

**THE SYSTEM OF MANAGEMENT OF PERSONNEL'S INNOVATIVE POTENTIAL
AT A HIGH TECHNOLOGY ENTERPRISE**

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Formation of a new economic space and increasing globalization provides new challenges and prospects for organizations, which are based on innovation. In the innovative economy competitiveness of enterprises is greatly influenced by the development of scientific knowledge and new technologies, both in production and in the field of management. Thus, a problem of work with innovation, creation and development of a well-functioning innovative environment and the mechanism of its maintenance arises.

The solution of this problem mainly depends on the human factor, in particular, personnel's innovative potential. Today management should focus on a person and his or her innovative potential as a main source of innovation and factors that contribute to a high level of innovative activity of enterprises.

The paper analyzes the features of labour at high-technology enterprises, two categories of employees are distinguished, that is employees involved in direct production and employees involved in innovative activity. On the basis of these, we propose the system of management of personnel's innovative potential, consisting of the following elements: objectives, tasks, functions, subjects of management, organizational forms, means, methods, techniques, motivation, assessment, development.

The obtained results of the study are aimed at solving the strategic and tactical problems in the implementation of the strategy of innovative development of a high-technology enterprise with the help of the formation of an effective system of management of personnel's innovative potential at an enterprise.

Keywords: personnel management, personnel's innovative potential, innovative economy, high technology enterprise.

Вестник СибГАУ
Т. 16, № 2. С. 509–514**СИСТЕМА УПРАВЛЕНИЯ ИННОВАЦИОННЫМ ПОТЕНЦИАЛОМ ПЕРСОНАЛА
НА НАУКОЕМКОМ ПРЕДПРИЯТИИ**

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Формирование нового экономического пространства и усиление тенденции глобализации ставят перед организациями новые задачи и перспективы развития, в основе которых лежат инновации. В условиях инновационной экономики необходимым условием конкурентоспособности предприятия является развитие научных знаний и новых технологий как в сфере производства, так и в сфере управления. Таким образом, встает проблема осуществления инноваций, создания и развития эффективно функционирующей инновационной среды и механизма ее обеспечения.

Решение этой проблемы в значительной мере обусловлено человеческим фактором и, в частности, инновационным потенциалом персонала. Сегодня особая роль должна отводиться человеку и его инновационному потенциалу как главному источнику инноваций и фактору, обуславливающему высокий уровень инновационной активности предприятия.

Проанализированы особенности труда на наукоемких предприятиях, выделены две категории сотрудников – сотрудники, занимающиеся непосредственно производством, и новаторские кадры. На основе этого предложена система управления инновационным потенциалом персонала, состоящая из следующих элементов: цель, задачи, функции, субъекты управления, организационные формы, средства, методы, технологии, мотивация, оценка, развитие.

Результаты исследования направлены на решение стратегических и тактических задач в рамках осуществления стратегии инновационного развития наукоемкого предприятия за счет формирования эффективной системы управления инновационным потенциалом персонала предприятия.

Ключевые слова: управление персоналом, инновационный потенциал персонала, инновационная экономика, наукоемкое предприятие.

Introduction. In today's modernised economy, the activity of employees is a leading factor determining the basis for the development of innovative ideas and their successful implementation at high-technology enterprises. The most progressive and dynamic enterprises of Russian industry are enterprises of the aerospace industry, because features of their functioning, the tendency of constant obsolescence of their products, constant need for upgrading technology determine the requirement for continuous development and implementation of innovative developments.

Setting the aim. Thus, employees of enterprises must be able to perceive and implement innovations in the workplace, as well as produce innovations. Therefore, under these circumstances, management actions should focus on the development and use of personnel's innovative potential.

Peculiarities of high technology enterprises and their employees. The company's work on contemporary market must meet the requirements of modern economy:

- there is a high level of competition that is associated with deletion of economic borders on a national and global scale;

- accelerating scientific and technical progress requires constant consideration of modern achievements and compliance of products and services with the advancement in science and technology;

- development of communications infrastructure allows many businesses to have a physically atomized structure, and this fact must be taken into account in the competition;

- presence of an open information environment leads to the necessity of existence of effective defense against various threats to information: from theft of technology to dangers of using false information, threatening economic security of an enterprise;

- increase in the share of intellectual work, mechanical work is transmitted to machines and human labor becomes more creative, innovative, based on personal and professional potential [1].

High-technology industries are characterized by the fact that the major factor of production, and thus the most important resource in competition is knowledge of their employees [2]. Taking the special role of personnel in the activity of high-technology industries into consideration, it is necessary to mention the distinctive features and peculiarities of labour in these industries.

Labour of employees at high-technology enterprises has the following features:

- the labor process is creative, which leads to the importance of stimulating creative processes;

- the result of labour is immaterial, therefore there is a need for special approaches to accounting work performed by employees;

- the result can not be accurately predicted, so the assessment system of personnel must take this into account;

- assessment of employees' contribution to the development and manufacture of high-technology products requires special tools and techniques;

- control of creative processes provokes additional socio-psychological difficulties [3].

The nature of work and the peculiarities of high-technology industries make the following specific requirements for personnel of these enterprises:

- high skills, flexibility, and wish to learn in order to effectively participate in research and development, as well as for production activities due to regular updates and product complexity. High technical competence is required even for employees of marketing and sales departments for competent and effective knowledge-based activity in the field;

- in the information society employees should work much faster because the new environment requires an increase in the rate of supply of products and services, employees must be able to adapt to new conditions and act very quickly, using modern means of transmitting information;

- good communication skills are also required. If the organization is geographically dispersed, the importance of communication and personal meetings should still be considered for more productive work and strengthening the sense of belonging to team and working for a common goal;

- creative abilities (due to the necessity to take part in research and development) [1].

As a rule, personnel in scientific and technical spheres has (should have) special personal characteristics due to the nature of their activities. According to modern scholars, changes in the structure of needs is primarily characteristic of scientific and technical personnel: the growing importance of non-material needs and moving the scope of their satisfaction to the workplace. According to the classification of T. Stewart [4], the scientific and technical staff of high-technology industries are a group of workers with high-impact and labor substitutability, they are top-level professionals whose knowledge and ability provide a competitive advantage. They are the special value of the company.

In general, personnel of high-technology enterprises can be divided into two categories – employees involved in direct production (manufacturing and production of goods, quality control, etc.), and “innovative personnel, who are people influencing the success of the organization, its scientific maintenance and commercial development directly. Innovative personnel may include scientists, generating ideas; managers, defining the most effective innovations and organizing the process of their implementation; skilled workers proposing projects for product improvement or improvement of technical processes” [5].

Due to the nature of high-technology industries, their personnel and the peculiarities of innovative activity, the decisions made in this field also have a number of specific features. We point out the main ones:

- decisions are difficult to standardize because the problems are unique;
- they destroy the economic balance, creating contradictions and uncertainty in the economic dynamics;
- decisions often provoke resistance;
- they are associated with higher costs of resources;
- they require knowledge of the latest advancement in science and technology [3].

Personnel management at a high-technology enterprise. Personnel management of high-technology enterprises should correspond to and line up with the features of today's market, the specific features of such enterprises and personnel activity within the high-technology industry.

In national literature there is no consensus on the definition of personnel management, but there are several approaches:

1. Institutional approach. From the standpoint of this approach, personnel management is considered to be “various activities of different actors (among which there is a system of personnel management, linear and senior executives performing the function of management in relation to their subordinates), aimed at realizing objectives of strategic development of the organization and execution of tactical tasks on the most efficient use of employees of the organization” [6].

2. Informative (functional) approach. This approach is based on the allocation of functions of personnel management, its objectives and tasks of functioning in an organization, it shows “what actions, processes must be implemented in order to achieve these objectives”, as opposed to the institutional approach, which focuses on “what personnel management should do for the organization. This allows to perceive personnel management as a special type of activity, a whole system, which has its own specific content” [6].

3. Organizational approach. In terms of this approach, personnel management can be defined as “a set of interrelated economic, organizational and socio-psychological methods to ensure the effectiveness of employment and the competitiveness of enterprises. In this case interaction of an object and a subject, mechanisms, technologies, tools and procedures for the implementation of personnel management functions are described” [6].

4. The approach viewing the process of purposeful interaction and mutual influence of managers and staff in the joint productive activity as an object of personnel management system. This approach defines a system of management as the unity of subject and object of management, which is achieved as a result of self-regulation in complex social systems and also of the purposeful impact of the object of management on the subject. In this case, the object of management involves social relationships, processes, groups, social resources and a man himself, who inevitably enters social relationships, is involved in social processes and groups, use of resources [7].

Hence, personnel management can be considered as a system that has an object and a subject of management, between which there are organizational and managerial relationships, as well as management functions, which are realized through certain methods. The system of personnel management is built on the basis of a particular concept. The concept of personnel management includes the basic principles of management and its general directional thrust, its regulations are unique in an organization, but, nevertheless, the contents of personnel management includes elements that are common. Thus, the contents of personnel management includes:

- a) determining the need for personnel based on the development strategy of an enterprise;
- b) formation of quantitative and qualitative composition of personnel (recruitment, selection and placement of personnel);
- c) personnel policies (principles of selection and placement of personnel, conditions of employment and dismissal, training and professional development, assessment of personnel and its activities);
- d) a system of general and vocational training;
- e) adaptation of employees at an enterprise;
- f) remuneration and stimulation (forms of remuneration, ways of improvement of labour productivity, etc.);
- g) assessment and certification of personnel;
- h) system of personnel development (training, career planning, etc.);
- i) formation of personnel reserve;
- j) organizational culture of the company, as well as interpersonal relationships between employees, management and non-governmental organizations [8–10].

In conditions of economy based on knowledge and innovations, the content of each of the above mentioned components of personnel management acquires new features. In the traditional approach to personnel management the required amount of work related to personnel recruitment is largely determined by the difference between the existing workforce and future demand for it. In innovative activity, which is characterized by uncertainty and significant risks, it is almost impossible to predict future demand in the labour force. Also work in an innovative organization imposes additional requirements for potential employees. In addition to traditional qualities (theoretical knowledge, experience, hard work, health, etc.) it is necessary to possess flexibility and mobility of thought, creativity, the need for self-actualization, the ability to adapt to rapidly changing working conditions, ability for learning and retraining [11]. Accordingly, there occur changes in the content of personnel policy, rebuilding the system of personnel assessment and system of its development.

On the whole, the following features of personnel management in terms of innovation can be distinguished:

- complexity, novelty, and uniqueness of work performed by personnel;
- high qualification, personal and psychological assessment of the quality of personnel;
- high turnover of personnel;
- possibility of a getting high wages by personnel;
- possibility of realizing the needs of personnel in self-expression;

- strong motivation system;
- new role of administrative personnel of an enterprise [12];
- new forms of cooperation between workers and professional teams (formation of project teams and innovative teams to solve a particular problem);
- formation of personnel reserve considering the new competencies of personnel needed to implement innovations.

Thus, functioning of an enterprise in the innovative economy, formation of an innovative strategy at an enterprise implies presence of resources and potential for its implementation, therefore, the fundamental factor for the development of an enterprise is its innovative potential and innovative potential of its employees, who also become an object of management.

System of management of personnel’s innovative potential. According to K. A. Lega, management of personnel’s innovative potential is a continuous, dynamic process constantly and consciously carried out by all participants, which involves carrying out various procedures, activities and operations aimed at changing the level of innovativeness of personnel. Innovativeness is susceptibility, willingness and ability to innovate; an ability to rapidly assimilate and use scientific and technological achievements; forecasting new trends in the development of science and technology and responsiveness to changes in the external environment; readiness of personnel for the effective development of scientific and technological innovations, creating the necessary objective socio-economic conditions for the introduction of innovations from the standpoint of human factors [12].

To improve the use of personnel’s innovative potential it is necessary to form a system of management of personnel’s innovative potential, which allows to systematize processes and forms of influence on personnel of an enterprise and provide the necessary level of its development.

A number of researchers have proposed different types of systems of management of personnel’s innovative potential [12–14]. Based on the analysis of their findings, we propose the structure of the system shown in picture.

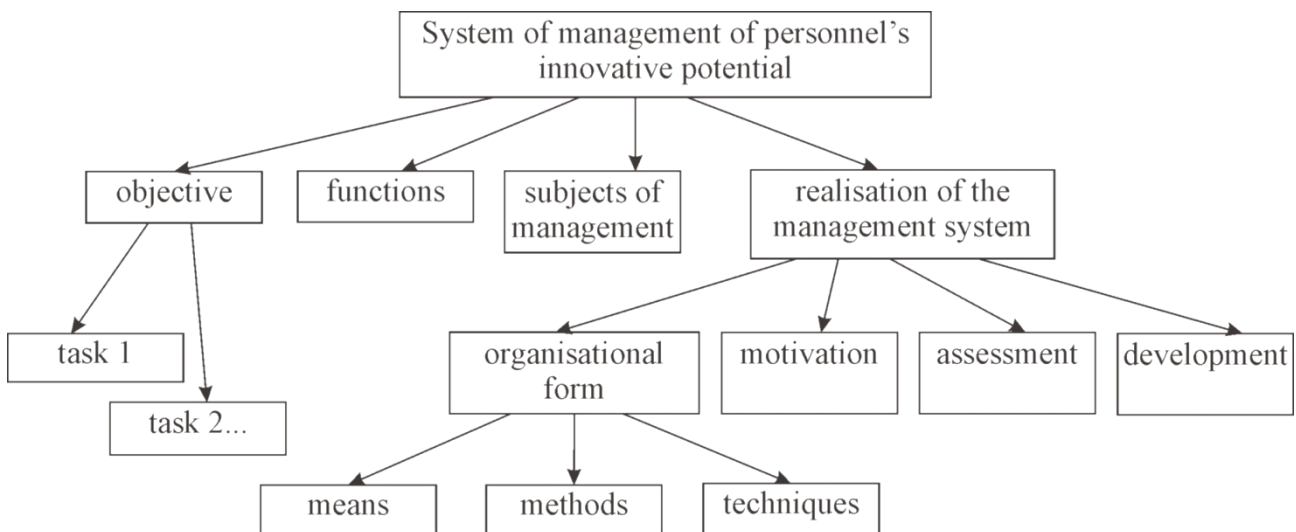
In our research, the objective of managing personnel’s innovative potential is defined as provision of an optimal level of development of personnel’s innovative potential for innovative activity of an enterprise and increasing its competitive advantages in the innovative economy.

The tasks of management of personnel’s innovative potential, in our opinion, are:

- formation, development and maintenance of knowledge and skills of employees necessary for innovative activity;
- assessment of personnel’s innovative potential in order to identify problem areas of its development;
- providing the necessary managerial impact on the factors affecting the level of development of personnel’s innovative potential;
- accumulation, systematization and transfer of new knowledge and technologies;
- maintaining “innovative spirit” at an enterprise;
- improving compliance of employee’s values with corporate values;
- improving personal and professional qualities of company’s employees.

V. P. Gorshenin highlights 7 functions of the system of management of personnel’s innovative potential in his study:

- 1) compensatory, which restores previously missing or lost educational opportunities;
- 2) adapting, which implies adaptation to new professional requirements in the rapidly changing society;
- 3) developing, that means progressive enrichment of active personal abilities and spiritual world;
- 4) correcting the change of patterns of thinking and behavior, overcoming personal professional deformations;
- 5) forming, which involves acquisition of new knowledge and skills in connection with the expansion or transformation of functional responsibilities;
- 6) assisting, which implies consulting services in the event of stubborn problems;
- 7) matching, that means integration of personal value system of employees with organizational values and culture [13].



The system of management of personnel’s innovative potential

In our study we also propose a motivating function (the eighth), which is to provide stimulating support of personnel's innovative activity. An enterprise should have mechanisms for the formation of employees' motivation to innovate, to acquire new knowledge and skills, to create innovative products. The motivating function can be realized by identifying employees' needs, expectations and motives for carrying out activities desired by the organization and ultimately leading to the required results, on the basis of which, there is a need for the formation of motivating factors that may encourage employees to realize their innovative potential.

The subjects of management of personnel's innovative potential involve both employees of an enterprise and its management team.

Implementation of the system of management of personnel's innovative potential is carried out using any of organizational forms of management. An innovative resource center is used for this purpose in some modern organizations. This is a center for searching, processing, structuring and storing information about existing developments in the area of interest, as well as for strategic planning of future activities and training on the basis of available data. The innovative nature of knowledge and skills obtained through the innovative resource center is achieved by combining research and training components of activity at an enterprise.

Within the organizational forms of managing personnel's innovative potential a variety of methods, techniques and tools is used. Traditional methods involve discussions, seminars, trainings, conferences, self-education. Also it includes innovative teaching methods such as the method of case studies, brainstorming, action learning method, role modeling and simulation games, project-based learning, and others [13].

Technology of managing personnel's innovative potential as a complex of organizational measures should be aimed at efficient and orderly accumulation, systematization, transfer and use of new knowledge by employees of the enterprise. The means ensuring the flow of these processes should involve technical means used for searching and storage of data, including telecommunications equipment required mainly for sharing information. Also the necessary means of management and development of personnel's innovative potential are educational-methodical complexes, educational programs, which are primarily focused on solving problem tasks, creative approach and contribute to the development of intelligence, flexibility of thinking and innovative potential.

An integral part of the system of management of personnel's innovative potential and its implementation is personnel's motivation to participate in self-development and innovative activity. Tangible and intangible motivation tools should be used depending on the values and orientations of each employee, and motivational impact should be aimed at developing desire for development, improvement in the professional field and creative solutions.

Assessment and development of personnel's innovative potential in the structure of the management

system are mutually reinforcing elements, as conclusions about the level of development of personnel's innovative potential and quality of management drawn on the basis of assessment make it possible to decide on the need for training and to minimize barriers associated with the development of personnel's innovative potential hindering the effective use of it.

Conclusion. In summary, it must be concluded that management of personnel's innovative potential plays an important role in the system of personnel management at high-technology enterprises, as knowledge, skills and innovative activity of employees of high-technology enterprises provide its competitive advantage, are of particular value to it and are the most important factor determining its development. There should be a system of management of personnel's innovative potential, which aims at providing the optimal level of development of personnel's innovative potential to implement innovations at an enterprise and increase its competitive advantages in the innovative economy.

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