

PRINZING GmbH, Blaubeuren, Germany

Innovation in staircase technology: adjustable formwork supplies top quality

Prinzing GmbH, of Blaubeuren, Germany, the world famous manufacturer of innovative machines and moulds for concrete plants, has developed a new

adjustable staircase formwork for producing straight concrete stairs. They are bringing it to the market under the name "Sirius – ingenious".

The target groups are concrete plants that have to change their staircase formworks daily to make stairs with different rise to run ratios. The old arrangements for adjustment took up a lot of time. So the concrete plants try to save on the number of set ups with complex scheduling. This usually results in stairs being produced that are not yet required, while the stairs that are required slip behind schedule, with predictable problems and costs.

Prinzing claim to have succeeded in developing an adjustable staircase formwork, which reduces the time consuming, expensive manufacturing of straight flights of concrete stairs to a minimum. Here the designers were able to use their extensive specialized

mechanical engineering knowledge for concrete plants in the best possible way.

The design was successful at the first attempt. The staircase formwork is already in use on a daily basis, meeting all expectations in the best possible way. It is very flexible in adjusting to the right rise to run ratios, and extremely accurate. Prinzing pointed out that craftsmen that have worked with this new staircase formwork never want to go back to the old ways of doing it. It is very easy to work with.

The best available technology, used to innovate

Different manufacturing methods are used to produce straight runs of slab

stairs. In some cases the run of stairs is made later, installed in position, in others it is lying flat with the profiled flight of stairs on the underside, or laterally, i.e., one side stringer (the filling side) facing upwards. These formwork systems are fixed or can be adjusted by different methods. Fixed, non-adjustable formwork systems require a high investment in stocks of staircase formworks, an enormous consumption of space and still cannot be used flexibly.

Current, adjustable formwork systems have to be manually changed to achieve the desired rise to run ratio. These methods of adjustment are very inaccurate and time consuming. Change over times and shuttering times may take several hours, depending on the methods involved. The surface of the stairway treads may not be up to standard. Adjusting the step height and tread widths is usually either impossible or only possible by spending a lot of time on it. If both landings are to be shuttered, then this must be done with a second concreting procedure, where the protruding connecting reinforcement of the upper landing always gives problems. Because of all the time it takes, these formwork systems cannot be used twice in a working shift. Working together with experts from concrete plants, who are very familiar with the construction and manufacturing of staircases, a new, adjustable staircase formwork was developed for straight runs of stairs and brought to the market.

Often the staircase is called "the queen of architecture". Every engineer who has had work with them knows the peculiarities of their construction and manufacturing. They have to be handled carefully. They have a number of special features. One must be able to shutter them quickly and flexibly. Switching over to other



View of a staircase manufactured on the Sirius plant: an outstanding surface and quality right down to the detail are the marks of these finished elements

Economical production of straight stairs:

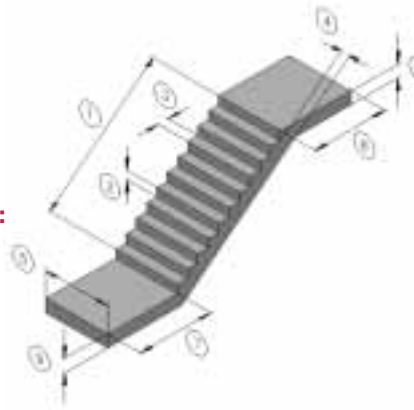
- With landing above and below
- Maximum steps
- Highest possible quality

Automatic adjustment of the:

- Height by 16-20 cm
- Tread by 26-30 cm

Quick adjustment of the:

- Thickness by 10-26cm
- Width by 80-100 cm
- Landings above and below



- 1 number of steps
- 2 height
- 3 tread width
- 4 thickness
- 5 width
- 6 upper landing length
- 7 lower landing length
- 8 upper landing thickness
- 9 lower landing thickness

run to rise ratios, adjusting step heights or tread widths, shuttering the upper and lower landings - both at the same time as well - everything has to be done in the shortest possible time.

To achieve the greatest possible flexibility, all settings must be stepless. The surfaces of the stair runs must meet the highest standards. The new staircase formwork "Sirius -ingenious" does all this. The extremely short changeover times mean that it can be used twice in a working shift.

The new stair formwork is extremely exact as regards measurements, and operates laterally, i.e., a side stringer facing upwards. The principle of operation involves a design where during adjustment all 18 step elements are moved evenly at the same time in such a way that the desired run to rise ratio as well as the length of the stair

is achieved. The set dimensions are exact and held in place by the adjustment mechanics. Changing the formwork boards or bracing the step elements is not necessary. The front step edges can be formed as rounded, chamfered or sharp edged by inserting edge protection sections.

Then the step height thickness is set by means of a plug in adjustment device. The landings can be shuttered as required. The shuttering of the landings - both at the same time - is completed in the shortest possible time with a cleverly thought out procedure. The upper landing can be shuttered at each step - in the desired width. The landing equipment is available as an accessory. After demoulding the top and bottom, the reinforcement is brought in and the height adjustable front wall of the formwork together with the landing formwork is positioned and braced. The staircase formwork needs little maintenance and is wear resistant.

According to Prinzing this new staircase formwork has revolutionised the production of straight runs of concrete stairs and provides the answer to the pressure on costs and time. Compared to conventional staircase formworks, the time required can be lowered by around 80 per cent - with just one production run per working shift.

Further information:

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