

DEVELOPMENT OF SMART CITIES IN UKRAINE

Technology development does not stand still. Every year, the world learns about new discoveries in various fields, ranging from new materials with improved capabilities and the development of electric vehicles to artificial intelligence. These and many other inventions can make people's lives easier, improve their health and productivity in one way or another. In this regard, it is appropriate to recall a quote by Eric Schmidt: «The development of technology in cities is not only about innovation, but also about changing the quality of people's lives for the better» [4].

While searching for information, I noticed that different cities have added a different number of interesting inventions and that technologies differ from city to city. I decided to choose the city of Dnipro for the study. First of all, I analyzed the latest technological implementations. Some of them were funded and initiated by private enterprises, and some by the city. The former include electric scooter rental services and the installation of self-service cash registers, order tracking, and payment in cafes by QR code [3]. The latter include public transport GPS tracking, smart bus stops, and free technological restrooms [2].

Each innovation has both positive and negative aspects, but they all make life easier in the city. And different cities have their own interesting technologies [1]. However, unfortunately, the presence of these technologies in one city does not mean that another city will also have this technology.

For example, the technology of buying a ticket in public minibuses through the terminal is available in Kyiv, but the city of Dnipro only has payment by card in electric transport via QR code [1, 3].

Therefore, the availability of technology does not mean that it will be implemented in most cities. Perhaps, the lack in general exchange of experience in integrating new systems into society or the low payback of such introductions, as well as the high cost of such introductions slow down the process of disseminating new technological solutions [4]. Nevertheless, every step towards digitalization and improving the standard of living in the city through convenient innovations allows people to develop together with the city, which undoubtedly has a positive impact

on overall well-being and productivity; this, in my opinion, should be a higher priority than the value of new technologies.

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POSSIBILITIES OF INCREASE IN ENERGY EFFICIENCY LRE WITH THE HELP OF ADDITIVES

Rocket fuel for liquid engines is usually divided by the number of components. Currently, two-component fuels are undeniably popular. These two separate components (oxidizer, fuel), which are stored in different tanks and fed separately to the combustion chamber, where they are mixed.

Today, the world is developing a new fuel called «acetam» (a 50:50 solution of acetylene in ammonia). The greatest effect from the use of this fuel can be achieved by using it on booster units (BU). Ballistic calculations show that for medium-class LVs, replacing the oxy-kerosene RB engine with an oxy-acetate engine will increase the mass of the payload by 30-40 %. Therefore, the use of acetam, which significantly increases the energy of existing means of removal, gives great savings.

Since oxy-acetamide engines are close to oxy-kerosene engines, it is possible to create modernized aircraft on the basis of existing launch vehicles. They will have the energy capabilities of launch vehicles with oxygen-hydrogen booster units, but at the same time they are easier to operate and much less expensive in terms of launch services, due to the reduction of fuel tanks and therefore the size of the launch vehicle.

Various additives can be added to increase energy efficiency and simplify fuel exploitation. These include: