes so it can be easily taken away from each floor once the curtain wall is installed.
Our number one priority is the Health and Safety of all our employees and subcontractors.

Planning is the key for creating a safe working environment on site. Our planning starts very early in the design phase and ends with detailed planning of installation, allowing for the changing conditions on each site.

For each site and working condition it is crucial for us to:

- Use the right equipment responsibly
- Follow the rules and standards set by local legislation and Skansa initiatives
- Be the leader in health and safety

Logistics on site

Planning the logistics on site helps us to improve and speed up the overall installation processes, reduce the time spent on site and help our clients to meet their deadlines. Therefore we plan the exact deliveries of the material on site early in the design phase to ensure not only continuous flow of installation, but also awareness of our presence and activities on site to make sure the site will be ready once we arrive.
Assembly
The team for assembly normally consists of our own in-house professional installers, subcontractors we have previously worked with in different projects or local recommended companies who are aware of those country specific standards and requirements. Each time however, we have our own in-house site managers and health and safety specialist who lead the installation team and flow of the installation and control the quality of work performed.

Assembly itself can be done either by using tower crane if available, mobile crane if the project allows or from each floor when the space on site is limited, using monorail systems or small spider cranes. Skanska Curtain Walling and Façades has experience with all types of assembly.

Finishing
Our job is only complete after the modular façade and or internal partitioning has been signed off by the client and is to the required standard. Skanska Curtain Walling and Façades has experience in delivering a number of cladding finishes ranging from ceramic tiles, fiber concrete panels and timber parts if needed.
The handover process is generally agreed before we even start work on site. This is to ensure both parties know what is expected and when it will happen. We schedule all major issues right through to close out and handover. This assists us in closing out the issues and ultimately speeds up the process for all. Our logging systems are there to assist us and prevent revisiting items and issues already resolved. We actively support continuity of our staff through to the conclusion of the project as we understand that this gives efficiency to us and to the wider project team.

In general our standard warranties last 5 years, which is required in the Czech Republic. We do however understand that different Skanska BUs work with different requirements within their own operating country, and with that in mind we are able to consider extending warranties where necessary. Further to this we have our specialist in-house warranty team who deal with any issues should they arise after the hand-over.
Reference Projects

Green Towers, Wroclaw

Project description:
- Skanska Commercial Development project; two 10 storey office buildings
- Gross leasable area of 23,300 m²
- Conveniently located in the proximity of Wroclaw’s Old Town
- Green Towers was the second office investment by Skanska CDE in Wroclaw
- Designed in accordance with LEED Platinum requirements

City Green Court

Project description:
- Commercial Development project, 8 storey office building
- Located in the heart of busy commercial and retail district
- Gross leasable area 16 300 m²
- Combination of modern features of the famous architectural studio of Richard Meier designed to meet LEED Platinum
- Distinctive vertical solid panels with fins angled according to the sun’s orientation to minimise solar heat gains
Statoil Bergen, Statoil Sandsli Kontorbygg

Project description:
- Statoil SA investment project in a new headquarters
- 5 office buildings connected together through a steel-glass atrium
- 6th building standing alone from the office complex is facilitating the main entrance and canteen area
- Gross leasable area of 55,000 m² accommodating 1,100 employees
- Project implementation in accordance with Skanska’s Green Workplace concept Value

Malmö Live

Project description:
- Private Public Investment of the City of Malmö, Hotel Clarion and Malmö Symphony Orchestra consists of 25 storey hotel, concert hall, congress hall and a restaurant
- Built in the heart of the city
- The hotel section consists of 445 rooms, spa and two large restaurants, one of which is a sky bar on the 25th floor
- The large, flexible conference building offers a wealth of innovative exhibition opportunities
- The concert hall boasts worldclass acoustics
- The whole complex will open in the summer of 2015
Referencer Projekty

Malmö Kontor

**Project description:**
- Skanska Öresund AB investment project; 8 storey office building
- Gross leasable area of 10 000 m²
- Dynamic and architecturally interesting building with varying heights
- Designed by the internationally renowned and award-winning architect Dorte Mandrup
- Malmö Kontor is situated close to project Malmö Live, complementing the leisure set up with a commercial offering

**Status:** Completed
**Location:** Malmö, Sweden
**Investor:** Skanska Öresund AB
**Type of Investment:** Private
**Architects:** Dorte Mandrup
**Building Contractor:** Skanska Sweden, Construction
**Contract Price:** 1.8 mil GBP
**Construction Period:** 6/2014 – 4/2015
**Curtain Walling:** 6000 m²
**Certificate:** LEED Platinum – ongoing, EU Green Building – ongoing, Miljöbyggnad program Syd, Kl. A
**Aluminium Supplier:** Hueck Hartmann
**Glass Supplier:** Guardian (Pilkington)

Waltrovka Aviatica

**Project description:**
- Penta Investment project, 7 storey office building with retail space in the ground floor
- First project of the extensive development of Waltrovka brownfield, designed to LEED Gold
- Gross leasable area of 27 000 m²
- A-class standard office space

**Status:** Completed
**Location:** Prague, Czech Republic
**Investor:** PENTA Investments
**Type of Investment:** Private
**Architects:** Cigler Marani
**Building Contractor:** Unique Development, s.r.o.
**Engineering Consultant:** PM Group CZ, s.r.o.
**Contract Price:** 4.1 mil GBP
**Construction Period:** 5/2014 – 6/2015
**Curtain Walling:** 10 000 m²
**Column-Partition Façades:** 2 500 m²
**Cladding and Acoustic walls:** 1 100 m²
**Certificate:** LEED Gold
**Aluminium Supplier:** Hueck
**Glass Supplier:** Guardian (Isosklo)
Team for you

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