energy loss in biomass due to the separation of the work area to the area of education and region generator gas combustion.

Boiler, burning, straw, biomass, fuel, air, gas generator.

UDC 631.1.27

TEST CONDITIONS FOR Cab MEW visibility From the operator station

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The problem of feasibility of designing forms tractor cab using ergonomic performance visibility from operator station and obtaining experimental data by computer simulation in three-dimensional space chiaroscuro method.

Tests cabin visibility.

Problem. The effectiveness of the system "man - machine" largely depends on the amount of visual information necessary to manage the system. The visual perception of man gives him about 80% of the information received from the surrounding environment. Ensuring

visibility of the operator station classified as major ergonemsary requirements and key performance indicators tractors.

Analysis of recent research. Requirements for visibility from the workplace tractor formulated directives ЕЭК UN [1]. Based on these data, a number of indicators that pryvedni in Fig. 1.

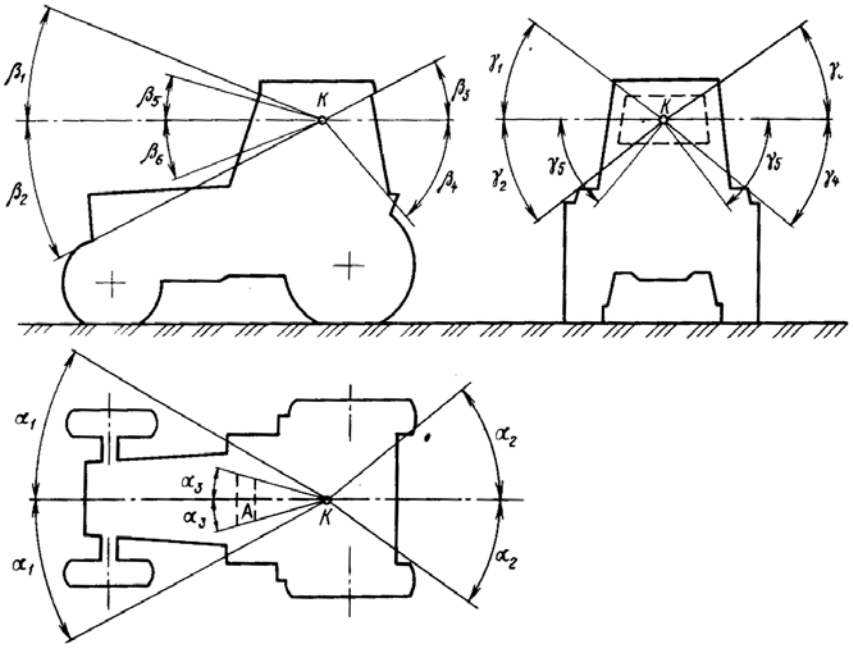


Fig. 1. Statutory performance visibility.

The purpose of research. Set the main provisions of the test cabin MEW provided visibility from operator station.

Results. The value of the angular parameters of visibility due to the point K, given in Table. 1.

1. Angle visibility settings tractor.

Zone reviews	Designation angles	The value of angles, deg
Forward	α1	60
	β1	12
	γ1	35
Side	γ1, γ3	10
	γ2, γ4	35
Additional Side	γ5	45
Rear	α2	30
	β3	11
	β4 *	30
The front (because of windshield wiper purified)	α3	20
	β5	8
	β6	20

* *In the presence of glass at the bottom of doors.*

Location of point of reference parameters K visibility on the seat reference point shown in Fig. 2.

At universally cultivated tractors must be equipped with inspection zone front wheels (points 1 and 2 in Fig. 3).

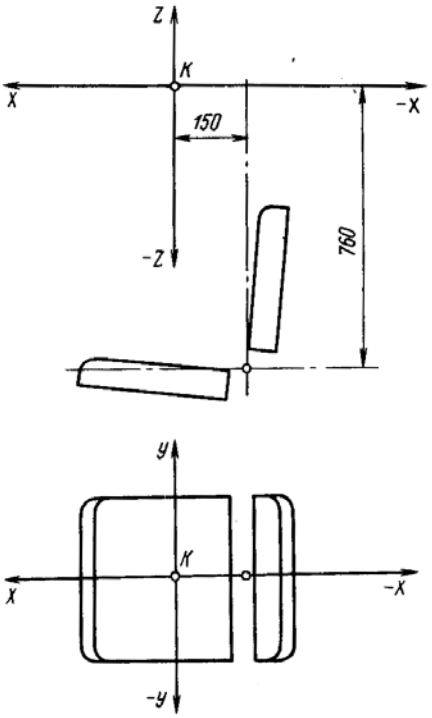


Fig. 2. The coordinates of Kvidliku visibility settings.

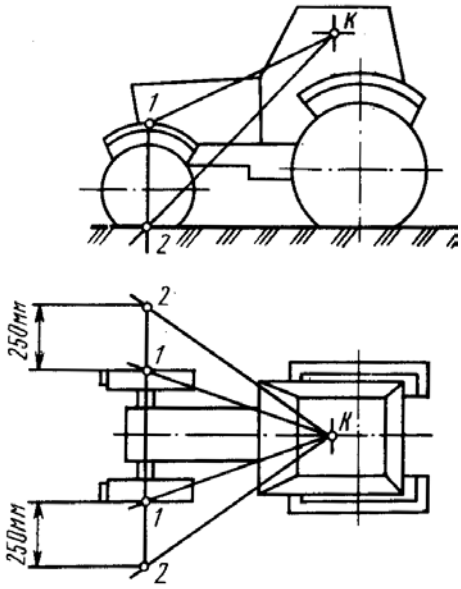


Fig. 3. Zone visibility of the front wheels.

Hood should not limit the review site before the tractor more than 12 m (horizontal distance from the projection point C on a horizontal surface to the end that is not reviewed in an area located in the front). Structural components (vertical racks and jumpers cab, exhaust, etc.) should not create more than two invisible areas within each of the sectors 1, 2 and 2 '(Fig. 4) semicircle area.

Width in unseen areas should be no more than 700 mm. Each of the sectors 2 and 2 'semicircle area allowed width of one invisible area not more than 1500 mm and each of the sites - not more than 1200 mm. In the distance 'between the centers of two invisible sections formed adjacent structural elements of a width of 80 mm should be at least 2200 mm. The last three requirements into account ЕЭК UN demands for agricultural tractors, used as vehicles. From the operator station should be visible rear hinges attaching rods with conventional operating position and location of the axis of suspension joints.

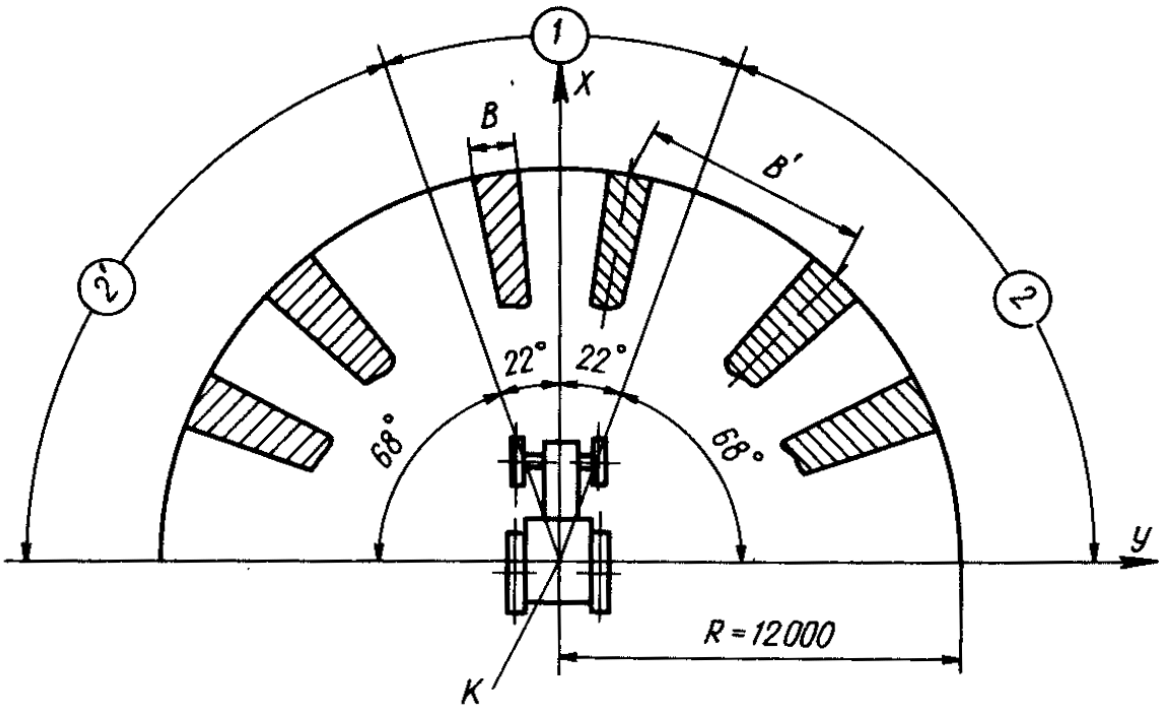


Fig. 4. The vertical projection of the front zone review.

Based on the above review of the indicators selected using CAD [3] created a project and cab tractors in general as a three-dimensional object space (Fig. 5).

In the design used AutoCAD and 3D Studio MAX [4, 5], and the method further considered in the publication [6].

Based on the developed model experimental data were obtained using chiaroscuro method for determining inspection areas. This experiment allows you to make 3D Studio MAX using light sources.

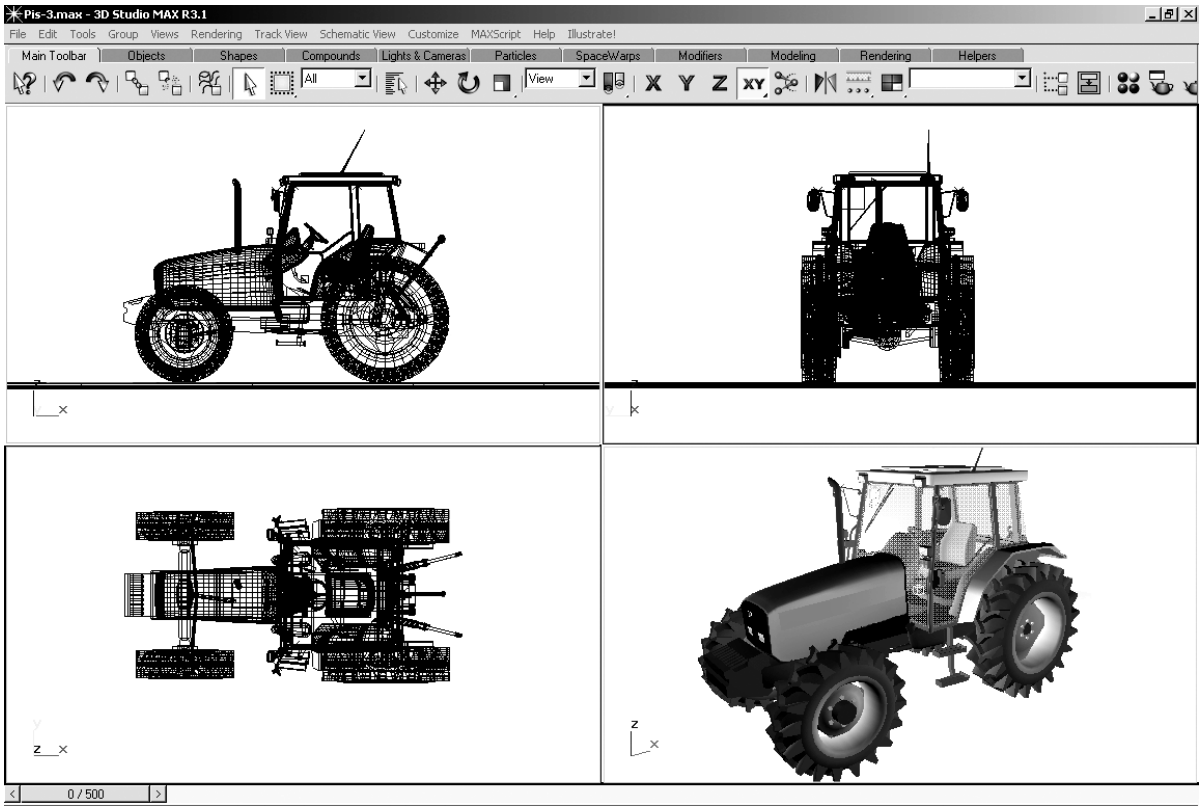
At the point which corresponds eye tractor sitting in the cab of the tractor, three-dimensional model (Fig. 5), set light source, no additional sources.

On top of the tractor installed camera display for the results of the study.

Fig. 6 shows blind areas (black) in the case where the operator is facing forward and the back of the image can be ignored.

Fig. 7, the current source is shifted slightly back, mimicking the situation in which the operator turns his head back, while the front part can be ignored.

The experimental data used to estimate parameters of inspection booths at the design stage, and eliminate the need for experimentation in the field.



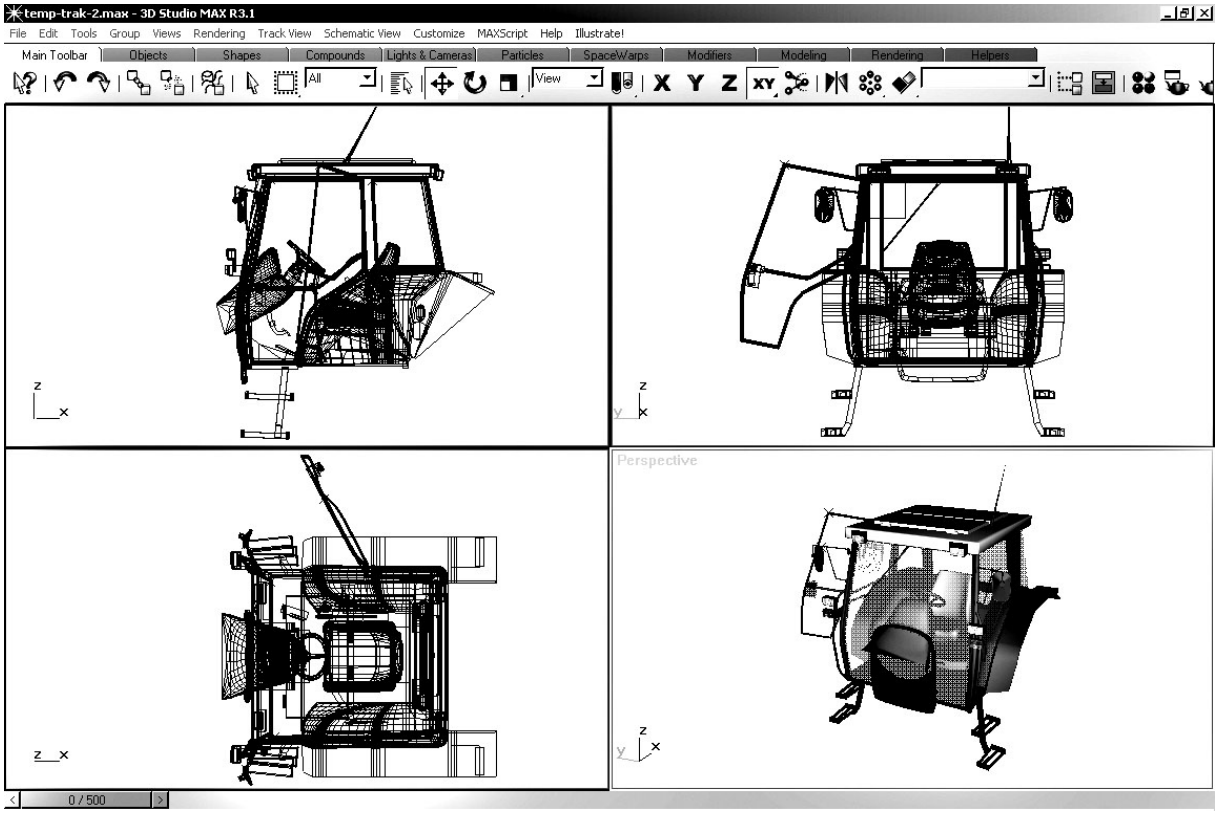


Fig. 5. The three-dimensional model of tractor and cab.

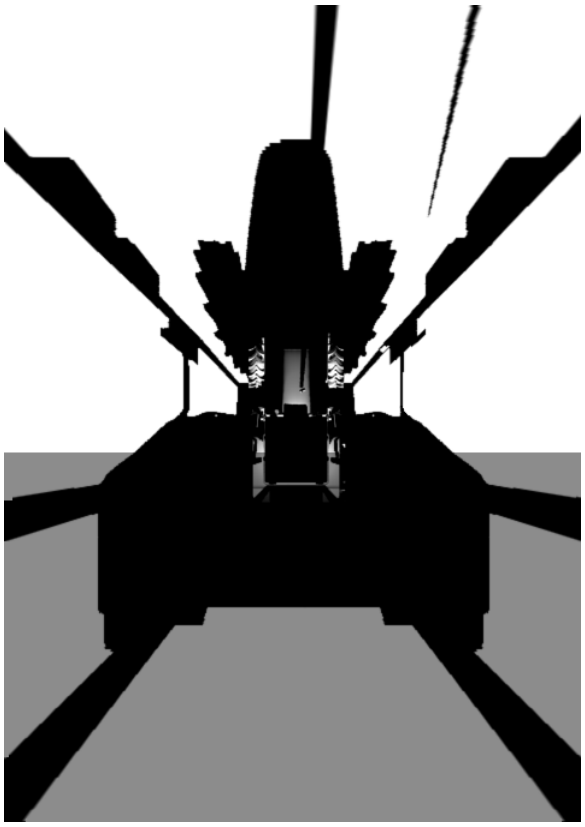


Fig. 6. chiaroscuro imprint in turn the head forward.

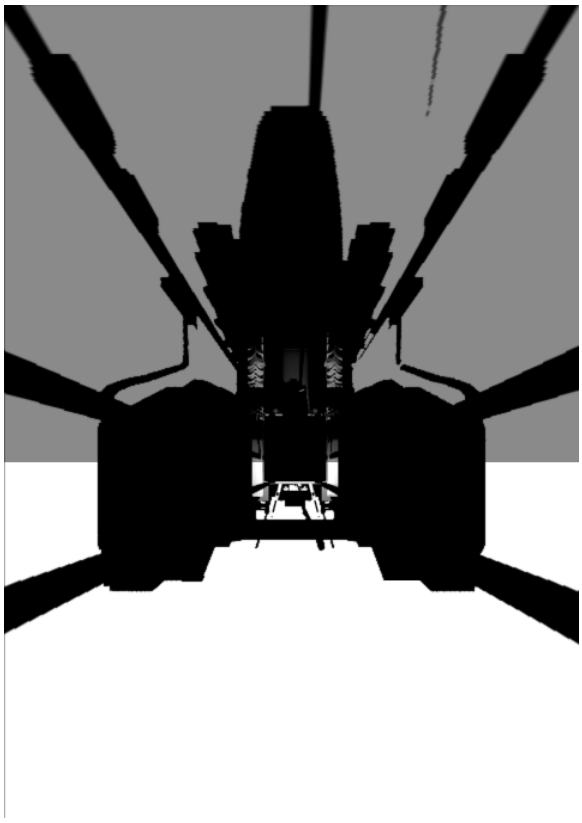


Fig. 7. chiaroscuro imprint in turn the head back.

Conclusion. This method allows to obtain experimental data, to obtain accurate results of research shaded viewing areas in the design of the tractor cab, in the design layout without making prototypes in nature and experimental studies aimed at the feasibility of using a cabin that is developed.

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Rassmotrena problem tselesoobraznosty Designing forms kabynы tractor yspolzuya эrhonomychnыe indicators visibility with Rabocheye revenge operator, as well as Getting эksperymentalnыh data putem of computer modeling in three-dimensional space cut-off method.

Yspытanyya, kabyna, visibility.

The problem of feasibility of designing forms tractor cab using ergonomic performance visibility from operator station and obtaining experimental data by computer simulation in three-dimensional space chiaroscuro method.

Testing, cabin, visibility.

UDC 630.56.7

ESTIMATING CRITERIA OF PARTS WARPING DURING HEAT TREATMENT

O.Ye. Semenovsky

The causes of parts warping during heat treatment were found. Estimating criteria for that value was constructed.

Steel, doping, cementation, technology, warping, internal pressure.

Problem. Modern technology sets increasing requirements towards mechanical properties of the structural materials and serial and wholesale engineering demands for high level of their adaptability. Complicated specialization of modern gear details requires inclusion of stamp operations, cutting treatment, welding, surface hardening, final lapping in the manufacturing process. Hence, all these additional operations should comply with higher technological standards

Recent research analysis. The choice of cementing steel compositions with optimal physical, mechanical and technological characteristics is getting complicated due to lack of information regarding

structure effect on those characteristics. In addition, the information is inconsistent and mainly qualitative. It's not enough data regarding mutual links between different properties of cementing steels. So, these