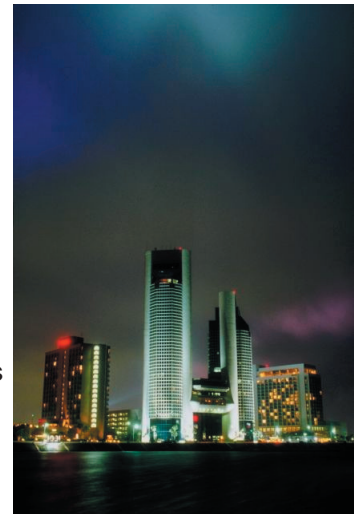


In the early 19th century, the heights of buildings reflect the richness of a family. However, in order to build tall buildings, there must be thick walls at the bottom to support the weight. Unfortunately, this would make the space inside becomes precious. The problem is solved by using new materials and building technology.



After 19th century, new materials are used. Bricks, stones used in the past are replaced by concrete, steel, and glass.

Besides materials, new building technology is invented. The invention of frame makes tall buildings possible. Roul Liver Building located in Liverpool, which is the first skyscraper and the highest building in Britain makes use of a frame which works as skeleton to support the weight of upper part of the building. More space inside the frame allows better light and ventilation. The frame used is reinforced concrete. It takes only 19 days per floor to make a frame. Therefore, this practice is economic. The wall is made of granite to keep the building stiff. As a result, the problem of supporting tall buildings is solved.

Besides support, tall buildings must be able to resist wind without bending. Commerzbank tower in Frankfurt overcomes this problem. It makes use of triangular shaped framework; wind can easily pass through without causing large damage to the building. Moreover, between each column, there is a truss which is different from ordinary diagonal shaped trusses. It is made of horizontal and vertical beam, hence rectangular shaped windows can be built.

Different techniques have designed to fit tall buildings. For safety reason, the windows are only allowed to open a bit to allow fresh air pass into the building. In 1983, lifts are widely used. This helps people to travel up and down easier.

Because of this new development in building technology, skyscrapers become common.