Glistening glaciers, majestic peaks, intoxicating views. The Alps are one of the most stunning mountain ranges on the planet. They emerged 135 million years ago when Africa drove the Adriatic continental plate into the European plate. People have faced the challenge of living in the Alps for thousands of years, and for 200 years the mountains have been a magnet to hikers, mountaineers, skiers and to people generally looking for somewhere to recharge their batteries. "Alpine Sports" were born in the Alps. Our contemporary passion for the Alps is relatively new for mountains that were previously considered dangerous bermers. The Swiss view the Alps as a national symbol of beauty, romance, and nature, a pure and authentic naturalness that is essential to protect. The more densely the cities in the lower regions grow together to form metropolitan sprawls and urbanization and agglomeration advance, the more important the Alps become as a "empty space" for the expansion of the mind as well as physical recreation, a pristine area where one can partake of unrestrained nature and experience oneself as part of it. The Alps are therefore a kind of urban alternative to our highly developed civilization, a kind of overflow vessel. In this respect Switzerland can be considered as a case study for the persistent phenomenon of global metropolization. Quite practical though is the significance and the value of the Alps as a "reservoir" and "energy source" for Switzerland and Europe in the form of hydropower and electricity.

One impact of the desire for the Alps in Switzerland is tourism. Often today tourism is merely an extension of the urban intensities, the pulse of the city, with its overabundant offerings of infrastructure and distractions. The interest of the local population in tourism is primarily economically motivated, for the most part the effects are anything but sustainable. In the best case tourism generates cultural landscapes and in the usual case it produces event landscapes.

The other, more quiet development is skiing. Here the goal is to experience nature itself. There is hardly a more impressive place, where one can let the spirit wander. The alpinist seeks both seclusion from the last pace of everyday life and the experience which makes one reflect on oneself become aware of one’s own limited strength. Through the most minimal intervention, the construction of so-called mountain huts, the Swiss Alpine Club provides hikers and mountain climbers with the opportunity for this different kind of experience.

Nowhere else than the Alps are the effects of global warming so dramatically visible as in the Alps, where the weather patterns have left alarming traces that can be seen by all. The Swiss are a "continent" of hikers, who exemplifies this: the first Monte Rosa Hut, which was then called Beltemps Hut, was constructed in 1895 directly on the edge of the Monte Rosa glacier. One could reach it after a three hour horizontal hike across the glacier.

The new Monte Rosa Hut will not only be easily accessible for mountain climbers, but also for untrained hikers. Nevertheless one must count on a descent of 350 meters and a subsequent climb of 400 meters - the difference between the old and the current level of the glacier. That is to say that global warming is not only visible, but also physically noticeable.

Autonomous Alpine Shelter, Monte Rosa Hut, Switzerland, HA08_UFNP
Splendid Isolation

Why go into isolation?
On the one hand because of human, personal needs such as a desire for seclusion, sublimation from everyday life, possibility etc.
On the other hand, in reverse, the absence of society and its incredible infrastructure becomes dramatically perceptible; without this our contemporary life would be simply inconceivable. The city creates the foundations for civilization, culture, and social and economic exchange. Although we take part in these matters of fact daily, we are seldom conscious of them. Who thinks every time when turning on a light switch or flushing the lavatory, etc., about the tremendously complex infrastructure that lies behind them?

When in isolation though where all of this is suddenly absent and no longer taken for granted, these facts become once visibly (and perhaps also painfully) graspable.

The Monte Rosa Hut in a case study utilized the Neue Alpine Planing Methodology, an architectural approach. First in isolation does the immense sensitivity of the natural as well as the urban resources on which life depends become apparent. This is not simply a matter of creating a sustainable building or energy-efficient mountain lodge, but more importantly the main issue is to create an awareness of these critical dependencies both in the sense of a respectful handling of natural resources in a landscape which is in fact finite, and in the transferability of the knowledge acquired on the site to the global city and its future development.

Conclusion
If we would consistently use only the daily radiant energy of the sun or geothermal energy, then we would have excess energy worldwide. The necessary technologies for this exist:

* Efficient energy use on energy problems, we have a distribution from wind power. World-scale we use the energy tremendous.
* This is expressed in the drastic increase of CO2 emissions and the subsequent greenhouse effect, global warming of the climate.

The Monte Rosa Hut has a self-sufficiency level that we should be able to achieve.

In order to achieve this goal saving--and generating strategies are used. Only the gas for cooking and food are brought in with a helicopter.
Island Solutions

Something akin to a sphere.
The hut would be designed most energy-efficient as a sphere or cylinder; this shape offers the lowest surface to volume ratio and least heat would escape. The present design comes close to this ideal scenario: the new hut is designed as a cut sphere into which a condensed package of recent has been incorporated. It is visually evocative of crystallised quartz, an impression which is also emphasised by the shimmering outer aluminium skin.

One thing led to another.
The particular requirements for the New Monte Rosa Hut helped to shape the design. The architecture is also defined by the objective – building with as few materials as possible, – saving as much energy as possible and – producing sufficient energy.

At the same time, the hut would have to blend into its Alpine surroundings as homogeneously as possible and serve as an architectural marker along the trail. In addition, it would have to meet the requirements of future visitors and satisfy topographical challenges.

A cascading staircase as an architectural spine.
A cascading staircase flows through the New Monte Rosa Hut in a spiral economy of reality itself. It provides a sweeping panorama to the visitor and simultaneously traces the path of the sun. Direct sunlight hits the staircase and the warm sun shines from floor to floor. On each level the sunlight shines deep into the center of the building.

Technology is widely available.
Although the new hut may appear high-tech its builders will employ a clever combination of energy efficiencies. The huts intended to be a condensation model of sustainable construction, it is possible to build with the difficult surroundings of the Monte Rosa Glacier without an energy supply system without having to go to enviro-friendly technical measures. This will surely also be possible in an urban environment.
Smart Technologies

A traditional wooden structure thanks to state-of-the-art technology. Components, which have been designed by computer, can nowadays be manufactured precisely in digitally controlled machinery. Computer-aided tim-ber construction is now used as stan-dard in the timber industry. The wooden construction of the hut, which weighs approximatively 200 tonnes, will also be treated separately.

A gigantic building block set. Computer-aided calculations are used to optimise the wooden wall and ceiling elements in terms of weight, dimen-sions, and accuracy. They are produc-ed in the valley and flown by helicopter to be fixed in place and assembled here to create a five-story structure. The wooden wall will then be covered by a thick layer of insulation and protected against the wind and the elements by a foil-aluminium skin.

Second level (entrance, panorama restaurant)

Third level (chambers, customers' apartments)

Fourth level (chambers)

Fifth level (chambers)

Autonomous Alpine Shelter, Monte Rosa Hut, Switzerland, HA08_LIFNPW

Spider-shaped foundations. The hut stands firmly. Since the building is to have as little impact on the environment as possible, the ground may not be broken up. Instead the hut is being built on a spider-shaped steel supporting structure, which is only in contact with the ground at a few points.

The building volume is a so-called light construction. This means that the production involves using very little grey energy and thus very little CO₂ is emitted.Selectable facades are light, the flight time and cost of helicopter transport are minimised, and thus also the CO₂ emissions. Ligh-tness, with the choice of wood as a building material: a renewable, ecologi-cal resource is incorporated.
The common formula for sustainability as a triangular relationship between economic, social, and environmental aspects is incomplete. The concept of architecture that expands this interrelation into physical, and respectively architectural space (namely into a tetrahedron) in the first place, is missing.

An idea such as architectural impact or architectural quality or even aesthetics is of course difficult to measure. In reverse though it is clear: What makes these not even mentioned in architecture?

Architecture is a „slow discipline”, that has a different life cycle than for instance short lived technologies. The challenge in sustainable construction lies in the intelligent connection between the most diverse interests, the problem is for the most part in the conflict of goals, the solution is to create a tool balance and not the one-sided optimization of singular aspects at the expense of other, legitimate concerns.

Sustainability, or more specifically sustainable building is therefore not a bounded discipline, rather much more an appropriate construction strategy, that incorporates architectural thinking and action on all levels. Therefore we prefer to ask: What makes good architecture?

High tech or low tech? The two often coexist in architecture. Buildings that endure through many generations exemplify that progress is not only connected to new technologies. The wealth of experience of many generations succeeds in any case the possibilities in one individual human life – today an often undervalued fact.

The power of seduction through digital media and global marketing is striking, above all, when at the outset only a superficially visualized „castle in the air exists: immediately people referred to the „Crystal in the Alps“.

We compare the New Monte Rosa Hut and the idea of sustainability for which it stands, much more imaginatively with the complex building and organism of a terrestrial population.
The Studio Monte Rosa

If you can make it there...

This project for the new Monte Rosa Hut originates in the last human name at the Department of Architecture (DARCH) at the Swiss Federal Institute of Technology in Zurich (ETH Zurich), directed by the Chair of Architecture and Technology. Over the course of four semesters, the students, guided by architects working in a multihouse project, developed the project and, as a result, dealt intensively with questions of sustainability. In total, over 25 students have participated in the design process. The project was established in 2002, ultimately the project „Gleitizing“ came out as the winner of the competition.

In this respect the Studio Monte Rosa constitutes a new, experimental, test bed of innovation, research and education, that since its inception has expanded the curriculum of the DARCH into „Architectural Design with Integrated Disciplines“. Therefore the Studio Monte Rosa is a bit like an „architectural think tank“, in that the next generation is already working on the solutions to the challenges of the future.

Currently the construction documents are being completed so that in summer 2009 construction can take place.

Studio work and design process:
The formulation of the task for the students was something unusual in the context of the school. The program, the clients, and the building site were new, and the goal of the work was a project that could actually be implemented and realized.

Important questions posed by the participation in the project are:

- Transportation logistics: how and in what form should the building material or the building components be transported to the site? And to what extent do the logistics of construction influence the form and structure of the building?

- The form and configuration: how and in what form does the project evolve within the constraints of the terrain, the materials, the landscape? How does one react to the given situation (i.e. the slope)? And which structure above is needed to be transferred into architecture?

- The building typology: how and in what form does one combine a hotel where there are no adjacent buildings, no infrastructure, no zoning or building setback plans. What building culture is transferable to this place?

- The energy and water supply: how much energy and water will be required? What are the energy and water needs of the building?

- Architectural language: what is to be made with existing constraints and problems?
Why is this Relevant?

... you can make it anywhere!

1. The New Monte Rosa Hut will be built in 2009. It is a unique shelter, designed to be assembled continuously during its operation, on the site through personal experience at a scale of 1:1, or through the Internet, therefore worldwide and online. It stands for an intelligent form of 

sustainability.

2. The know-how for sustainable building exists. It can be adapted and transferred to the entire world. The necessary building technologies for this are well known. Thus the main issue is not to create a good mountain lodge but rather to create a concept and philosophy for sustainable building that can be transferred to the urban situation.

3. The concept of sustainable building is applicable for every city and every individual building, adjusted to the local conditions. It is comprehensible, teachable and applicable to the existing building stock.

4. The problem in the debate on sustainable building is the actual building process. The sensible degree of intervention is not dependent on the application of sophisticated technologies, rather on the most efficient relationship between costs and sustainable optimization. Herein lies the key to a quantum leap in the discussion on sustainable building.

5. The model of the Studio Monte Rosa demonstrates a teaching method for a new architectural education. It encompasses integrative, interdisciplinary and innovative design methodologies as well as fundamental research, since theory requires practice and practice requires theory.

6. The project for the New Monte Rosa has gained a great deal of attention already in Switzerland and worldwide, both in professional circles, but above all also in the interested general public.

7. ... and it’s fun!

It’s not about a hut – it’s about a concept and a philosophy of sustainable life.

Cost-efficient but not cheap.

The hut will cost around CHF 600k. The Swiss Alpine Club will contribute around a third of this sum, with sponsors provid- ing the rest. This project has stirred a great deal of interest from the general public. Worldwide awareness is also aided by architects.

“One must always attempt the impossi- ble in order to achieve what is possible.” (Hermann Hesse, writer)