

Constructing with metal and wood : the engineering department ensures precise planning, be it for the federal parliament building or for a bank : interview with Roland Keller

Autor(en): **Iseli, Philipp / Keller, Roland**

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CONSTRUCTING WITH METAL AND WOOD

Taking carpentry to the next level – working with a range of materials: acrylic, metal, glass, steel and aluminium.

Interview: Philipp Iseli, photo: Alexander Jaquemet

Mr Roland Keller, how do you define the interface between design and production? We believe that co-operation between architects and manufacturers is of prime importance for a fully developed product. Ideas are refined, rejected or reviewed and result in working plans, samples and prototypes. Strictly speaking, this process is like ping-pong, and it is the core of our engineering activities.

Who finishes the ping-pong match? As soon as we have achieved the closest possible conformity between design and implementation, the architect gives his go-ahead. Then we start production. There are two factors which influence our engineering activities: efficiency and deadline. Our quotation serves as a rough guideline for clients and architects, and they can see whether or not the chosen direction is in line with the client's idea of costs. Before we start working on a construction draft, a rough schedule is drawn up.

EXCELLENT ENGINEERS **Is engineering an independent sector, or is it part of the product?** We differentiate between engineering as additional service required for the implementation of architectural plans and the work preparation which forms the basis for production. Engineering means turning complex design ideas into a three-dimensional product, be it furniture or a complete interior design project. We develop constructions, check all possibilities, try out material combinations, draw up construction plans and make samples and prototypes. We do this until we reach a point where both the client and the architect can be sure that their design concept has been dealt with in the best possible way. Such services are invoiced separately. The actual work preparation, i.e. production planning, the unit lists, CNC programs etc., commences once the plans have been approved. Special engineering work is usually required for all but the simplest interior fit outs.

Who works in the engineering department? What qualifications does the staff need to have? Ten people are responsible for work preparation in our engineering and process planning (AVOR) department. They are skilled carpenters and joiners who have also trained as technicians or master craftsmen. They are construction experts with comprehensive knowledge of the materials available and proficient draughtsmen both using CAD and at the drawing board. They know a lot about architecture and design and are competent organisers. Some of our staff have been with us for many years. They have enhanced their skills in certain areas such as mechanics, structural analysis, fire protection, logistics or cabinet making. These additional skills are applied depending on the project at hand.

TURNING IDEAS INTO REALITY **What are the steps from draft to the production?** I would like to answer this question by telling you about the "Egg Loft" project. Our task was to build an egg-shaped sculpture in a large room in a New York apartment. It was to serve as semi-transparent partition, dark horizontal slats ensuring semi-transparency, and wide-opening doors. The two front doors were more than 2 metres in width and vertically as well as horizontally rounded and should be easy to open manually. We discussed various material combinations as possible options, ranging from wood to acrylic and carbon. First we checked the feasibility by means of draughts and construction ideas. Then we came up with a quotation for engineering, and after that we calculated a rough estimate for the production

costs and worked out a schedule. After talking to the client about costs we knew that carbon was out of the question. Then we started developing our first design, exchanging various details with the architect. The combination of wood and acrylic did not seem very convincing, whereas the combination of light building boards made of veneered wood for the framework with extra reinforcements seemed ideal. In the end we tested an option with half of the door made of unprocessed light building boards and presented the results to the architect. Many details still had to be worked out, ranging from the vertical rotation axis with concealed mounting to the fixtures and fittings for other components, the necessary pre-assemblies and sub-assemblies and transport. All these details needed to be discussed and a precise offer had to be submitted before the client and the architect could give us the go-ahead for production.

The variety of materials used in some projects is most impressive. What does this mean for the engineering work? As interior engineers of services and technical equipment we work with a large variety of materials. New materials come on to the market all the time which means that there are most interesting combinations. Architects and designers present us with some real challenges in this area! We work with wood as well as glass, stone, metals, plastics, leather, fabrics, parchment, special surfaces and many other things, and we have acquired comprehensive knowledge and have a wide network of suppliers.

EXPORTING ENGINEERING **What effect does engineering have on production? What does it mean for your staff?** As we really enjoy working on complex projects our staff in the engineering department and in production need to meet very high standards. 95 percent of our staff in production are highly qualified carpenters and joiners, and several of them have done additional training, specialising in certain areas or becoming master craftsmen. The precision required and material combinations mean there are always new challenges.

Röthlisberger exports about half of its products. Is the Swiss market too small? The architects who work with us often work in other regions or in other countries. If complicated interior design projects are on the agenda, then it is in the architect's interest to have a reliable partner on his team. The large number of international projects we have handled in the last twenty years and our furniture collection have made our name known to foreign architects.

What has changed because of your export activities? Thanks to the projects abroad we have been able to gain a lot of engineering, planning and logistics know-how. We have had to learn to co-operate with foreign planners and craftsmen. This know-how is also very useful for projects in Switzerland. What is more, international repute intensifies our clients' confidence in our company.

How do you find suitable partners for the assembly abroad? All interior parts are first assembled and checked at our plant and then dismantled again to the appropriate size for transport to ensure that the assembly on site takes as little time as possible. Nevertheless we require experienced and thorough professionals for the assembly. Precision is also very important on the building site! A partner company has been supplying highly-qualified staff for the assembly for twenty years. On every large project, one of our staff who is fully familiar with all details travels to the site to supervise the assembly. >>

>Carpenters and joiners working with CAD.

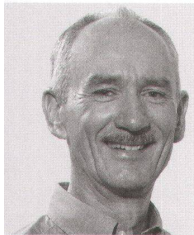


>> **STEEL INSTEAD OF WOOD** Röthlisberger are carpenters and joiners. If you take the chrome-nickel-steel staircase of the "Columbus" project, what do you see as the greatest challenge? First and foremost the engineering work. But our aim is to offer a range of interior fitting services that is as wide as possible in order to reduce difficult interfaces on the building site. During a conversation with the New York architect, Peter Marino, he showed me drawings and 3-D-animations of a spiral stainless steel staircase and asked me whether or not we would be able to make such a staircase in "Swiss watch-making quality". I was fascinated by the task, and I said that we could do it. In our next meeting I presented drawings with various suggestions and a stair tread with a central column as mock-up in wood. The engineering process from the first plans to production took six months. The two-storey staircase weighed approximately 3 tons and had to be suspended from the ceiling since the floor could not take the weight.

A steel staircase hardly adds value to a carpentry and joinery company. Do you produce parts for such a project yourself? The added value is, indeed, very small. The curved exterior cladding was assembled and glued together with CNS sheeting at our plant. However, such a project is extremely interesting for our engineering department. Due to our construction and design know-how and our experience with building sites we are able to implement a high-quality steel project in cooperation with a suitable partner. Such a project adds to our competence as an all-in-one interior fitter.

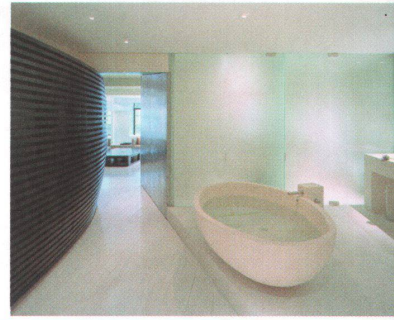
ROLAND KELLER (*1956)

Head of Engineering, Manager and Partner. Roland Keller is a master carpenter and joiner with additional business training. He has worked as joiner and carpenter and in work preparation projects in various companies including a two-year period working for a firm in Calgary/Canada. In 1986 he joined the work preparation team at Röthlisberger and has been a partner since 1989.

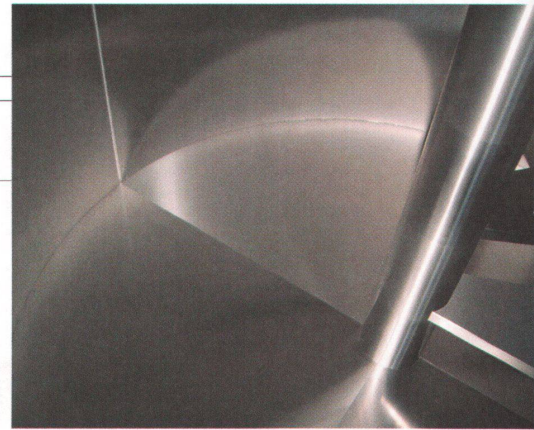
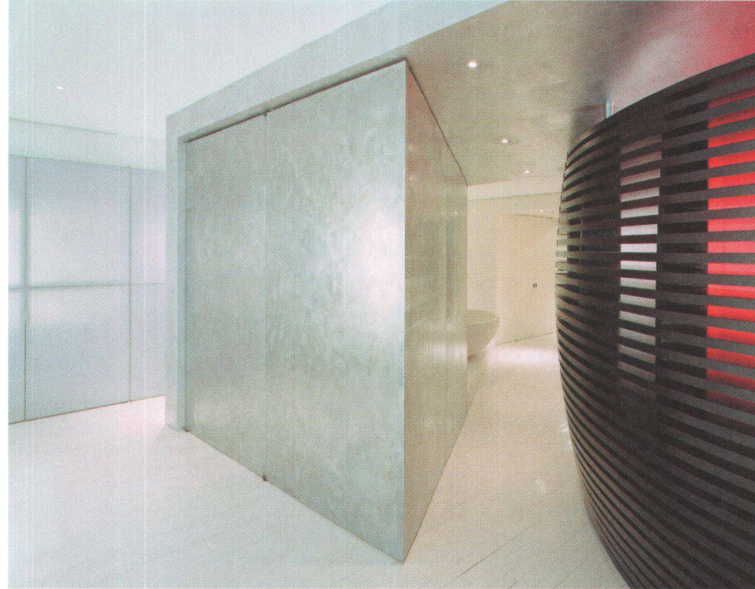


< Roland Keller

∨ The bathroom behind the partition.
Photo: Paúl Rivera/arch. photo

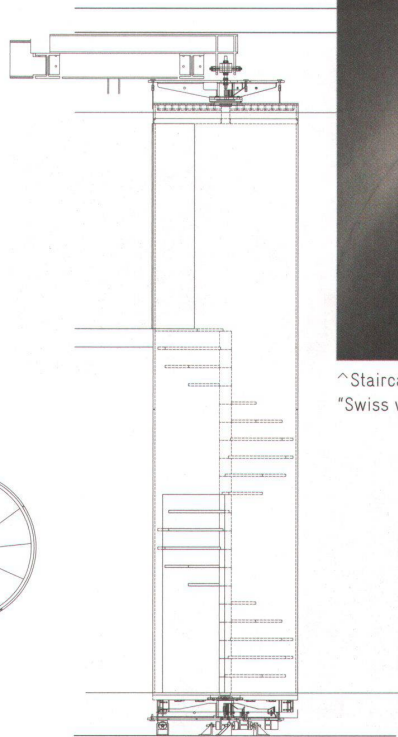


∨ For the "Egg Loft" project in a New York apartment, the architects of Plane Space Inc. designed an egg-shaped sculpture as partition.



^ Staircase made of stainless-steel in the required "Swiss watch-making quality".

> Cross-section of spiral staircase. An apartment project by Peter Marino, New York.

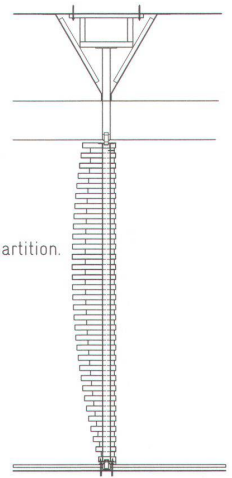
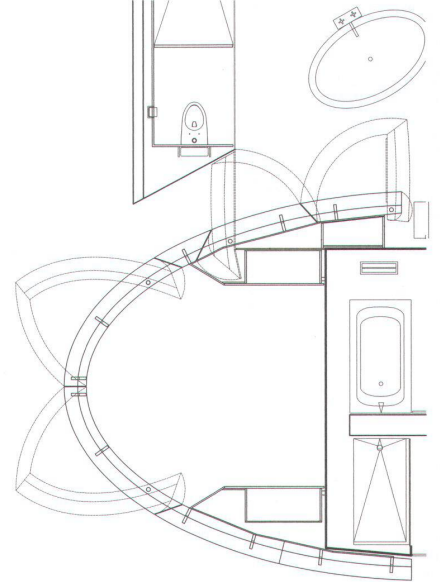


^ Weighing approx. 3 tons, the staircase was suspended from the ceiling.

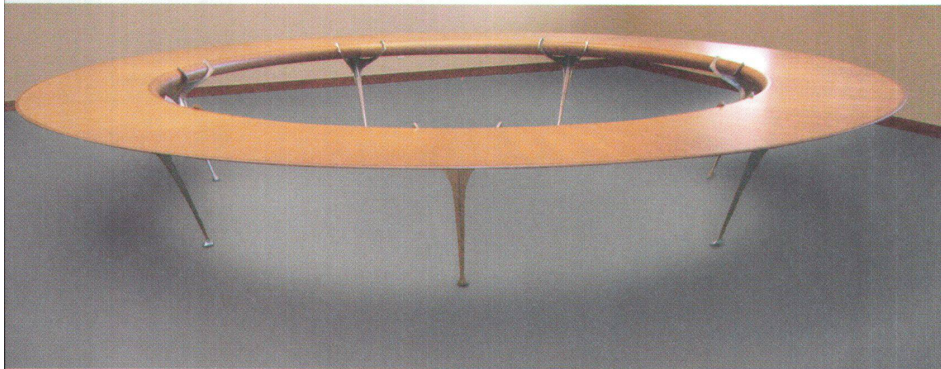


^ Dark horizontal strips allow partial transparency.

✓ The two rounded front doors are more than 2 metres wide.



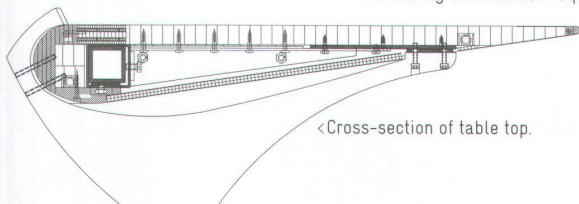
> Cross-section of partition.



^ Conference table designed by Santiago Calatrava Valls.



^ The daring construction required state-of-the-art technology.



< Cross-section of table top.