STAIRLIFT: THE OTHER ELEVATOR

M.C.Riedijk, Thyssen de Reus BV, PO Box 4, 2920 AA Krimpen A.D., Ijessel, The Netherlands

History of the elevator goes back many centuries but only since successful demonstration of the overspeed governor and arrestor in 1853 has the industry developed progressively. The elevator is acknowledged as a safe means of transport for people.
This congress with almost 40 presentations on all kinds of technical subjects concerning, elevators shows how much scientific work and research in the industry is done. This is typical for a matured and established industry. Today one cannot imagine the world without an elevator.

Although the first drawing of a stairlift was made more than 100 years ago the product never really gained acceptance.
In comparisson with an elevator the stairlift has a still some catching up to do. Certainly when we consider the acceptance of the product by the users and architects or even the elevator industry.
Only now is it starting to become more widely acceptance.
In the elevator industry, stairlifts were very often not considered as a serious option and, from a technical point of view the product is often still under estimated. This may be caused by lack of familiarity with the product. People used to thinking about complete, relatively expensive elevator installations see the stairlift as a "sideline" product. This may have been understandable in the past but is not right for the future.
In general, an elevator is preferred to provide access, however for technical and/or financial reasons a stairlift is more often the solution.
In fact, the stairlift gets more recognition as a means of transport since more countries demand accessibility to public buildings for the disabled or provide to people assistance, allowing them to live longer independantly, in their own homes.

It is difficult to make a comparison between the elevator and the stairlift as we are talking about different magnitudes. Nevertheless there are some interesting subjects to look at, and highlight differences:

1 SPACE

An elevator is an installation which is a dominating factor when designing the building. The elevator will always be provided with space for a shaft. In fact when we start to make a building today, the design always incxludes space for the needs of the elevator. Whatever design of elevator an architect wants to install in his building, he fully accepts the necessity of the product. This puts the engineer in a favourable or sometimes even dominating position as he determines what is possible and what not. In any case he gets space to build his installation in.
Only very recently has an elevator been desinged that could fit in or against an existing building. This still requires considerable construction work to be carried out to make the installation fit.

When we compare this with the stairlift we see a totally different situation! A stairlift has to be made to fit in an existing building. The engineer has to design his installation in a space which was never meant for it. Construction work on the building is usually not necessary and the finished installation should cause no or very little, obstruction for non-users.
Furthermore a stairlift should be small and aesthetically pleasing, to complement its surrounding.
It is clear that the approach of the stairlift engineer has to be quite different from his colleague from the elevator side.

2 TRAVEL

If an elevator travels a few degrees out of the vertical line this is something special and often published in Elevator World as something special. This is because an elevator normally only travels in 1 dimension, just up and down. A stairlift travels in at least 2 dimensions, along a straight staircase, and in very many occasions in 3 dimensions along curved staircases. Nobody seems to be surprised and takes this for granted. Do you know of elevators going around corners?
If so you can count them on the fingers of one hand.
Generally speaking we can say that in this respect the elevator has an enormous advantage over the stairlift. Of course the stairlift for straight staircases is relatively easv to make and you see many manufacturers who produce them in batches.
The stairlift that operates in 3 dimensions requires much greater skill for design and manufacture of the rail which explains the much lower number of manufacturers than those who produce straight stairlifts only.
Every curved rail is produced according to the specific dimensions of the staircase which makes each order unique. However the main manufacturers produce them in large numbers. This requires both technical skill and a proper organisation.
A technical implication, of the difference between travelling in 1 dimension or 3 dimensions, is that the rail of the elevator only guides the car during its travel in normal use, while the rail of the stairlift has also to carry the weight of the load.

3 FORCES

When we look at the situation in the Netherlands as an example we see that in 90% of our stairlift installations are for curved staircases. It is clear that it has to comply fully with the shape of each staircase. This, in combination with the fact that the stairlift may not take more space than absolutely required forces us to install the rail as much to the side as possible. As a consequence the load it has to carry cannot be placed over the rail but at the side. This causes a torsion moment on the rail that has to be taken up.
The rail has always to carry out functions mentioned above; guiding, carrying. In many designs the driving force of the unit is also taken up by the rail.

4 SAFETY

In an elevator the danger of falling is in the direction of travel which is straight down or up. Thus the protection is concentrated on this possibility, where the rail must be able to bear the forces of the car and the load in case of failure. Furthermore the user, is standing in a closed liftcar which avoids him from getting "squeezed" during the travel.
The stairlift has the hazard of falling, or slipping, in the direction of the travel and also wants to tumble away from the rail. This is a factor which is a most important subject when we design a stairlift, and causes the already mentioned torsion on the rail.
This does not mean that a stairlift is a dangerous means of transport. The rate of casualities is low and one can state that all serious manufacturers consider the safety issue to be a very major factor and feel a big responsibility to their clients. The time that stairlift are produced in backyards is definitely over!
Like in the elevator industry many countries have strict regulations. These can deviate quite a lot from each other. Apparently the opinion about safety is not in line all over the world. A good example is the requirement of the overspeed governor plus arrestor on a chairlift. In some countries this is a strict demand and in others it is not not. This is not logic.
Important points of safety are determined by the fact that the user is not in an enclosed situation. He is in fact quite vulnerable and can easily be hurt. Therefore issues as follows are clearly defined:
-the free headspace
-Security against squeezing
-maximum speed
-overspeed safety
-mechanical safety
-the constant pressure controls should be easy to use especially for people who also suffer a problem with their hand functions.

Another problem which we have to keep in mind is the safety of non-users. When the stairlift is in use the non-user is also vulnerable contrary to the elevator situation. In public buildings this can be solved by the surplus width of the staircase, audio visual alarms when the lift is in motion and safety edges on the device, which halt the lift when they contact an obstruction.

5 USER

Stairlift users are a restricted group of people, for whom we as stairlift manufacturers, have a great responsibility. Apart from the technical aspects the product has a very emotionl aspect.
In the United States we have been talking about the Yuppies and the Dinkies. They are followed up by the OPALS (Older People with Active Lifestyles)
The "over 65" is pictured today as an active and healthy person. This is a great step forward with past ideas and of course one wants to conform to this. Elderly people tend to postpone decisions to buy a device with which they admit that they are getting older or that they are having problems climbing stairs. Thus they have to cross an emotional threshold before they even start to enquire about a stairlift. Our experience is that once installed they say that "they are sorry that they did not buy sooner because it makes their world, at home, bigger again.
The other group of users is the people who are disabled through illness or accident. Often these people are wheelchair users. It is very positive that in many countries these people get more and more integrated in normal life. Politics are now demanding facilities for disabled people. Good examples are The Netherlands, United Kingdom and the Scandinavian countries with existing grant systems but also new American with Disabilities Act (ADA) in the United States which demands accessibility of existing buildings which comes in force this year.

It is clear that stairlifts have to be designed for this specific group of people whilst keeping in mind both the safety and control of the lifting device.

CONCLUSION

By pointing out some of the differences I hope to have made clear that the stairlift is a product with its own strengths, requiring its own approach. The industry has ickly over the last 25 years and nowadays one can find several manufacturers in different countries who are dedicated to the product and provide a safe and appropriate solution to accessibility problems. They have set up professional organisations including service and maintenance facilities and have good knowledge of codes and safety regulations in the countries where they operate.
Through the years they have gathered a lot of experience and developed the stairlift as a well designed product which gets the recognition it deserves. The circumstances in the market predict a positive future. In many countries the number of stairlift installations now outnumber the number of elevator installations. However, it is clear that both products are not necessarily competitive but are complementery. In fact, we could say that stairlifts are just another elevator.