Background information
The Wen Yuan Building on the Campus of Tongji University which built in 1953 is the first building which built in International Bauhaus Style in China. During the years with its understated style and very good considered composition of different function areas Wen Yuan Building has not only fulfilled its function as teaching building, the proper volume, harmonic connections to other buildings in the neighborhood and modest influence to the environment endue it with reputation. 1994 it would be graded to Shanghai excellent historic preservation building class three. Any changes on the building should be considered under the conditions of building preservation law and be permitted by the committee which consists of professional staffs.

Status quo
WenYuan Building has been used by the Architectural faculty at first phase and then completely by the faculty of building engineering. End of 2005 since the new faculty building for building engineering has been built it has been returned back to the College of Architectural & Urban Planning and a comprehensive renovation is necessary since it could not satisfy today’s using condition. May problems are followings:

a. There is no energy concept till now; it’s very hot in summer and very cold in winter. In the past several years some office spaces have installed single air conditioners and outdoor machines hanging on the facades everywhere so that the image of the preserved ensemble has been damaged.
b. It lacks maintenance. Many indoor places as well as the facade are under unsatisfying situations.
c. There are some added parts on the building which are not well considered should be cleaned up.

The most important and difficult point is the point a. which concerns the contemporary standard needs of comfort. A traditional solution which put central air conditioning system in charge is not suitable since it proved as energy consumptive and against our today’s states development policy. Furthermore with its extravagant installation space requirements it could not match the original Bauhaus Style of the building. A new type energy concept should be developed under this specialized keystone.
Constellation of teams
Since in the rapid developing period our country didn't pay enough attention to the aspect of energy efficiency in the field of construction factor it lacks experimental experiences and in the field of preserved building renovation there are even no single example. The leadership of Tongji University made the decision to work with some German experts who have plentiful experiences in renovation of preserved buildings as well as in energy efficiency design. Not only a technical concept could be learnt by the opportunity working together with German experts but also from the methodic which will accompany the whole process we could make profit.

Zoning
- dynamic heating and cooling
- statcal heating and cooling
- unheatet
- natural Ventilation
- Mech Ventilation
- statical heating and cooling
- unheatet
Concept

For energy saving the good insulated building cover is obligatory. This includes facades and roof as well as ground floor. Since WenYann Building has only a simple layer brick wall and large simple layer of float glass windows with steel frame this became to the most intractable problem cause the facade should remain in the original outlook.

Not only insulation system should be carefully designed but also climate protection of the surface, drainage systems for the roof and thermal protection of the foundations. Under building service the cooling and ventilation systems are the most important aspects whereby a building could save operating energy. A very efficient lightning system is also obligatory for energy saving. Water systems include waste water recycling and rainwater utilization and decentralize retention are also very important for sustainable building development.

After several investigations on site and intensive discussions a totally new concept has been worked out under cooperation of architectural staffs of Tongji University and the technical engineers from Technical University of Braunschweig Germany.
The general course of the renovation project is to fulfill the teaching function, to improve the using comfort of an old building and at the same time it should reduce the operating energy consumption as much as possible. Through the renovation WenYuan Building should be endowed with demonstration character for technologies which are sustainable and orient to the future development.

The concept intends to put different cooling and heating systems into different function zones, which divides the whole building into three separate parts. On the left and right sides are big lecture halls and in the middle are normal class rooms. Both parts are connected through entrance hall and stair houses as well as corridors and sanitary. The part of big lecture halls will use solar cooling and heating system which uses the roof area as solar collector field; the middle part will use the thermal radiation ceiling plates with water medium which is tempered through energy piles. The energy pile will be located in the garden in the south of the building. The connection parts are considered as no working zones so that it will be only tempered limitedly. For the south facades a sun shade systems should be developed. Since the facades must be remain in the original forms this could be only placed indoor behind the double glassing.