GIRDERS PARAMETARS DESIGN FOR AUTOMATIC FLEXIBLE PRODUCTION LINE ADJUSTMENT

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ABSTRACT
Flexible lines for the production of welded girders SP-088 was designed in 1988 by the reputation of the existing constructive solutions that has the possibility of creating girders of different dimensions. The possibility of changing the parameters is done manually, which is set-up time needed eight to ten o'clock. As the market demands require less quantities of the same dimensions, carrier, or more frequent change of the parameters and the production of girders of different dimensions that are present at the time of the great economic crisis in the world and by us, the market demands a lot sharper in terms of time delays.
With the economic standpoint, this flexible line has become non-productive for reasons that require frequent changes of parameters and dimensions of girder and therefore must be given to a new constructive solution for flexible lines SP-008 in order to meet market demands.Development of new flexible lines SP-008, as well as the development of computer technology have created new approaches and solutions for the acceleration and automatically adjusts the parameters of a porter, or making an appropriate application-software required for computer control, which is a goal and this work.
Keywords: flexible lines, girder parameters, software

1. INTRODUCTION
Fabric reinforc, welded, truss is made of steel with good weldability. Construction of girder triangle cross guarantees necessary bearing capacity of concrete structures in civil engineering, for and roof panels in housing, etc.
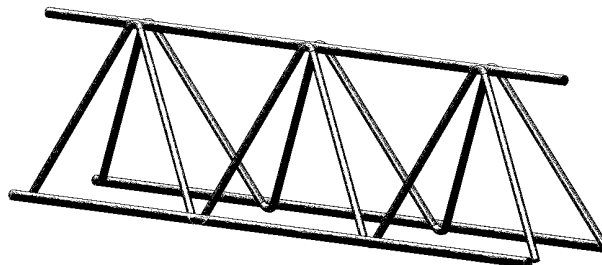

Figure 1. Welded girder

Weld between longitudional and zigzag wire, in the lower and upper band, were derived by Electric welding process.

Flexible line SP-008 with its technical characteristics, allows the work with the five speed, with step T = 200mm, or 90 cycles per minute with a hydraulic system that allows welding and cutting beams on a particular length, depending on customer requirements, from 2m to 14m .

Hydraulic and pneumatic systems machines, according to the manufacturers catalogs have difficulties in the work of more than 100 cycles per minute to be productive new lines of SP-008 achieved maximum lack of time setting the lines for the various dimensions of girder.

2. GIRDER DIMENSIONS

Flexible line SP – 008 for making welded girderer allows the creation of triangle cross-carrier with following dimensions:
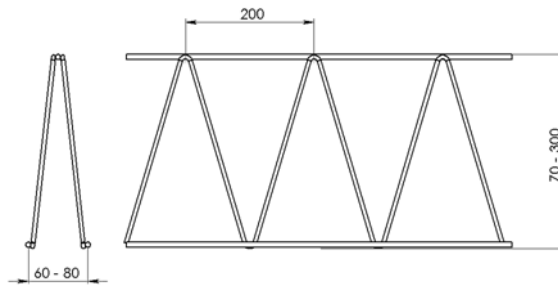

Figure 2. Space lattice girders

TYPE	HEIGHT H MM	WIDTH B MM	LOWER CHORD MM	UPPER CHORD MM	DIAGONAL MM
SP-008	70 – 300	60,70,80	4,0 – 10,0	5,0 – 12,0	4,2- 6,0

Flexsibile line is designed as two-piece, where the lower band weld lower wire to wire diagonally, while the top ring of the upper wire of the same diagonal wires. In addition, prior to welding two wires meet (zigzag) must turn to bend around the countershaft in the vertical plane, and then bend then weld in the slanted position. Therefore, changing the distance of the two lines would automatically and the necessary dimension of height girders, beams and the height is less than the height of the diagonal fill.
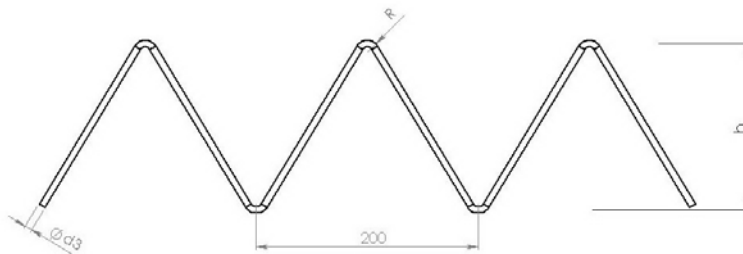

Figure 3. Dimensions zig-zag wires

3. SYNTHESIS MECHANISMS

Based on the analysis and synthesis found a new mechanism for bending zigzag wires, which can bend strings, which is shown in Figure 4. The mechanism consists of two disk on which the six countershaft through which the bending wire, and the drives are rotating in the opposite direction.
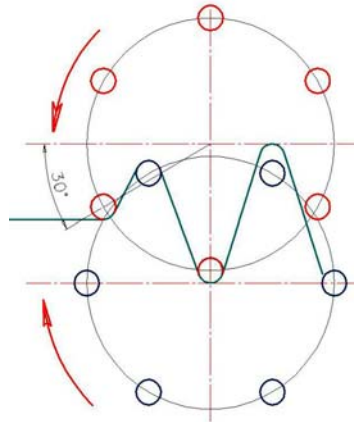

Figure 4. Mechanism for bending wire

The specified mechanism makes bending strings about three points that make up isosceles triangle. In this matter there are two points on a single disc, and the third is on the second disk. Turning the drive in the opposite direction, two countershaft hold the wire while a third made bending strings. To achieve rotation of the bent wire comes out of the mechanism, a straight wire goes into the grip and rolled. Slider allows you to vertically shift a disk and thus can be achieved changed cik height - even strings.

4. CREATION SOFTWARE

On the basis of the analysis made a program that enables automatic calculation of parameters of automated lines. On the basis of information provided about the height and width of girder, and wire thickness on the support which should make the program automatically calculates the amount of zigzag wire axis and the distance bicycle chain for the transportation of the folded wire. Example of input and output parameters for the mount height 300mm and width of 80mm is shown in Figure 4.

Figure 4. Input and output parameters of carrier

Thus developed the program and allows the calculation of other parameters, automatic lines, as well as other data on the truss.

5. CONCLUSION

Automated flexible line for making reinforced girders type SP - 008 is technically functional and ensure a maximum efficiency, acceptable in terms of time on setting lines.

Creating a work program - software setting is reduced to the time that is less than an hour, which in terms of economic indicators, making for faster, is acceptable.

6. REFERENCES

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