

The Road will be Cleaned Going

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There are two ways to live: you can live as if there are no miracles, and you can live as if everything in this world is a miracle.

The main purpose of all roads is to ensure the safe movement of vehicles. The common pain of all roads is pollution.

- Atmospheric precipitation in the form of rain and snow of varying intensity, at different temperatures with different compositions, for example, to the presence of nitrogen oxides and sulfur.
- Salt and sand, sprinkled with a giant fleet of special equipment to combat slipperiness.
- Clay, taken out by the wheels of cars and streams from dirt roads and construction sites.
- Spill different materials from trucks
- Rubble, knocked out of the pavement.
- corpses of cats and dogs, etc. living creatures, there are insects, birds and rats are contagious.
- cigarette butts and a variety of debris from the windows of cars.
- Particulate matter of exhaust gases.
- Wiped-out microparticles of tires and brake linings.

After precipitation, all this is mixed and forms a liquid. As the temperature, air movement and transport change, this suspension, passing through many different chemical-physical transformations, all stages of concentration, gradually dries up and turns into powder and dust. Dust of thousands of cars rises in the atmosphere, and we inhale it, fight it...

At alternating temperatures, the road surface is slowly destroyed by the action of water penetrating the cracks. Pits appear, and this - endless repairs - traffic jams.

Freshly fallen snow is caught by the wheels of continuously moving vehicles, crumples, freezes, forms ice and ruts, leads to

traffic jams in the city, a complete stop of traffic on interurban routes - emergency situations.

The share of road accidents due to unsatisfactory condition of streets and roads makes up 20% of the total number of road accidents.

In 2011, only Russia has significantly increased the number of accidents due to poor road conditions. For this reason, 41,863 accidents took place, which killed nearly 6,000 people.

The existing methods of cleaning roads have long been outdated. The cleaning technique increases in capacity and volume, but still does not have time. Precipitation falls immediately on all roads, and cleaning is consistent. Transport moves according to its laws - around the clock. By the time of cleaning, the snow is already becoming denser.

And what if you look at any vehicle - a car, a bus, a trolleybus, a road train in terms of its interaction with snow, mud, water. Considering the design of the car, you can see that in the space between the wheels, the bottom and the road surface are active and quite interesting processes. Everything lying on the road is crushed, lifted by wheels, sprayed, reflected, mixed, transformed and... the bulk remains in the same place. Some of the spray, flies in different directions, covers the oncoming, passing and rear cars and... fit into the curb. Therefore, with intensive movement, the road is self-cleaning. But it's on the streets and roads with very intense traffic. On the outskirts of cities and secondary roads the mud dries up. The snow gets caught, turns into a gruel and freezes.

If this interesting process is to take control and introduce control over the direction of movements, reflections of splashes, dirt and snow. Not when the snow cracks and freezes, but as it falls. The first snowflakes on the roads are light and harmless. They can easily be swept away immediately after falling out, in a state of down.

It is enough to install light brushes in front of the wheels of all machines, turned by the plow towards the roadside. All machines. Or the majority. Not all, but some of them are always the first to meet the first snow. The likelihood that all the wheels of all cars are rolling along a single track are insignificant. Consequently, the material is slow, each machine will shift in one direction - to the shoulder.

It turns out some controllability - the impact of cars on falling snow. Ideally, if all machines are equipped with such brushes, all the snow will go over the curb and to the side. And the rest of the garbage? What is formed in the summer from clay, sand and water. Raised by the wheels of the material to guide it mostly towards the side of the road, to the right. Or/and reduce the material's movement to the left. But every machine or their majority.

So, the set task looks like this: for clearing the road, each or most of the cars shifts everything lying on the road, mostly towards the side of the road. Greater, this means that more mud is displaced to the right of the wheel or machine than to the left.

It is an entirely new task for the machine to clean itself before and along the road. If each machine displaces dirt or snow in one direction more than the other, then in total all the dirt will gradually reach the curb and even beyond the curb still in a state of fluid. When drying, the road becomes dry and clean, there is nothing to dust.

Thousands of factories in the world produce millions of vehicles. There are some standards, rule 1a, the norms of common principles of design, relating to the interaction of machines with each other - this is lighting, signaling. But such that cars cleaned the road themselves...? This has never happened. Never, no one thought about the fact that the machines spoil each other. Is it that the mud flaps...? Installed on most machines in order to reduce the spraying from behind the moving transport. New goals are emerging: improving the environment - reducing the dust cloud over the city, eliminating the possibility of ice, increasing the longevity of roads. Means - the moving technique itself with minor reconstruction. Reconstruction consists of new principles for the design of the bottom, wings, shrouds, mudguards of the car, which would allow the bulk of the material lying on the road to the right side - to the roadside and to 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. Or most moving cars. For countries with right-hand traffic. For left-hand traffic, respectively, the offset

in the opposite direction. A great variety can be developed to provide this new rule. Depending on the size and shape of the body, the location and number of wheels, clearance, lower surfaces of bodies and wings. The simplest available mudguards are to rotate about 30 - 45 degrees around the vertical axis to guide the raised material with wheels to the right side. For each type of machine will require the development of an individual design. Designers - automakers can offer many other options. After verifying the result, the plants will take as a basis these recommendations and gradually all new vehicles will be equipped with elements of mud and snow shift in one direction. Do not wait for decades, when all this is realized on new cars. Clean roads are needed now. Any city can become a pioneer and show the world successes in this area. It is now possible to begin to redo the existing mudguards of public and freight vehicles. Reconstruction of mudguards is the simplest and most accessible way that can be realized in any workshop. To do this, the existing mudguard turns around the vertical axis to 45 degrees and tilts at an angle to the road surface in such a way that the material reflected from it bounces off and drains more towards the roadside. Everything on the road accumulates on the curb. There remains a problem in cleaning only the curbs and the adjacent curb. But it can be solved by directing existing rotor snowplows to this. Gradually, all the snowplows with giant shovels - dumps to convert into mechanisms for cleaning curbs. As an option, in the city, to remove the accumulated snow on the roadside and beyond the border, you can dispense the local janitors with snow-removing machines that throw snow 2 - 3 meters. There is such a technique with rotor augers and low-power engines. They must throw snow before the formation of a snow crust. On the intercity routes, winds often blow. Therefore, a design with variable sweeping direction is possible - there may be brushes with a kinematic connection from the weathercock on long distance trucks. Thus, a slight change in the simplest elements will be able to solve the grandiose task of clearing roads of dirt, snow and dust without attracting a huge fleet of special equipment. Ecological and economic effect from the use of the proposal:

Reduction of road accidents associated with ice and road pollution. This is 20% of all accidents.

- There is no salt on roads, poisoning rivers. It is known that the number one enemy of automotive rubber and paintwork is the technical salt. This is an ordinary salt, only coarse. Mixtures of salt and sand do not add to the joy of either external or internal parts of the car. The use of solid and liquid road reagents is considered to be a particularly dangerous negative factor:

- Improving the quality of the roadside atmosphere by reducing dusting, and, consequently, increasing the longevity and health of the roadside population, all drivers and passengers.
- Reduction of the harmfulness of exhaust gases in the case of its use for blowing mud from mudguards.
- The number of car washes is decreasing. Saving water and one parasitic industry. Machines no longer spatter each other with dirt.

Reduction of existing road-operating enterprises. No need monsters with flashing beacons - with brushes and shovels hung on, sand and salt are not needed, the machines themselves are sand and salt spreaders. In essence, the entire industry disappears. These are offices and warehouses, enterprises and plants for the production of salts and mixtures, machinery, staff, salaries and megaton of fuel. Service is reduced by 90%. There are only operations to clean the curbs of city roads.

Increase the longevity of the roadway and reduce the numbers repair. If the coating is always dry, there will be no water penetrating the cracks and destroying the asphalt in the frost, then there will be no ice. If there is no ice, what will winter tires be for? Reduction of another branch.

Reducing the cost of road construction. The need to use geosynthetic materials for road construction disappears, the layers of the roadway are reduced in number and size.

Improved road quality increases the durability of the suspension and chassis of vehicles.

Ways to implement the proposal

It is not necessary for this to equip all the machines of the city at once. For testing and testing it is necessary and sufficient to identify machines with stable specific routes, for example, buses, trolleybuses, trams. Determine the operability and verify the efficiency of the direction. When on these specific routes the road becomes clean and dry, when the executive is convinced of the effectiveness of the idea, it will simply oblige all transport to be transferred to the installation of additional devices.

Long distance vehicles are being prepared for cleaning long-distance communications. For this purpose, workshops and locksmiths are being installed in the parking of long-distance vehicles. Experts redesign all the mudguards.

Road maintenance services will be reduced by 90%, the rest will be reorganized into special brigades for the reconstruction of all transport, down to cars, work with trucks, in special places at the exits from city.

The shown positive effect in the city and intercity routes in the future will be the basis for the reconstruction of cars in automotive plants. And the positive effect will spread around the world. New machines with a directional displacement of dirt in a natural way will gradually replace the old ones.

There will be a new era in the maintenance and operation of roads. Thus, there is a real opportunity for any city to take the first place in the world to reduce road accidents, improve the quality of roads, reduce dust and pollution of the atmosphere, and reduce the number of emergencies.

Organization of a new direction

It is necessary to create a joint-stock company. It includes the administrator of the city, the owner of a large car fleet, a businessman who can start an organization. In its staff there should be members and / or attracted experts lawyers who will be able to organize such a society, economists who will be able to consider the economic effect of the implementation of the proposal. Lawyers, patent specialists and administrators will be able to ensure the status, authorship and protection of the interests of the new enterprise. The designers will provide the capabilities of the really developed elements in the operating transport. The head of the enterprise can be any persistent, determined entrepreneur who can convince key authorities. There are such tasks:

1. The first is to decide and start a new business.
2. In any city there are bus, trolleybus parks. Select only one route with the longest line, with as many cars as possible.
3. Convince the city and park leaders to conduct only one experiment. Small funds can be borrowed from the city budget.
4. Maybe take a loan. With a return. Means are not very large. This can afford a medium-sized business owner.
5. To organize the reconstruction of mudguards of buses or trolleybuses of just one chosen route. To do this, draw a designer, fitters.
6. Turn the existing wheel mudguards to 30 - 45 degrees. around the vertical axis of all machines of the selected route. Not necessarily everyone. Maybe it's only the rear

- wheels, only the front wheels, enough even one wheel is right. Where it is convenient, where there is a possibility. But only on all machines of the same route.
7. Check within a month - half a year the roads of these routes. The cleanliness of a particular road, the chosen route will show the effectiveness in wet weather - rain, snowfall. The effect will manifest itself and it must be registered with photos, video materials, a recording of discussions.
 8. Spread the experience on all regular passenger transport routes.
 9. Gradually reconstruct the mud flaps of all the city's trucks.
 10. In the same way, start experimenting with long-distance trucks.
 11. In the case of success - it's clean dry roads in summer and winter - there is a fairly tangible savings of the city budget. Some of these funds can be allocated by the city administration for the new structure. This will be the main source of profit for the new enterprise.
 12. The success of cleaning is advertised in the media and distributed to other cities and countries.
- Development and reconstruction of cleaning machines for cleaning curbs in cities and roadsides of intercity routes. The solution of the problem with winds on the roads, problems with low location of the slopes above the general level of the surface
 - Development of cleaning means for dirt roads
 - Elements of single series for different types of cars with distribution to other cities and countries
 - Design of cleaning elements for other modes of transport. There are special developments:
 - It will be possible to sell patents and technology licenses to other cities and countries
 - Massive expansion of new technology in other cities and other countries.
 - Realization of inventions in this and other branches.

The source of revenue may be the released funds from the city budget for fuel economy that burns existing special road machinery. Purchase, storage of salt, sand, rent of buildings and structures with these materials, machines, salaries. Or/and transfer to the ownership of the Center. Enough is even half of this. Economists will be able to calculate all options qualitatively. The received funds of the first city can be invested in the beginning reconstruction of cars in other cities.

Funds from different cities, profits, will be concentrated in a single ticket office, accountable to shareholders.

On these funds, it is possible to create a Single Research and Development Center, for example, "Doroga". With its staff of scientists, economists, lawyers, patent experts, designers. The main goals of the "Doroga" center are:

- Recommendations to auto plants on new designs for new machines
- Providing patent and technological authorship of the Center. To the existing several patents will be massively added a lot of improvements and new products for each type of machine.

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