

## **EVALUATION OF PRODUCTION RESERVES USE EFFICIENCY, AS A BASIS FOR TAKING PERFECTED MANAGEMENT SOLUTIONS ON PJSC «POLTAVA AUTOMOBILE UNIT PLANT»**

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**Introduction.** Provision of enterprise production inventories is an important factor in efficient production. The lack or formation of surplus production is a cause of unstable and inefficient work of the enterprise. This leads to the withdrawal of funds from economic circulation, reducing the return on capital used, reducing liquidity, the emergence of a need for attracting borrowed funds. interruptions in the process of production, not full use of production capacity. All this determines the need for constant control over the level of production stocks, an important component of which is to analyze the effectiveness of the use of raw materials, materials, etc.

An overview of the latest sources and publications. Questions of accounting, analysis of efficiency, use of production stocks studied by such scientists as V.V. Sopko, V.P. Zavhorodnii, O.I. Hadzevych, F.F. Butinets, V.I. Khomiakova, V.V. Kovalev, also foreign – E.F. Brigham, J.P. Vumek, D.T. Jones, M.R. Lindsay, J.V. Horn, J.K. Shim, Taiti Ono.

The efficiency of using current assets in an enterprise is important, since it has a significant impact on the overall efficiency of the entire set of funds attracted by the enterprise. According to Yaroshevych N. B. [2], the efficiency of the use of working capital should be evaluated using a system of indicators, which include: the duration of turnover of working capital; turnover rate of working capital; load factor of working capital; return on working capital; coefficient of saving of own working capital. In this case, the risk of using working capital depends on their level of liquidity.

Sadovska I. B. [3] provides a scheme for assessing the release of stocks and components of their original value.

The essence of material resources, the organization of their management process, planning and forecasting, features and advantages of the timely production system are considered by Luhovskyi O.P. and Ivaniuta P.V. [5]

M.V. Rumiantsev [6] estimates the level of loading of production capacities of the enterprise, the model of dynamics of the optimal distribution of capacities, and the efficiency of the use of fixed assets.

The analysis of the publications of scientists testifies that the issues of analysis and control of the state of inventories are reflected in the specialized literature, but to this day they do not lose their relevance and require further research.

**Setting objectives.** The purpose of this study is to analyze and assess the efficiency of the use of industrial stocks at PJSC “Poltava Automobile Unit Plant” and further development of recommendations for improving the efficiency of their application in production.

**Main material and results.** Based on the data of financial reporting and accounting of PJSC "Poltava Automobile Unit Plant", the indicators of the company's activity were analyzed to determine the efficiency of the use of inventories.

The basic information about the production stocks is accumulated on the synthetic account 20 “Industrial stocks”, to which 9 sub-accounts are opened in accordance with the Schedule of Accounts [1], then all information is reflected in the balance sheet. Availability of inventory available at the disposal of the enterprise can be calculated both on a certain date and on average for the past and reporting periods. The volume of inventories at the reporting date is determined directly by the balance sheet or in more detail – according to the synthetic and analytical accounting. Table 1 shows the availability of PJSC “Poltava Automobile Unit Plant” in production inventories and Figure 1 shows the dynamics of their composition.

Table 1

## Availability of inventory at PJSC "Poltava Automobile Unit Plant", ths. UAH

Composition of inventory	2015 year	2016 year	2017 year	Absolute deviation of 2016 from 2015	Absolute deviation of 2017 from 2016	Absolute deviation of 2017 from 2015
Raw materials	3031	4063	4549	1032	486	1518
Spare parts	624	774	882	150	108	258
Fuel	853	413	402	-440	-11	-451
Packaging and packaging materials	6	12	23	6	11	17
Purchased semi-finished products and component parts	2254	4014	4396	1760	382	2142
Building materials	45	60	75	15	15	30
Materials transferred to the processing	18	6	4	-12	-2	-14
Other materials	328	1000	1106	672	106	778
Together	7159	10342	11437	3183	1095	4278

The data in Table 1 indicate that in 2017, compared with 2016, the research enterprise has a tendency to reduce such components of production stocks as "Fuel" – by 11,00 thousand UAH. "Raw materials" – increase by 486 thousand UAH, "Spare parts" – by 108,00 thousand UAH, "Other materials" – 106,00 thousand UAH at the expense of additional replenishment of resources. It is important to note that the growth of these components should be justified by the limits of production and economic activity of the enterprise; otherwise the enterprise loses the possibility of effective solvency.

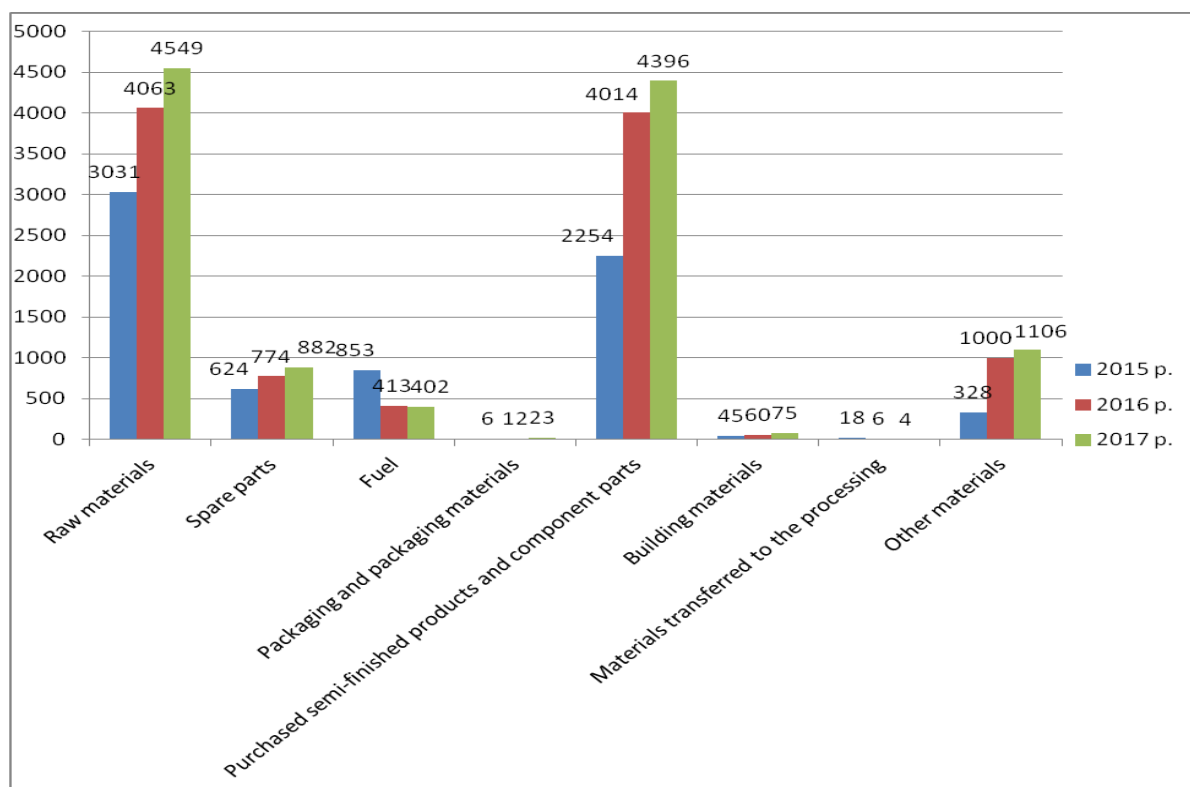


Fig. 1. Provision of industrial stocks of PJSC "Poltava Automobile Unit Plant".

An important indicator of the efficiency of the use of stocks is their share in the total amount of its current assets (Table 2). According to Table 2, it can be concluded that there is an increase in the volume and share of production stocks in the enterprise, which is a positive fact. Thus, in 2015, industrial stocks occupied 30.39%, in 2016 – 31.41%, and in 2017 – 29.93%. At the same time, in 2016, compared with 2015, the sharp increase in inventories in the structure of current assets was set at 1.62 points to 6.23%. In 2017, compared with 2016, an increase of 0.98 points to 7.21%.

The turnover of the company's inventory determines their systematic transformation into finished products, the sale and purchase of new production resources necessary to continue the production process (Table 3). The faster the revolving resources are rotated, the less they need in the stock to ensure the same volume of output.

**Table 2**

**Indicators of composition and structure of material working assets**

**PJSC “Poltava Automobile Unit Plant” [8]**

Indexes	2015 year		2016 year		2017 year		Absolute deviation of 2016 from 2015		Absolute deviation of 2017 from 2016		Absolute deviation of 2017 from 2015	
	ths. UAH	%	ths. UAH	%	ths. UAH	%	ths. UAH	%	ths. UAH	%	ths. UAH	%
Current assets, incl.:	11567	100	27745	100	34755	100	16178	-	7010	-	23188	-
Reserves of all, including:	23559	4,61	32874	6,23	38539	7,21	9315	1,62	5665	0,98	14980	2,60
Industrial stocks, incl.:	7159	30,39	10327	31,41	11534	29,93	3168	1,02	1207	-1,48	4375	-0,46
Raw materials	3031	42,34	4063	39,34	4549	39,44	1032	-3	486	0,10	1518	-2,90
Spare parts	624	8,72	774	7,49	882	7,65	150	-1,23	108	0,16	258	1,07
Fuel	853	11,92	413	4	402	3,49	-440	-7,92	-11	0,51	-451	8,43
Packaging and packaging materials	6	0,08	12	0,12	23	0,20	6	0,04	11	0,08	17	0,12
Building materials	45	0,63	45	0,44	75	0,65	0	-0,19	30	0,21	30	0,02
Purchased semi-finished products and component parts	2254	31,48	4014	38,87	4493	38,95	1760	7,39	479	0,08	2239	7,47
Materials transferred to the processing	18	0,25	6	0,06	4	0,03	-12	-0,19	-2	-0,03	-14	-0,22
Other materials	328	4,58	1000	9,68	1106	9,59	672	5,1	106	0,09	778	5,01

According to Table 3, the following conclusions can be drawn:

- net income from the sale of products (goods, works, services) during the 2015-2017 years was positive (increase by 44772 thousand UAH);

**Table 3**

**Turnover of inventories at PJSC “Poltava Automobile Unit Plant” [8]**

Indexes	2015 year	2016 year	2017 year	Absolute deviation of 2016 from 2015	Absolute deviation of 2017 from 2016	Absolute deviation of 2017 from 2015
Net income from sales of goods (goods, works, services), ths. UAH	133756	145819	178528	12063	32709	44772
Average annual production volume, ths. UAH	23875	28216,5	35706,5	4341,5	7490	11831,5
Ratio of production inventory, revolutions	4,63	3,96	3,93	-0,67	-0,03	-0,7
Duration of inventory turnover days,	24,51	30,04	29,59	5,53	-0,45	5,08
Factor for fixing inventory	3,82	3,56	2,98	-0,26	-0,58	-0,84

- the average annual volume of production stocks also tended to gradually increase during 3 years; in 2017 compared to 2016 this indicator increased by 4341.5 thousand UAH;

- the coefficient of rotation in 2016 compared with the past was characterized by a decrease of 0.67 revolutions, and in 2017, compared with 2016, it decreased by 0.03 turns. That is, in fact there was a decrease in the number of revolutions of production stocks.

- the duration of the turnover of industrial stocks in 2016 compared with 2015, the time of turnover increased by 5.53 days, which was negatively characterized, but already in 2017 there was a decrease of this indicator by 0.45 days, which in turn, has a positive effect on the general turnover of stocks;

- the coefficient of fixing inventory allows us to state that in 2016, compared with 2015, there was a decrease in the amount of the average balance of production stocks, which accounts for 0.26 points of revenue from sales of one hryvnia, in 2017 compared with 2016, there was also a decrease of this indicator by 0,58 points. This indicates an increase in the efficiency of the use of stocks. The main reason for the revival of revival was the fact that the average value of inventories and net income from sales in 2015-2016 increased.

The result of accelerating or slowing down the rate of turnover of inventories is the release or additional attraction of funds into circulation. This indicator is determined by the formula:

$$\Delta PR = \Delta I_{of} * I^n, \quad (1)$$

where  $\Delta I_{of}$  is factor for fixing inventory;

$I^n$  – net income from sales of goods (goods, works, services).

In 2015, the figure was negative and amounted to UAH 165857.44, in 2016 the negative value was UAH 37912.94 thousand, indicating a release of funds and effective turnover. In 2017 – a negative value of 103546.24 thousand UAH. Timely receipt and efficient use of inventory ensures uninterrupted, rhythmic work of the enterprise, execution of the business plan and increase profits.

An unjustified surplus can lead to a slowdown in the turnover of working resources, which worsens the financial condition of the entity. To characterize the efficiency of the use of inventories, a system of generalizing indicators (material return, material and profitability) is used. The analysis of the level and dynamics of material resources, material productivity and profitability of production stocks is presented in Table 4.

**Table 4**

**Material consistency, material productivity and profitability of the production facilities of PJSC "Poltava Automobile Unit Plant" [8]**

Indexes	2015 year	2016 year	2017 year	Absolute deviation of 2016 from 2015	Absolute deviation of 2017 from 2016	Absolute deviation of 2017 from 2015
Volume of production, ths. UAH	102244	131548,5	155602,80	29304,5	24054,3	53358,8
Profit from operating activities, ths. UAH	6420	19127	13567,00	12707	-5560	7147
Average annual volume of production stocks, ths. UAH	23875,00	28216,5	35706,5	4341,5	7490	11831,5
Material costs, ths. UAH	58416	67841	83363	9425	15522	24947
Material return	1,75	1,94	1,87	0,19	-0,07	0,12
Material consistency	0,57	0,52	0,54	-0,05	0,02	-0,03
Profitability of production stocks, %	26,89	67,79	38,00	40,9	-29,79	11,11

After analyzing the data in Table 4, it should be noted that there was a decline in material returns in 2017 compared with 2016 by 0.07, this negatively affects the activities of the enterprise. The material content of the product in 2017 increased by 0.02, which indicates that the material cost of UAH for manufactured goods has increased, that is, the products became material resources. Changes in material productivity also indicate a reduction in the efficiency of the use of inventories. The profitability of this type of resource in 2016 compared to 2015 increased by 40.9% due to the fact that the rate of increase in profits (9.02%) was lower than the growth rate of the average annual inventory (18.18%).

The profitability of production stocks is unstable, in 2016 this indicator is increasing, by 1 UAH inventories accounted for 67.79 cents of profit from the main activity, and in 2017 there is a decrease in the indicator, and in the reporting period, each hryvnia invested in production reserves provided 38.00 cents of the main profit.

**Conclusions.** The analysis of the efficiency of the use of industrial stocks at PJSC "Poltava Automobile Unit Plant" for 2015–2017 showed an unsustainable tendency.

There is a stable level of material content and a decrease in material productivity. Reducing the level of material productivity can be affected by a decrease in output.

To improve the efficiency of the use of inventory at the enterprise, it is necessary to analyze trends in the composition of inventories, the implementation of the plan at their level, calculate the influence of factors on their growth, determine the indicators that characterize the efficiency of the use of this type of resources, the cost of commodity products, efficiency and rationality.

The company needs to take measures that will increase the profitability. One of the reserves in this direction is an increase in sales, which will provide an opportunity for profit growth and will have a positive impact on profitability.

Therefore, as recommendations for improving the use of inventories, the following measures may be proposed:

1. Economic: substantiation of the norms of consumption of inventories, material incentives for their savings.
2. Organizational: optimizing the use of inventories and strengthening control over their condition and structure.
3. Innovative: introduction of resource-saving technologies.

The rational use of inventory at the enterprise is the most important factor in reducing the material content and cost of production, increasing profitability and profitability of production. The proposed directions of improvement of the use of industrial stocks at the enterprise of PJSC "Poltava Automobile Unit Plant" will facilitate the creation of reserves for improving the efficiency of use both of inventories and working capital in general. Prospects for further research are to develop new methods for managing

inventories that will reduce the cost of their maintenance, and to plan models development that will ensure the optimal availability of inventory to maximize the efficiency of their use.

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**Коба Олена Вікторівна**, кандидат технічних наук. **Давидова Ірина Вячеславівна**, студентка. Полтавський національний технічний університет імені Юрія Кондратюка. **Оцінювання ефективності використання виробничих запасів, як основа для прийняття зважених управлінських рішень на ПАТ «Полтавський автоагрегатний завод».** Актуальність статті обумовлена необхідністю вирішення питань, пов'язаних із налагодженням ефективного використання виробничих запасів на підприємстві. Виробничі запаси задіяні в основному виді діяльності, без їх участі в процесі господарювання неможливе повноцінне функціонування промислового підприємства. Метою цього дослідження є визначення ефективності використання виробничих запасів на ПАТ «Полтавський автоагрегатний завод» і розроблення пропозицій щодо їх оптимізації на підприємстві, що розглядається. Методологічною основою здійсненого дослідження є системно-структурний підхід, який передбачає розгляд об'єкта як цілісної, багатоаспектної та багаторівневої системи. У процесі розгляду використовувалися такі методи: теоретичне узагальнення, статистичний аналіз – для вивчення, групування і порівняння емпіричних даних з метою дослідження тенденцій зміни виробничих запасів у динаміці; аналіз та синтез, системний підхід – для визначення особливостей обліку виробничих запасів; індукція й дедукція – для аналізу складу виробничих запасів; графічний метод – для оцінювання стану виробничих запасів підприємства; факторний аналіз для прогнозування фінансових результатів діяльності. Емпіричну базу дослідження складають фінансова та бухгалтерська звітність ПАТ «Полтавський автоагрегатний завод». У процесі аналізу встановлено, що наявність і стан виробничих запасів на підприємстві більшою мірою позитивно впливають на його діяльність, що свідчить також про гарну економічну ефективність їх використання. Для підвищення ефективності використання цього виду ресурсів підприємства необхідно аналізувати тенденції зміни складових виробничих запасів. Елементи наукової новизни отриманих результатів полягають в обґрунтуванні організаційних, теоретичних та методичних положень і наданні практичних рекомендацій щодо ефективного використання виробничих запасів на ПАТ «Полтавський автоагрегатний завод», що дозволить поліпшити результативність управління виробничими запасами підприємства. Практичне значення отриманих результатів полягає в тому, що реалізація наданих висновків і пропозицій буде сприяти ефективності використання виробничих запасів. Результати проведеного дослідження можуть бути використані в процесі вдосконалення системи контролю виробничих запасів на підприємстві ПАТ «Полтавський автоагрегатний завод». Питання ефективному використанню виробничих запасів завжди знаходилися в центрі уваги практичних та наукових працівників. Нині існує необхідність і можливість застосування нових організаційних та методичних підходів у розв'язанні проблем їх контролю, аналізу і використання

підприємствами. Подальші дослідження будуть сприяти розробленню нових методів управління виробничими запасами, котрі зменшуватимуть вартість їх утримання, плануванню розробленнямоделей, які дозволять забезпечити оптимальну наявність виробничих запасів для досягнення максимального зростання ефективності їх використання.

**Ключові слова:** виробничі запаси, оборотні активи, коефіцієнт закріплення, обороти, тривалість оборту, матеріаломісткість, матеріаловіддача, рентабельність.

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**Koba Olena**, PhD in Engineering Sciences, **Davydova Irina**, student. Poltava National Technical Yuri Kondratyuk University. **Evaluation of production reserves use efficiency as a basis for taking perfected management solutions on PJSC «Poltava Automobile Unit Plant».** The urgency of the article is due to the need to address issues related to the establishment of effective use of industrial stocks at the enterprise. Industrial stocks take part in the main activity, without their participation in the management process, the full functioning of an industrial enterprise is impossible. The purpose of this study is to determine the effectiveness of the use of industrial stocks at PJSC "Poltava Automobile Unit Plant" and to develop proposals for their optimization at the investigated enterprise. The methodological basis of the research is the system-structural approach, which involves consideration of the object as a holistic, multidimensional and multilevel system. In the process of research, the following methods were used: theoretical generalization, statistical analysis – for studying, grouping and comparing empirical data in order to study the trends of changes in inventories in dynamics. In the course of the analysis, it was established that the availability and condition of industrial stocks in the enterprise have a greater positive effect on its activities, which also testifies to the good economic efficiency of their use. To increase the efficiency of using this type of enterprise resources, it is necessary to analyze trends in the changes in the components of production stocks. The elements of the scientific novelty of the results are to substantiate the organizational, theoretical and methodological provisions and provide practical recommendations for the effective use of production resources at PJSC "Poltava Automobile Unit Plant", which will improve its effectiveness of management of industrial stocks of the enterprise. The practical significance of the results obtained is that the implementation of the conclusions and proposals provided will contribute to the efficient use of inventories. The results of the conducted research can be used in the process of improving the system of control of inventory at the enterprise of PJSC "Poltava Automobile Unit Plant".

**Key words:** production stocks, current assets, fixing ratio, rotation, turnover duration, material concentration, material productivity, profitability.

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**Коба Елена Викторовна**, кандидат технических наук, **Давыдова Ирина Вячеславовна**, студентка. Полтавский национальный технический университет имени Юрия Кондратюка. **Оценка эффективности использования производственных запасов, как основание для принятия взвешенных управленческих решений на ПАО «Полтавский автоагрегатный завод».** Актуальность статьи обусловлена необходимостью решения вопросов, связанных с налаживанием эффективного использования производственных запасов на предприятии. Производственные запасы задействованы в основном виде деятельности, без их участия в процессе хозяйствования невозможно полноценное функционирование промышленного предприятия. Целью данного исследования является определение эффективности использования производственных запасов на ПАО «Полтавский автоагрегатный завод» и разработка предложений по их оптимизации на исследуемом предприятии. Методологической основой проведенного исследования является системно-структурный подход, предусматривающий рассмотрение объекта как целостной, многоаспектной и многоуровневой системы. Практическое значение полученных результатов заключается в том, что реализация предоставленных выводов и предложений будет способствовать улучшению аналитичности и оперативности информации, а также повышению эффективности использования производственных запасов. Результаты проведенного исследования могут быть использованы в процессе совершенствования системы контроля производственных запасов на предприятии ПАО «Полтавский автоагрегатный завод». Дальнейшие исследования будут способствовать разработке новых методов управления производственными запасами, которые будут уменьшать стоимость их содержания, и планированию разработки моделей, которые позволят обеспечить оптимальное наличие производственных запасов для достижения максимального роста эффективности их использования.

**Ключевые слова:** производственные запасы, оборотные активы, коэффициент закрепления, обороты, продолжительность оборота, материалоемкость, материаловіддача, рентабельность.