THE UTILIZATION CAD PROGRAMS IN DESIGN OF CARS RIMS

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ABSTRACT

The work proposes to presents the advantage of rims shaped cars with help computer as the creation the varied maul of rims from easy alloy with investments more reduced through the CAD programs utilization. Geometric form of rims is manageable on bases outwork information's of operations standard as the car firm's producer.

1. Introduction

Many users of car want to modify the outside design of personal cars. There for they resort the special in resort of the rims offered by the cars producer with another wagon rim which confer anther identity of the cars given the others cars from the same lot of make.

Therefore it needs to create a varied maul of rims, which satisfied the needs of every car driver, which want his customize his car.

In this sense, models of rims presented in this paper were realised with help programs AutoCAD but have the applicability also in another programme of simulation, as AutoDesk Inventor.

2. Programs CAD applications in design of car rims.

For saving of time and important resources, also for the realization with an elder accuracy is tried as many operations, which was, accomplish in past by the man is take over of the computer.

In sight achievements of geometric models of rims we make off prime information's of cars producer.

Thus, whole cars are rigged with tyre of 15 inches. That we chosen from a car producer the model of tyre 185/65 R15. For this tip of tyre the producer recommend utilized the rim 6,0 J15.

In figure 1 we present the rim profile depths with inclined shoulders to 5°.
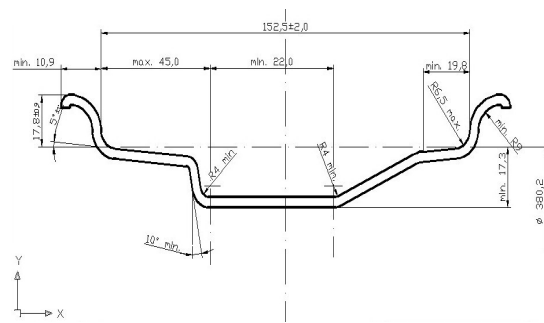

Figure 1: Rim profile with bead over form J

According to Romanian standard this rim has the sizes presented in figure 1 and the beads over of forms J.

It is necessary that we have form in order to are achieved modelled much devoted of setting zone of tyre.

In order to achieved the model of continuum rim, it is necessary to generated a zone of rim grasp of deck flange as the zone of assures the fluxes of necessary air cooling rim and different sub-assembly from immediate proximity.

In figure 2 it is presented the geometric model of rim with beads over forms J in follows of CAD program utilization.

From the above-mentioned figure we can noticed as rim modelled with help of a CAD program present the advantage as the design result of that can be noticed immediately and possibly problems can fixed still from this stage.
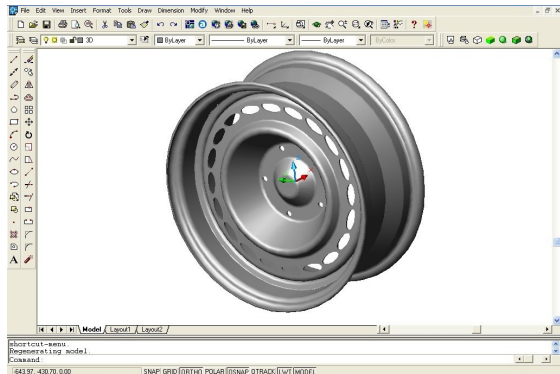
Figure 2: Rim modelled with beads over forms J

Because classic rims are realised from steel, these have thin-walled, fact which confer the advantage relative light weight and the disadvantage as the, for the realization fluxes of air are make with relative little orifices, the orifices are joining with relative big radius to reduced the effect of tensional concentrators.

In special, in average urban, rims are submissive of an important elder, therefore the majority of rims from steel are reinforcement by dint of ribs which protects zone of touch among the rim profile of setting tire and zone of rim grasp of the deck cars.

Because we wanted as that information are used-up and for really rim realization, in figure 3 we presented projection of rim with bead over form J, section in vertical and sight in the horizontal plane and in lateral plane.
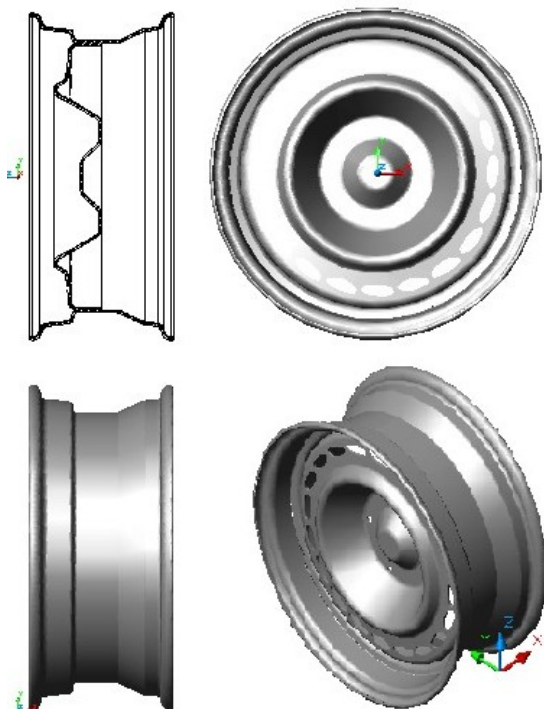

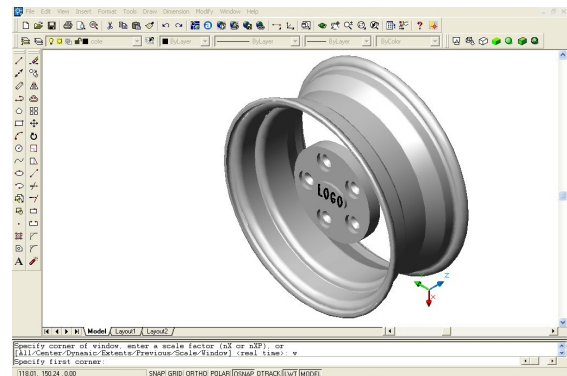Figure 3: Projection of rim with bead over form J

Figure 4: Model the profile and flange of catch

In figure 4 it is presented design rim profiles and the flange of grasp car.

Because rims from easy alloy has mechanical resistant reduced than steel, the wall of rim which are make from easy alloy shall be bulk than walls of the rim realised from steel. For the rim from easy alloy are utilized same profile as for the rim from steel, with discrepancy as the walls are bulk. Rim grasp of the deck cars are achieved in this case by dint of 5 bolts, therefore achieved in flange of catch lamaje. In figure 5 we have a detail of this flange of catch.
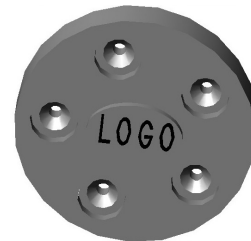

Figure 5: Details of flange of catch

In general every rim has placed uptown this the logo of producer firm. This logo can be placed on topper, which achieve the covering central screw nut of rim grasp of deck and the preclusion of impurity penetrated.
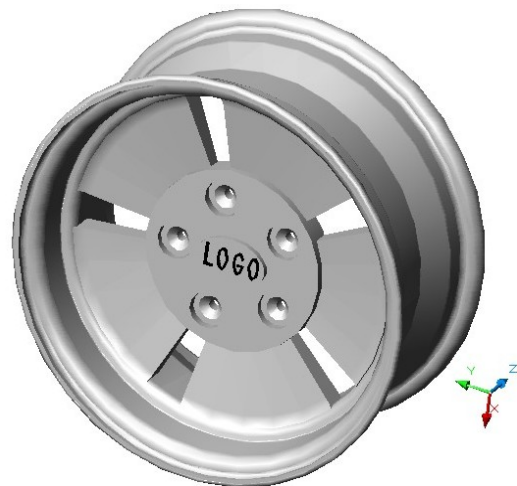
Figure 6: The rim of easy alloy with 5 spokes
(prismatic triangular section)

In figure 6 we present a rim from easy alloy with 5 spokes. Spokes are achieved through remove triangular zone from central rim zone, what has as effect decrease of his weight.

Because the central zone profile is concave, that will have as effect the attraction of daylight toward that zone, putting thus much more in value the rim.
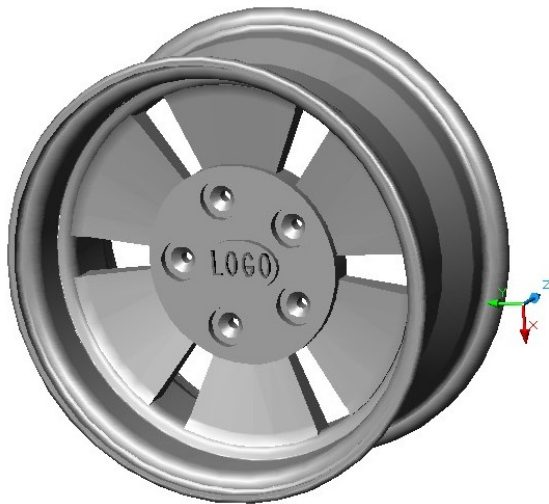

Figure 7: The rim of easy alloy with 6 spokes
(prismatic triangular section).

Because we wanted to creation diversity group of rims, from same principle we achieved in present figure 7 rims from easy alloy with 6 spokes and in present figure 8 rims from easy alloy with many spokes. In case the number of spokes crest empty space zone be elder, which shall have as effect utilization the disks and the stirrup piece brake arrangements.

Figure 8: The rim of easy alloy multi-spokes
(9 spokes – prismatic triangular spokes)

In present figure 9 we realised a rim from easy alloy with 5 spokes. In order to big a visual effect to speed low spokes are of curve section, so that to movement create an effect of palette of airscrew.

Figure 9: The rim of easy alloy with 5 spokes (curves section)

Figure 10: The rim of easy alloy with 6 spokes
(curves section)

Such in foregoing cases in present figure 10 in case the number of spokes crest with as much we can making evident the rim the and sub assembly from immediate proximity.

In figures 11 and 12 we have 2 solutions of rims with 5 spokes. Thus, in present figure 11 we presented the model of the rim in which area generation were realised started from tangent cylinders to the rim profile. In this case we establish

as empty space is largish and takeover efforts from tire is achieved on straight zone.
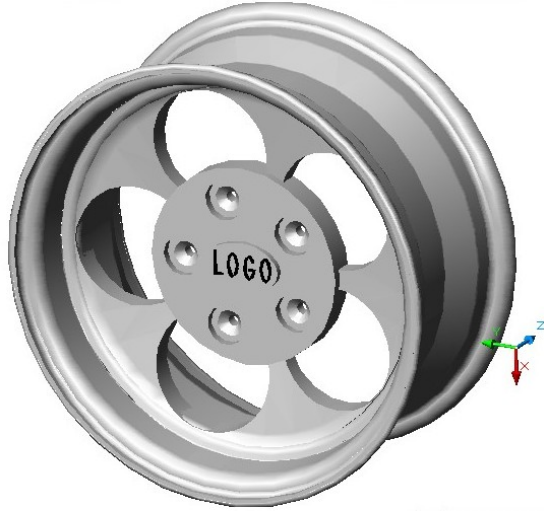

Figure 11: The rim of easy alloy with 5 spokes
(cylinder outside tangent section)

In present figure 12 are presented tangent cylinders to interior zone what has as effect setting in evidence of spokes, the realization of a empty space, very large and the advantage of an resistant elevated through joining realised between spokes and the rim profile, on aside, and the flange on of another part.

3. Conclusions

In this paper we analysed the design of rims departing from the adequate rim of producer and getting on with analysing more models of rims from easy alloy. Behind the process of model we obtain final forms of rims, but in order to can passed from modeller to the physical rims realization is necessary

Figure 12: The rim of easy alloy with 5 spokes
(cylinder interior tangent section)

also the simulation of different regimes of rims working. In sight of simulation we shall utilized the obtained information in followed the process of model.

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