

Climate and Roads

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INTRODUCTION

The main purpose of all roads is to ensure the safe movement of vehicles. The main problem of the road space is pollution and a decrease in the adhesion of the wheels to the road surface.

After precipitation, moisture mixes with garbage and forms slurry. As temperature, air movement and transpurtort change, this suspension, passing through many different chemical and physical transformations, concentration gradually dries and rises into the air with dust; we inhale it and fight it. In winter, the wet road turns into an ice rink.

The main means of combating dust in cities is the displacement of dirt to the curbs with water jets. For this, there is a considerable fleet of watering machines that consume megatons of water. Water becomes scarce, requires savings, and creates artificial fumes. And artificial fumes affect the water cycle and climate: [https:// www.actascientific.com/ASMI/pdf/ASMI-SI-01-0009.pdf](https://www.actascientific.com/ASMI/pdf/ASMI-SI-01-0009.pdf)

At alternating temperatures, the road surface slowly collapses under the influence of water penetrating into cracks, leading to endless repairs and congestion on the roads.

Existing methods of cleaning roads with dumps and brushes are long outdated. Cleaning technology has become an industry with its plants, services, and ministries. In essence, it is a parasitic industry. Cleaning agents develop and grow in productivity and volume, but still do not have time. Precipitation falls immediately on all roads, and cleaning is carried out sequentially. Transport moves according to its own laws - around the clock. By the time of cleaning, the snow first turns into a slurry, then it freezes and covers the road with ice.

But what if you look at the vehicle - a car, a bus, a trolley bus, a road train in terms of its interaction with dirt, snow, water on the road. Considering the design of the zone between the

wheels of the vehicle above the roadway, you can notice that in this space there are active and quite interesting processes. Everything lying on the road is crushed, mixed, lifted by wheels, sprayed, reflected and returned to its place, along the width of the road. Active chaotic processes of movement of liquid and helium masses are underway. A wheel moving in a puddle sprays slush in both directions. What flies out splashes oncoming and passing cars. When driving along the edge of the road, flies to the side of the road and to the dividing strip between oncoming directions. Therefore, with heavy traffic, some clearing of the road occurs. But it is on the streets and roads with very heavy traffic. On the outskirts of cities and roads with lower intensity, the mud dries and turns into dust, which we have to breathe. In winter, if it does not have time to dry, the road is covered with ice.

But what if you look at these chaotic processes? You can set a task. If dirt flies, then how to make it fly in a given direction. Considering the design of the devices of the zones near the wheel and the wheels themselves, we find that all these elements are symmetrical along the longitudinal axis of the machine: mud flaps, wings, pallets. The simplest solution appears: asymmetry. All these elements can be designed so that the dirt flow is reduced to the left and increased to the right, then the problem will be solved. The simplest solution is an elementary rotation of existing mudguards around a vertical axis by 10 - 45 degrees to the right. The dirt raised by the wheels rises and bounces off the mudguard for the most part to the right.

The trajectory of movement of all cars in total covers the entire area of the road. The likelihood that all the wheels of all the cars roll in a single rut are void. Therefore, the material slowly, each machine can be shifted in one direction - on the side of the road. It turns out some process - control the movement of liquid masses.

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If all cars are equipped with passive devices to reduce lateral displacement to the left side, all slurry will gradually go beyond the curb - to the right side and to the side of the road.

So, the solution to the problem is found. And it does not look complicated: to clean the road, each or most of the cars shifts all the liquid lying on the road for the most part towards the curb.

This is a completely new task: the car itself cleans the road. If each car or wheel moves more slurry, dirt or snow in one direction than in the other, then in total all this will gradually reach the curb and the curb. When dry, the road becomes dry and clean. Such purity is visible for a short moment in a triangle after the wheel has passed through a pool of thick mud. There is no need to clean and wash roads with special equipment.

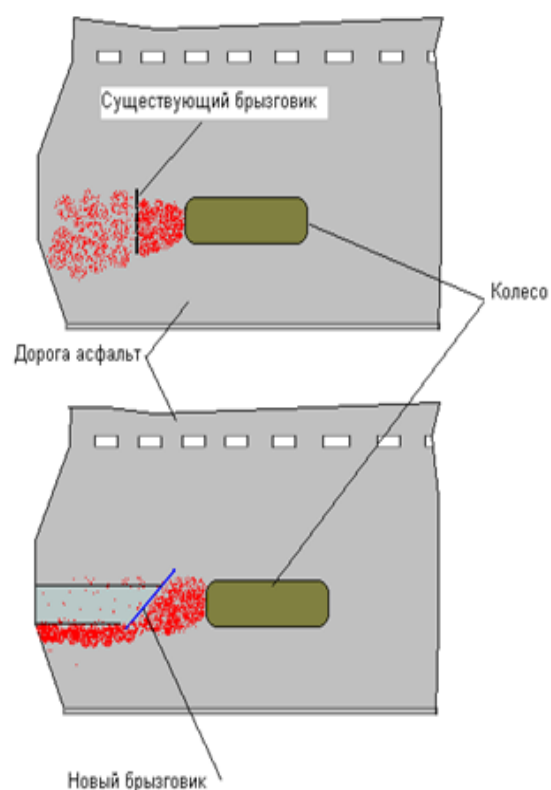
Thousands of factories in the world produce millions of vehicles. There are some standards, rules, norms of common design principles regarding the interaction of machines with each other - this is lighting, alarm. But such that they interacted with the road - they cleaned it themselves ...?

This has never happened before. Never, no one thought about that cars get dirty each other. New consequences are emerging: improving the environment - reducing the dust cloud over the city, eliminating the possibility of ice, increasing the durability of roads. The need to design, create and operate all road cleaning equipment and related plants, offices, and states disappears. Means - the moving equipment itself with a slight reconstruction.

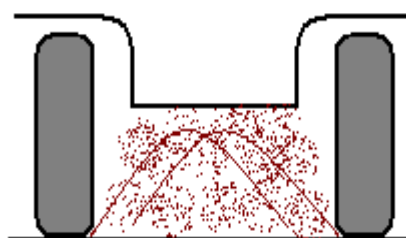
The reconstruction consists of new principles for the design of the underbody, fenders, hoods, and mud flaps of the car, which would allow moving most of the material lying on the road to the right - on the side of the road and on the side of the road. Or / and shifted to the left much less than to the right. It is not necessary much, it is enough that each machine could shift dirt to the left less than to the right. Let it be 1 cm, even 1 mm, but each along the entire path. Or most moving cars. For right-hand drive roads. For left-hand traffic, respectively, an offset in the opposite direction.

A great many designs can be developed to provide for this new rule. Depending on the size and shape of the vehicle, its body, location and number of wheels, clearance, lower surfaces of bodies and wings. • Mud flaps are installed on

most vehicles in order to reduce splashing onto the rear vehicles. It is enough to rotate the mud flaps around the vertical axis by 5-45 degrees.

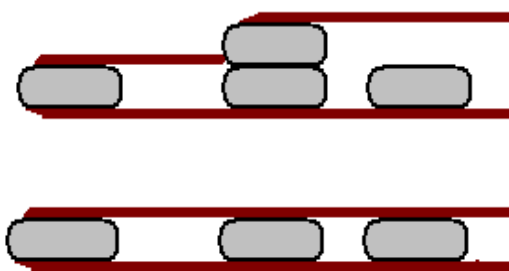


- It can be special small, palm-sized, brushes near the wheels sweeping away dirt, snow, especially fresh and wet in the state of slurry.
- Aprons located longitudinally to the axis of movement near and to the side of the wheels can stop dirt splatter to the left.

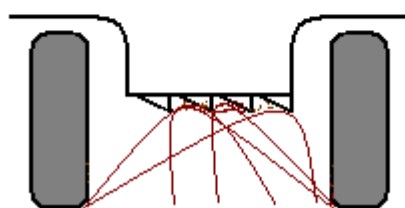
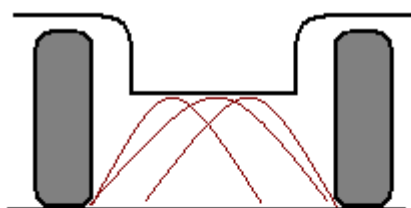


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The displacement of one of the wheels or the installation of additional special wheels (optionally inflated) in road trains.



- Corrugated stepped surfaces of pallets, casings, bottoms can hold the spray to the left of the right wheel and pass to the right of the left.



Engine exhaust gas directed to the mudguard at an angle can not only blow dirt to the right, but also can be neutralized by mixing with road slurry on the surface of the mudguard. Another important environmental problem is being solved - reducing the concentration of exhaust gases in the atmosphere.

Each type of machine will require the development of an individual design. Designers - car builders can offer many other options.

After testing and obtaining the result, the plants will take these recommendations as a basis and gradually all new vehicles will be equipped with mud and snow shift elements in one direction.

No need to wait for decades when all this is implemented on new cars. Clean roads are needed now. Any city can become a pioneer and show the world success in this area. You can

start the experiment right now and redo the existing mud flaps of the wheels of public and freight vehicles. Reconstruction of mudguards is the easiest and most affordable way that can be implemented in any workshop. To do this, the existing mudguard rotates around a vertical axis up to 45 degrees and tilts at an angle to the road surface so that the material reflected from it bounces off and flows more towards the curb.

Thus, a slight change in the simplest elements of all or most cars can keep the roads clean.

It is not necessary to equip all the cars of the city at once. For verification and testing, it is necessary and sufficient to identify cars with stable specific routes, for example, buses, trolleybuses. Determine the performance and verify the effectiveness of the direction. When the road becomes clean and dry on these specific routes, when the executive branch is convinced of the effectiveness of the idea, it will simply oblige all vehicles to transfer to the installation of additional devices. Each mayor of the city and district is concerned about the problems of cleaning streets and roads, in saving money. Here the roads become clean, and the whole army of road maintenance services disappears. The main thing in checking and testing the method in execution is the organizational effort. The determination of just one of the thousands of mayors.

Long-distance cars are being prepared for cleaning intercity roads. To do this, they just rotate all the mudguards at 20 - 45 degrees.

Road maintenance services will be reduced by 90%, the rest will be reorganized into special brigades for the reconstruction of all vehicles up to cars, working with trucks, in special places on the outskirts of the city.

The proven positive effect in the city and intercity routes in the future will be the basis for the reconstruction of cars in automobile factories. A positive effect will spread throughout the world. New machines with directional dirt displacement will naturally replace old ones. A new era will come in the maintenance and operation of roads.

Thus, there is a real opportunity for any city busy 1 first place in the world in reducing traffic accidents, improving road quality, reducing dust and air pollution, reducing the number of emergencies.

Ecological and economic effect of the use of the proposal:

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- Reducing traffic accidents associated with icy conditions and road pollution. This is 20% of all accidents.
- Almost the entire road maintenance industry with offices, warehouses, officials, factories disappears.
- Excluded salt on the roads, poisoning the river.
- Improving the quality of the roadside atmosphere by reducing dusting.
- The number of car washing enterprises is reduced.
- Improving the durability of the roadway and reducing the number of repairs.
- Reducing the cost of road construction.
- Improved road quality increases the durability of the suspensions and chassis of the machines.
- The need for winter tires disappears.

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None

CONFLICT OF INTEREST

No conflict of interest.

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