TCHNOLOGICAL STUDY ON THE EXECUTION OF THE SUSPENSION COIL SPRINGS

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Abstract: the suspension of a vehicle consist of elastic devices arranged between the wheels (the axles of the car) and chassis (the body of the car) with a view of ensuring the protection of the body of the car to the action of dynamic loads that are transmitted from the ground up, stability and road-holding of the vehicle as well as the passengers convenience. Vehicle suspension consists of three main parts: an elastic element, damping element and guiding element.

INTRODUCTION

The elastic element is mounted between the chassis(body) and deck (wheel), and helps to decrease the vertical dynamic loads changing them in amplitude and frequency oscillations acceptable to the passenger.

For the vehicle suspension the metallic elastic elements are being used,and usually being combined with the telescopic shock absorbers.

The coil springs are made of steel rods wrapped by a propeller. In this type of springs there is no friction and as a result this kind of suspension requires the use of stronger dampers.Also, these kind of springs only take assignments and work along their axis and because of that the suspension requires guidance for these kind of springs.

Next, I will briefly present the technological process of obtaining the components of the suspension coils spring of the car.

TECHNOLOGICAL PROCESS OF CAR SUSPENSION COIL SPRINGS

The steps for the technological process that are being followed (the bar cut to size) to obtain the finished product are Heating of the bar - The process can be done by induction or with the help of the heated furnace..

The heating of the beam can be done by using an induction furnace.

To be noted here that the (bar) comes to cutting length represented

Figure 1 shows the machine S.C Compa Sibiu which produces the heating of the bar through the induction process.

The winding of the spring - this process is executed with machine wrapped mandrels. This machine tool is shown in Figure 2..

Spring-hardening heat treatment is done in oil at a temperature between 40-80 ° C, followed by the return of the produce on the furnace.

This operation is performed in S.C. COMPA SIBIU with the machine shown in Figure 3.

Hardening is the next step in the process of obtaining helical springs.

This process consists of bombarding the spherical steel shot diameter ø 0.6 - ø 0.8 mm for surface hardening of the metal coil spring

This process of hardening is achieved by the company COMPA SIBIU with the help of the machine shown in fig.4

Fig. 1. Machine from the S.C Compa Sibiu which produces the heating of the bar through the induction process

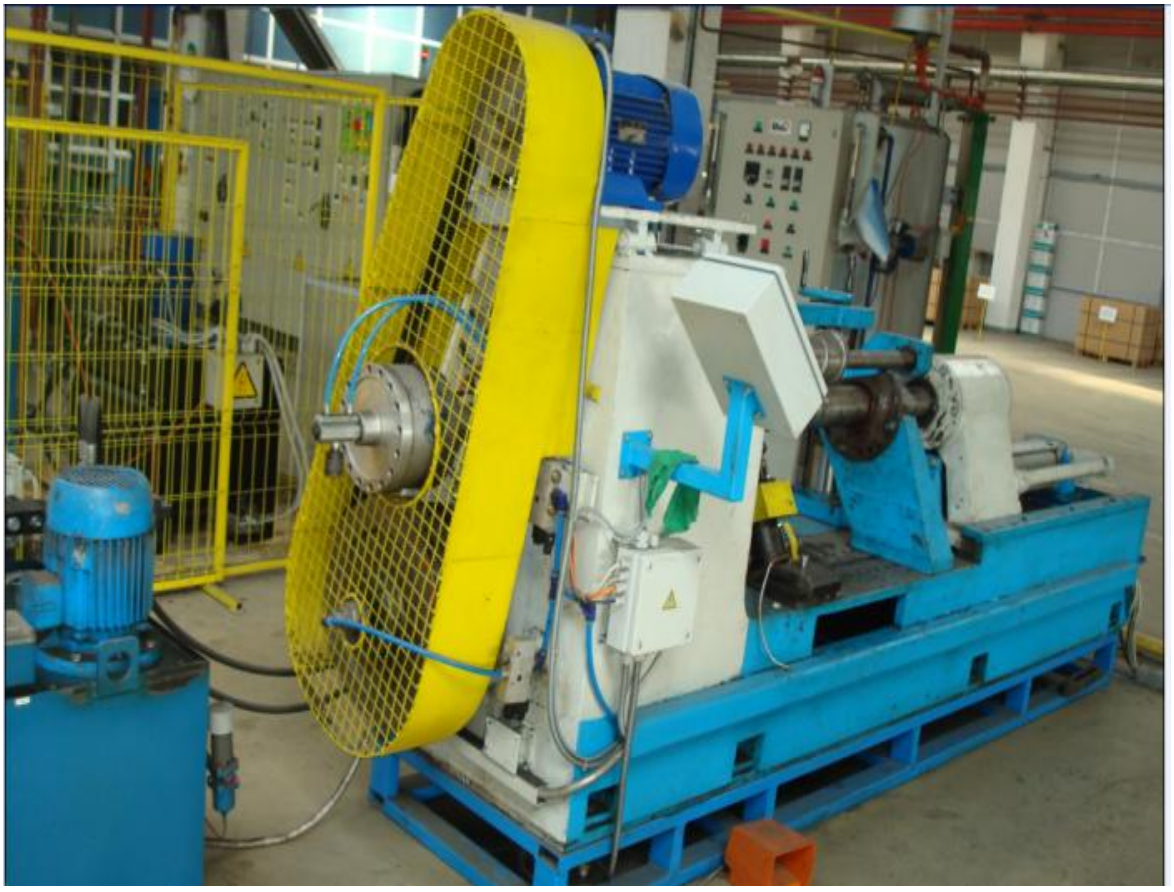

Fig.2. Machine wrapped mandrels

Fig.3. Machine for spring-hardening heat treatment

Fig.4. Hardening Machine

The next technological process before the last of obtaining the helical springs at hot temperature consists of the BLOCK compression - spira by spira or below the minimum rate of use (Hmin).

This step it is done with the help of the machine shown in figure 5

Fig.5. Machine for BLOCK compression

The last phase in the technological process of obtaining the helical spring is the Painting.

At this stage there is surface preparation consisting in decreasing and phosphating, which takes place after the powder and paint curing.

These latter stages of the technological process can be seen in fig.6, fig.7 and fig.8 below.

Fig.6. Beginning the painting process

Fig.7.Inside the Painting machine

Fig.8 Layout with painting machine

CONCLUSION

Coil springs have a wide distribution as elastic elements still in construction due to suspension vehicles advantages: durability, low weight, simple execution, maintenance and minimal operating expenses.

This is about 2.5 times lighter and less voluminous than spring leaves.

It can be used in building both independent and dependent bridges.

The technological process of production is relatively simple, does not require a very high cost price.

The coil springs can get both hot and cold.

The disadvantage of the second method is due to the fact that cracks may appear in the spring bar, which can lead to its break during machine operation.

Another disadvantage is that the coil springs can not withstand forces acting on the directions different from their axis, for which reason the system construction must be.

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