BUILDING PROJECTS
ON THE TEST BENCH

Thermal – Flow – Light
in Computer Simulation

INGENIEURBÜRO P. JUNG
Konzepte für innovative Gebäude
Investors are confronted with different experts and opinions. We bring together the single disciplines and are main contact persons and managers in one for you. Before the background of our many years of experience in international large scale projects, we create synergies that will pay off for you.

Clients need to implement tight schedules. We assist and support you as a quality controller. Our analyses and concepts save the environment and are easy on your budget.

Architects can use our simulations to show the client that their design fully complies with all functions. We build 3D feature model on the PC for you. Thus you can visualise and verify your concepts in every planning phase.

Engineers need to plan precisely under increasing cost pressure. We help you to quickly find the optimum technical solution. Our computer simulations give you planning safety. HVAC, Indoor air currents and Energy Supply Centres, atriums, concrete core activation, geo-thermal energy, solar power systems, photovoltaic - we calculate everything for you.

Accurate Forecasts through Building simulation. The comfort and the indoor climate of a building are crucial for its success. This applies for all buildings, from a single-family dwelling in passive construction method up to the big event hall. On the basis of your design, we can clear up, for example, already before start of construction work whether there will be a draft in the atrium of your planned office building. Thus, you can readjust on time.

**DEG-Bank, Cologne.** DEG has set new environmental standards with the new construction of its administration building in downtown Cologne: As the first building of the city, it received the gold certificate of the DGNB. IPJ engineering office developed a tailor-made energy concept with component cooling, ground water utilization and natural ventilation via an inner courtyard with „convertible roof“. (architects: JSK, Düsseldorf)
Thermal Building simulation. We implement the architectural design in a three-dimensional, building physics computer model representing the thermal behaviour of the building and its parts, taking into account usage and weather influences. Using this simulation model, we can design and test different strategies for ventilation, lighting and energy. For municipalities, we calculate the solar gain of urban projects. For calculation and simulation, we use the TAS software of EDSL Ltd.

Flow simulations point out how air currents and temperature stratifications originate in the building. To plan atriums, halls and large rooms without this method means a big risk for the investor. With the help of flow simulation, design can thus be modified early on. This is especially true for large shopping centres, airports or concert buildings. For the computation and visualisation of the flow conditions, we not only use TAS but also the 3D-CFD-Software Phoenics from CHAM Ltd.

Finanz Informatik, Frankfurt /Main. A special planning challenge was presented by the 6-storey glazed hall of what is today the Frankfurt headquarters of the Finanz Informatik. On the basis of a flow analysis, the IPJ engineering office developed a solution by means of which, year round, a very good indoor climate is being ensured and which, besides, has considerably reduced heating costs.

(architects: MOW, Frankfurt /Main)
Light simulation. Light is one of the most important design elements in architecture and light quality demonstrably has a big influence on well-being and productivity. Our light simulations 3ds Max Design from Autodesk illustrate not only the technology but also the aesthetics of your design. You will receive a scientific analysis in a clear implementation: the photorealistic representation of daylight and shadow casting facilitates the assessment of the design for you.

Sustainability. We assist you and your planning team in developing and implementing tailor-made sustainability strategies for your building. We are member of the DGNB and the EcoCommercial Building Network. Here in addition to the energy efficiency and the ecology, we also consider the economy, the integrated building planning as well as the socio-cultural and technical quality. If requested, we will assist you with the certification of your building. We advise you in your decision of which seal of quality make sense and support your construction project as an auditor, from the design phase up to the completion and the awarding of the certificate.

Building physics. To achieve the desired quality of the building climate, the building envelope must be planned and configured accordingly. We take care of the physical building dimensioning of heat and moisture protection and investigate specific components of the multi-dimensional heat flow and coupled heat and moisture transport. Together with our partners we can offer you the entire building physics design. With pleasure we generate energy certificates and set up summer serviceability checks on your behalf.

Achleitner Organic Farm, Eferding. Energy optimisation before the groundbreaking ceremony: The Achleitner Organic Farm in the Upper Austrian town of Eferding was modelled with the help of a computer simulation (TAS). IPJ engineering office developed an energy concept that uses the soil as a heating and cooling source. For the insulation of the big hall, straw was used as a renewable raw material.
(arichitects: architekturplus, Vahrn)

Atmos im Arnulfpark, Munich. For this building, which received the silver DGNB label, the IPJ engineering office created the Energy control and automation by means of a dynamic simulation model with more than 200 zones.
(architects: Engel and KSP Zimmermann, Munich)
Patrick Jung. Graduate Engineer

1992 Degree at the University of Stuttgart (Mechanical Engineering) and Assistant at the European Community Research Center JRC in Ispra, Italy

1994 founding of the engineering firm, owner

2009 transformation into GmbH, ever since: Managing Director

Since 1996 lecturer and scientific advisory board at the Department of Building and Environment at the Danube University Krems, Austria, in the fields of Facility Management and Future Building Solutions

Since 2004 Visiting Professor at the Danube University Krems

Ingenieurbüro P. Jung (IPJ) provides advisory consulting services for major international projects designed by well-known architects. Engineer Patrick Jung founded the company in 1994 with the aim of putting his vision of innovative building into practice: buildings in energetic balance. Our office considers itself as a cooperative, advising partner for our clients - investors, builders and architects. We work on the principle of integrated planning, which means we strive to achieve a balance between all the disciplines involved in a building project, with the aim of generating synergies for optimal results. Our team has many years of experience in the field of sustainable construction and energy efficiency.

In Ingenieurbüro IPJ, experts from different disciplines work together: interior designers, energy consultants, building services engineers and lighting designers. They all share the respect for the proposed architecture and the demand to achieve sustainable buildings with optimum comfort and quality of life.

Claus Faruß. Graduate Engineer

1992 Degree at RWTH Aachen (Mechanical Engineering)

1994 to 2006 Activities in various engineering firms with a focus on simulation

2006 joined Ingenieurbüro IPJ, and there has been authorized signatory since 2008 and Managing Director since 2009

Since 2010 DGNB Auditor

Dr. Peter Holzer. Graduate Engineer

1994 Degree at the Vienna University of Technology (Mechanical Engineering)

1994 to 1996 Research activities in the field of building energy systems and biomass combustion

Since 1996 Research associate at the Department of Building and Environment at Danube University Krems, and head of department there from 2008 to 2012

Since 2009 PHI-certified Passive House Consultant

2009 Doctorate at the Technical University of Vienna (Architecture & Buildings)

Since 2011 Managing Director of the Vienna branch office of Ingenieurbüro IPJ

Since 2012 Shareholder of the Institute of Building Research & Innovation, Vienna

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Our range of services. So that your construction project will be a success, we wish to accompany and consult you already during the planning phase. We discover weak spots, develop thought-out climate concepts and creative individual solutions. With the help of our calculations, you achieve a maximum in climate comfort with a minimum in costs. What can we do for you? Here are our services in overview:

| The building structure and its envelope | Facade consultation  
Heat and moisture protection consultation  
Solar protection consultation  
Natural ventilation and ventilation systems  
Solar architecture  
Passive houses, Plus energy houses  
Renovations |
| --- | --- |
| Energy generation and energy supply | Energy concepts  
CO₂ neutral buildings  
As built stock-taking and optimisation of the building services engineering  
Tariff consultation  
Energy benchmarks and controlling |
| Dynamic building simulation with TAS | 3D shadow computation  
Computation of climate facades and atriums  
Room comfort rating with temperature course and temperature statistics  
Computation of natural ventilation and hybrid ventilation  
Analysis of condensation  
Dynamic energy balances  
Concrete core activation  
Geothermal Cooling  
Management and control optimization  
Operating cost forecast  
Life cycle analysis |
| Flow simulation with PHOENICS | Temperature stratification and airflow for atriums and climate facades  
Computation of airflow around high rise buildings in urban planning  
Comfort studies  
Reduction of pollution transport |
| Light simulation with 3DS MAX DESIGN | Visualisation of light effects  
Computation of the daylight proportion  
Lighting concepts  
Photo-realistic representations |