

O'ZBEKISTON RESPUBLIKASI OLIY VA  
O'RTA MAXSUS TA'LIM VAZIRLIGI  
FARG'ONA  
POLITEXNIKA INSTITUTI  
ENERGETIKA FAKULTETI

“INGLIZ TILI”  
FANIDAN

# REFERAT

Bajardi:

29-11 guruh talabasi

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Farg'ona- 2014.

# Annotation.

We can use solar battery and velosimulator - minipower station in telecommunication, military appointment, general purpose, water supply, sports complexes, family and etc.

Telecommunication:

- cellular communication;
- the body and radio transmitters;
- repeaters.

Military appointment:

- the remote bases;
- border protection;
- supervision stations.

General purpose:

- Electrotranslation of rural settlements;
- hospitals;
- an emergency energy source.

Water supply:

- water delivery;
- distillation and water treating.

Sports complexes:

physical and military preparation with development and electric power accumulation;

Family:

Physical improvement with development and electric power accumulation;

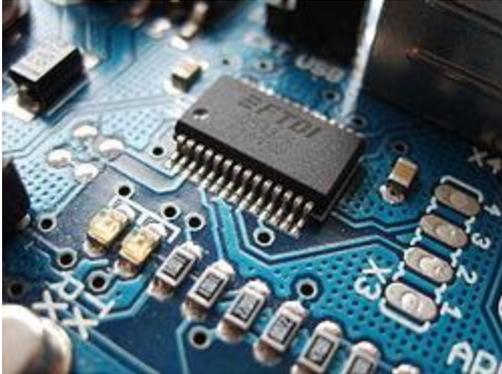
# The labour market

## Plan:

1. Electronics and labour.
  2. Microelectronics and labour market.
  3. Components.
  4. Energy production.
  5. Solar battery. Velosimulator - minipower station.
  6. List of used literature.
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# 1. Electronics

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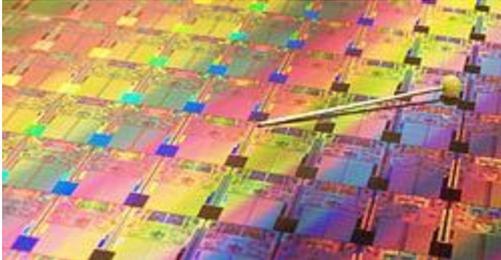
**Electronics** is the branch of science, engineering and technology that deals with electrical circuits involving active electrical components such as vacuum tubes, transistors, diodes and integrated circuits, and associated passive interconnection technologies. The nonlinear behaviour of active components and their ability to control electron flows makes amplification of weak signals possible and is usually applied to information and signal processing. Similarly, the ability of electronic devices to act as switches makes digital information processing possible. Interconnection technologies such as circuit boards, electronics packaging technology, and other varied forms of communication infrastructure complete circuit functionality and transform the mixed components into a working system.

Electronics is distinct from electrical and electro-mechanical science and technology, which deals with the generation, distribution, switching, storage and conversion of electrical energy to and from other energy forms using wires, motors, generators, batteries, switches, relays, transformers, resistors and other passive components. This distinction started around 1906 with the invention by Lee De Forest of the triode, which made electrical amplification of weak radio signals and audio signals possible with a non-mechanical device. Until 1950 this field was called "radio technology" because its principal application was the design and theory of radio transmitters, receivers and vacuum tubes.

Today, most electronic devices use semiconductor components to perform electron control. The study of semiconductor devices and related technology is considered a branch of solid state physics, whereas the design and construction of electronic circuits to solve practical problems come under electronics engineering. This article focuses on engineering aspects of electronics.

## 2. Microelectronics

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**Microelectronics** is a subfield of electronics. As the name suggests, microelectronics relates to the study and manufacture (or microfabrication) of very small electronic components. Usually, but not always, this means micrometre-scale or smaller. These devices are made from semiconductors. Many components of normal electronic design are available in microelectronic equivalent: transistors, capacitors, inductors, resistors, diodes and of course insulators and conductors can all be found in microelectronic devices. Unique wiring techniques such as wire bonding are also often used in microelectronics because of the unusually small size of the components, leads and pads. This technique requires specialized equipment and is expensive.

Digital integrated circuits (ICs) consist mostly of transistors. Analog circuits commonly contain resistors and capacitors as well. Inductors are used in some high frequency analog circuits, but tend to occupy large chip area if used at low frequencies; gyrators can replace them in many applications.

As techniques improve, the scale of microelectronic components continues to decrease. At smaller scales, the relative impact of intrinsic circuit properties such as interconnections may become more significant. These are called parasitic effects, and the goal of the microelectronics design engineer is to find ways to compensate for or to minimize these effects, while always delivering smaller, faster, and cheaper devices.

## 3. Components.

A component may be classified as passive or active. The strict physics definition treats passive components as ones that cannot supply energy

themselves, whereas a battery would be seen as an active component since it truly acts as a source of energy.

However electronic engineers performing circuit analysis use a more restrictive definition of passivity. When we are only concerned with the energy due to signals it is convenient to ignore the so-called DC circuit and pretend that the power supplying components such as transistors or integrated circuits is absent (as if each such component had its own battery built in) although it may in reality be supplied by the DC circuit which we are ignoring. Then the analysis only concerns the so-called AC circuit, an abstraction which ignores the DC voltages and currents (and the power associated with them) present in the real-life circuit. This fiction, for instance, allows us to view an oscillator as "producing energy" even though in reality the oscillator consumes even more energy from a power supply, obtained through the *DC circuit* which we have chosen to ignore. Under that restriction we define the terms as used in circuit analysis as follows:

- **Passive components** are ones which cannot introduce net energy into the circuit they are connected to. They also cannot rely on a source of power except for what is available from the (AC) circuit they are connected to. As a consequence they are unable to amplify (increase the power of a signal), although they may well increase a voltage or current such as is done by a transformer or resonant circuit. Among passive components are familiar two-terminal components such as resistors, capacitors, inductors, and transformers.
- **Active components** rely on a source of energy (usually from the DC circuit, which we have chosen to ignore) and are usually able to inject power into a circuit although this is not part of the definition<sup>[1]</sup>. This includes amplifying components such as transistors, triode vacuum tubes (valves), and tunnel diodes.

Passive components can be further divided into lossless and lossy components:

- **Lossless** components do not have a net power flow into or out of the component. This would include ideal capacitors, inductors, transformers, and the (theoretical) gyrator.
- **Lossy** or **dissipative** components do not have that property and generally absorb power from the external circuit over time. The prototypical example is the resistor. In practice all non-ideal passive components are at least a little lossy, but these are typically modeled in

circuit analysis as consisting of an ideal lossless component with an attached resistor to account for the loss.

Most passive components with more than two terminals can be described in terms of two-port parameters satisfying the principle of reciprocity, although there are some rare exceptions<sup>[2]</sup>. In contrast, active components (which have more than two terminals) generally lack that property.

Note that these distinctions only apply to components listed below which would be modeled as elements within circuit analysis. Practical items which act as transducers or have other connections to the outside world such as switches, cannot be subject to this form of classification since they defy the view of the electronic circuit as a closed system.

## **4. Energy production.**

Research is ongoing to use nanowires and other nanostructured materials with the hope to create cheaper and more efficient solar cells than are possible with conventional planar silicon solar cells. It is believed that the invention of more efficient solar energy would have a great effect on satisfying global energy needs.

There is also research into energy production for devices that would operate *in vivo*, called bio-nano generators. A bio-nano generator is a nanoscale electrochemical device, like a fuel cell or galvanic cell, but drawing power from blood glucose in a living body, much the same as how the body generates energy from food. To achieve the effect, an enzyme is used that is capable of stripping glucose of its electrons, freeing them for use in electrical devices. The average person's body could, theoretically, generate 100 watts of electricity (about 2000 food calories per day) using a bio-nano generator.<sup>[12]</sup> However, this estimate is only true if all food was converted to electricity, and the human body needs some energy consistently, so possible power generated is likely much lower. The electricity generated by such a device could power devices embedded in the body (such as pacemakers), or sugar-fed nanorobots. Much of the research done on bio-nano generators is still experimental, with Panasonic's Nanotechnology Research Laboratory among those at the forefront.

## 4. Solar battery. Velosimulator - minipower station.

In connection with reduction of natural stocks of traditional organic energy carriers and nuclear fuel, a rise in prices for them, concern in environmental problems the economic pays attention to search and development of nonconventional and renewed energy sources more and more. Share NRES in the general power consumption of the developed countries (the USA, England, Germany, Japan, etc.) by 2020 will reach 20-30 %.

In republic Uzbekistan practical application NRES lags behind world level (makes 0,3-0,5 % from the general power consumption of Republic). At the Fergana polytechnical institute the faculty, according to the program, creations of scientific and technical educational base for preparation of experts in direction NRES and development of nonconventional renewed energy sources, has developed and has constructed the solar converter in model execution. A converter basic element is the photomodule, in which elements potted in the anodized aluminium frame. Face-to-face has flown down maintains the big loadings and is transparent in a wide interval of lengths of waves.

In drawing for connection of various consumers the scheme of power installation of low power is resulted in the photo-electric module the block.

In need of connection of consumers of an alternating current the system is supplied with inverter and the storage battery, allowing to connect the loadings, which capacity of consumption above developed capacity for time units the system. At connection of consumers of a direct current the inverter is not required.

In the conditions of the central Asia three modules in summertime can generate 280-300Wt capacities. Such capacity will be sufficient for lifting to 21m<sup>3</sup> waters in day from depth-15m. The given installation starts to give out the electric power with a sun exit over horizon and will reach the maximum capacity before a hour after sunrise.

In the complete set of a low-power independent power supply system for a food of the equipment by a voltage of 220 V: and capacity of 300 Wt consist:

### System components

The photomodule of 100 Wt	3
The inverter of 800 Wt	1
Charge-controller	1
The storage battery 50A.	3

## Velosimulator - minipower station

Search of nonconventional renewed sources of the electric power has pushed on working out and manufacturing in model execution. Minipower station on the basis of the sports training apparatus used for physical preparation of sportsmen.

For a trial variant in the given system the usual marching bicycle rotating the electrogenerator by means of time transfer is used.

The system is supplied also: the Storage battery the controller of charge SBCH; with inverter. The sportsman can make work as capacity 3÷4,5 kwt. Sports halls are usually equipped with tens various training apparatus for muscles development, thus mechanical energy is spent without advantage. If each training apparatus to supply with the electrogenerator total capacity, for ten training apparatus, will make 30÷45 kWt.

## 6. List of used literature:

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