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SCHNELL

Highly innovative company in the field of reinforcement processing equipment, presents:

S P I R E X

After years of research and testing, we found out a suitable solution for safer and more convenient buildings, in accordance with the standard requirements.

THE CONTINUOUS STIRRUP WITH VERTICAL ARMS AND VARIABLE PITCH

This is the real solution for any kind of structure, even for the earthquake proof one

- Controlled by the Universities of Florence, Neaples, Ancona
- Agreed and accepted by foreign Institutes and building contractors on the occasion of the presentation during the Intermat Exhibition in Paris (20-25 April 2009)
- Very positive judgements from project managers at all levels
- Strong interest shown by companies producing programs of calculation, HAVING RECOGNIZED THE IMPORTANCE OF THE PRODUCT, have announced the next software update
- Easy application and control on the end of the Work Management
- SPIREX QUALIFIES THE QUALITY OF THE BUILDINGS AND OF THE FIRMS THAT USE IT .
- Schnell stays at your disposal for any technical or economic demonstrations.

Awaiting your kind reply we send our best regards.

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SPIREX, the earthquake-proof reinforcement

Produced by Schnell Group, it is considered one of the most important innovations of the last 15 years in terms of safe buildings.

Schnell Group, a world leader in the field of machineries and technologies for reinforcement processing, proposes a new solution in the name of quality and safety of homes.
His name is Spirex, a **new generation of stirrups**. It consists of a continuous spiral with vertical arms, Spirex is the result of 4 years of research, and is considered the most important innovation of the last 15 years in the field of reinforced concrete.

The Spirex eliminates all of the errors that may occur on site during the erection of reinforcement. Spirex is a single piece of steel rod for easy and fast application which requires to match the original project of the engineer, with no possibility of damage or negligence.

THE SPIREX CONTINUOUS STIRRUP

The vertical arms of the "**SPIREX continuous stirrup**" duly reflect the position of the traditional stirrup, whose arms are perfectly vertical to the upper and lower bars. The reinforcement is more resistant to the shear effect, as established by the calculation of the engineer. The traditional spirals are no longer accepted for the realization of the beams, because their arms cannot remain vertical to the main reinforcement.

Phase 1: PRODUCTION
The "Spirex continuous stirrup with vertical arms" is produced in the plant accordingly to the calculation of the project manager. Once realized, the continuous stirrup is compressed, tied and easily transported in the yard. The low size allows to reduce the cost for transportation: 60 cm for a beam of 6mt.

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Phase 2: POSITIONING
On the yard the longitudinal bars are inserted in the spiral when it is still compressed, and ensure an easy and quick implementation.

Fase 3: UNFASTENING AND ASSEMBLY
Once unfastened, Spirex returns flexibly to the original conformation, and promptly joins to the main reinforcement, according to any planimetric requirement. Pitch and position are duly observed.

Fase 4: TIES
Given that the spirals are tied to each other, it is NOT important that the joints of the Spirex be tied to the longitudinal bars. This allows a great saving in terms of time of assembly: in the comparison timed between Spirex and the traditional clamping system the average assembling time of the Spirex is 65 - 70% ahead.

ADVANTAGES

1. absolute accuracy in the number of stirrups in **BEAM/PILLAR**;

2. given that the **"SPIREX continuous stirrups with vertical arms"** are produced with a pre-established pitch, STIRRUPS (spirals) are always in the **right position** along the reinforcement, even with variable pitches. The number and the position of the stirrups along the reinforcement can no longer be modified because of the negligence of the workers on the jobsite.

3. It is NOT important that every stirrup (spiral) be tied to the longitudinal bars of the reinforcement, because, **as the stirrups are connected to each other, they DON'T move from their position** during the pouring of the concrete;

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4. The **"SPIREX continuous stirrup with vertical arms" CANNOT open** during an earthquake, as the traditional stirrup can (particularly in a pillar);

5. **Great saving of time and cost of assembly**, with a reduction of up to 70% in the installation time of the reinforcement.

Finally these are the advantages of the ***"SPIREX"***:

1. The final beam is stronger than the traditional one;
2. The system meets the requirements of the operators to have the vertical arms actually vertical;
3. There is a perfect match between the calculation of the project manager and the realization on site;
4. Reduction of the material used: the quantity of wire used in a continuous stirrup with vertical arms is lower, as there are not the overlapping hooks of the traditional stirrups: there is a reduction of 10 up to 15% in the quantity of the material".
5. The risk that the stirrups can open when under load is eliminated: the reinforcement is continuous;
6. Low size during transportation (60cm for a beam of 6mt);
7. Lack of down time due to tracing reference points, because the stirrups enlarging will place themselves according to the pitches established by the project;
8. Absolute accuracy in the number of stirrups in beams and pillars;
9. Absolute accuracy in the pitch between the stirrups;
10. Great reduction in the number of stirrups to tie on the yard;
11. Great saving of time and costs during the installation;
12.

The joints of the structure can be quickly and easily reinforced through Spirex

With Spirex it is possible to produce continuous stirrups with vertical arms for the realization of various forms of beam such as "L" and "T" shapes, and pillars. Also, it is possible to realize spiral staircases, arches, kerbs, terraces, parapets, etc..

SCHNELL
REINFORCEMENT PROCESSING EQUIPMENT

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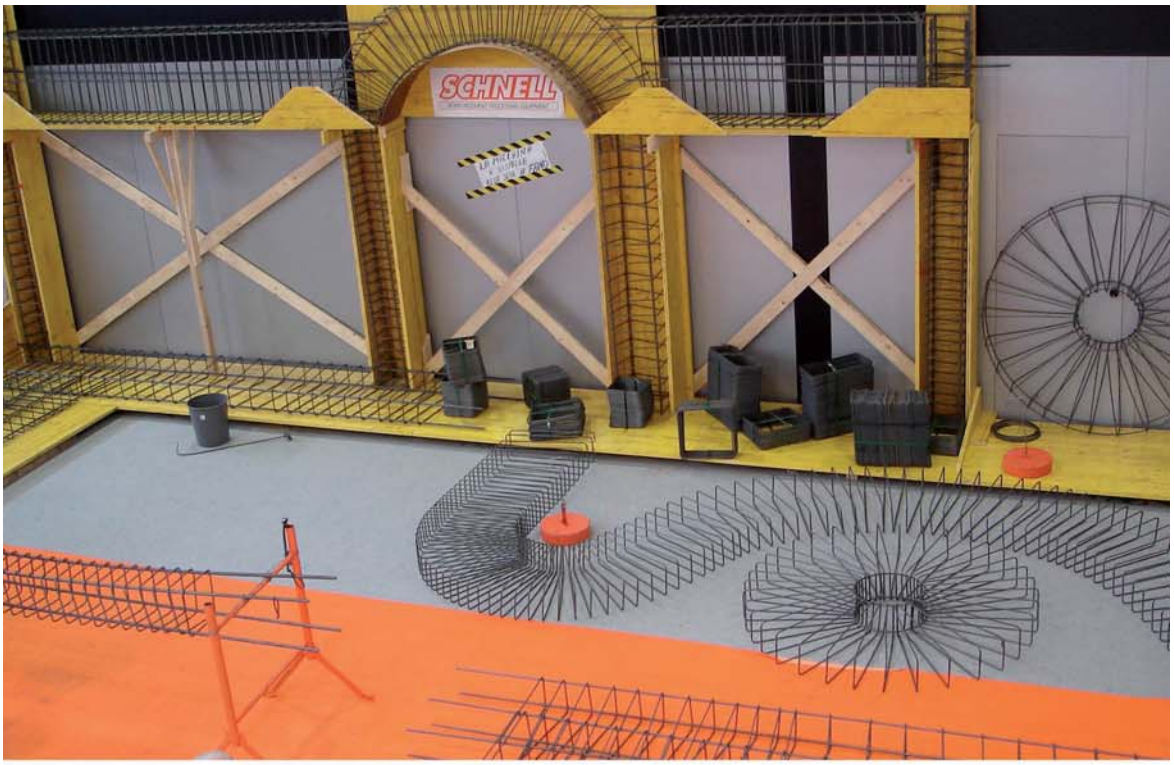

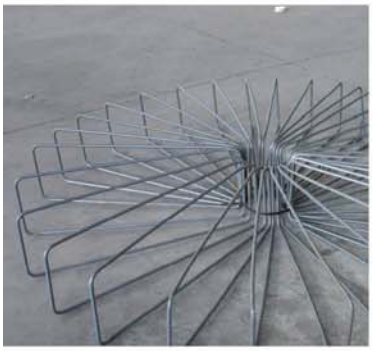

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Università degli Studi di Firenze

DEPARTMENT OF CIVIL AND ENVIRONMENTAL ENGINEERING

LABORATORY FOR STRUCTURES AND MATERIALS TESTING

"Crack testing of rectangular beams with spiral stirrups and traditional stirrups"

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The evaluation of the results achieved during the testing, revealed that:

- The performance of the elastic and pseudo-elastic stretch up to the value of the last load are the same in the four cases of beams breaking during the cutting;
- The value of the last cut in the TA and TB beams is not influenced by the type of reinforcement, within the limits of the common changeability of the test results;
- The value of the cut is the same as the one pre-established by analytical means (equal to Ptot = P1 + P2 = 354 kN) using the procedures proposed by various requirements (ACI, Eurocode 2 and DM 1996);
- The mode of breaking is the same in the four tested beams (the breaking is due to the crushing of the compressed Biella=rod(?) of the concrete with steel in the elastic area and excursions of the stirrups steel in the plastic area);
- The distribution of the breaking cracks is coincident, perhaps with a lower concentration of cracks in the case of a spiral (beams TB);
- The "softening" branch next to the maximum load shows a greater strength in case of a “spiral" than in case of a traditional stirrup, that means there are greater values of the residual cut;

The numerical modelling carried out with defined spatial models, have confirmed the experimental evidence, by giving to both the models comparable values of the last load and similar performances during the loading as well as upon the break, as per the graphic above.

The analysis of the numerical and experimental results allows to draw the following conclusions:

- the "spiral" gives to the beam ***the same advantages*** as the one offered by the traditional stirrup, because there are no particular damages prior to the break or by the last load either;
- the beams with the ***spirals have a better performance against the residual shear strength upon the clearing of the last cut***;
- ***The sample of calculation proposed*** by the current regulations for the evaluation of the last cut ***can be used in both the cases*** and provide reliable values concerning the maximum load bearable by the beam.