

# **State of technological production and energy consumption in automotive industry enterprises**

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**ABSTRACT:** Both the head of the department and a specialist in supervision of compliance with regulatory legal acts. Enterprise energy resourcing the actual consumption of graphs based on 2020 year. As well as, electric consumer energy influence on this factor.

## **I. INTRODUCTION**

Today, in order to increase the energy efficiency of enterprises, the use of energy and resource-efficient suitable equipment is offered to enterprises with the purpose of conducting energetic inspections [1-5]. A joint venture specializing in the production of seats for cars were established on May 30, 1995 in the city of Andijan. The company's activities are aimed at the production of seats for NEXIA-R-3, SPARK, COBALT and LASETTI (Genra) cars. The enterprise is fully equipped with the most modern equipment. On the territory of the enterprise: administrative building, production building, office and household buildings, boiler room, pumping station, compressor station.

## **II. LITERATURE SURVEY**

There are the following production areas:

- foam polyurethane foam;
- sewing;
- press;
- welding;
- assembly line
- consumer goods production manufactory

The actual consumption of energy resources by the whole enterprise in 2020 year is as follows:

- electricity – 3727487 kW\*hour
- boiler and oven fuel-127699 liters.
- domestic and drinking water-22075 m<sup>3</sup>

The calculated average annual total productivity of working compressors is 7600 thousand m<sup>3</sup>/year.

The number of workers at the enterprise is 1008, of which 290 are engineers, 718 are production workers.

The enterprise works on 2 shifts. Annual working time fund 4084 hours or 256 days.

Since the enterprise does not have a technical account of the consumption of electricity for production and auxiliary facilities, the Table 1 shows the approximate annual consumption of electricity for 2020 year for production and auxiliary facilities, taking into account lighting.

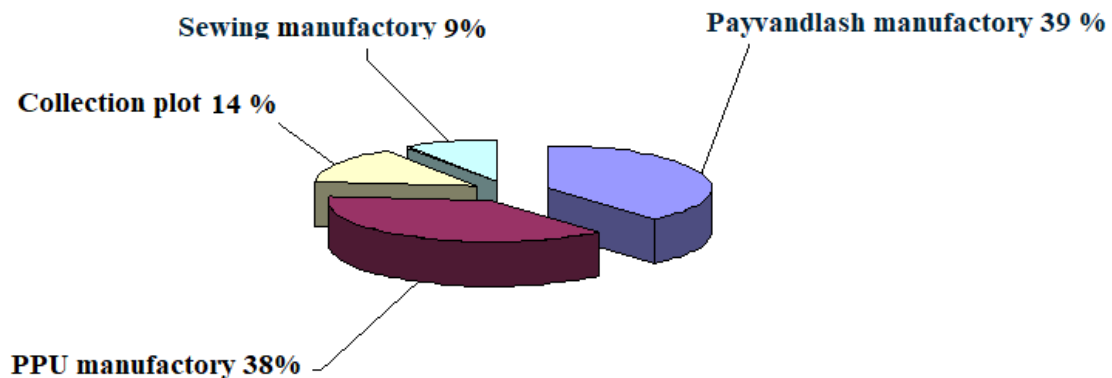
Table № 1

| Production units                      | Installed power, kW*h | Power consumption, kW*h | On account of % of total electricity consumption | Electricity consumption, kW*h |
|---------------------------------------|-----------------------|-------------------------|--|-------------------------------|
| <b>Technological needs</b>            |                       |                         |  |                               |
| Welding manufactory                   | 1055,9                | 386,7                   | 32   | 1177630,2                     |
| PPU manufactory                       | 1148,5                | 377,7                   | 31   | 1151745,2                     |
| Collection plot                       | 161,0                 | 140                     | 11   | 426346,6                      |
| Tick in the shops                     | 240,2                 | 94                      | 8  | 286261,3                      |
| <b>Nationwide</b>                     |                       | <b>998,4</b>            | <b>82</b>  | <b>3041983,3</b>              |
| <b>Auxiliary fields</b>               |                       |                         |  |                               |
| Area of delivery of finished products | 84,9                  | 35                      | 3  | 106586,6                      |
| Compressor and repair area            | 227,4                 | 100,4                   | 8  | 305751,4                      |
| <b>Overall</b>                        |                       | <b>135,4</b>            | <b>11</b>  | <b>412338</b>                 |
| <b>Additional buildings</b>           |                       |                         |  |                               |
| ABK                                   | 24,76                 | 22,7                    | 2  | 69129,1                       |
| Kitchen №1                            | 63,8                  | 39,6                    | 3  | 120595,1                      |

Table 2 and picture 1 shows the balance of electricity consumption by the enterprise.

Table № 2

| manufactory             | Electrical power consumption, kW*h | %   |
|-------------------------|------------------------------------|-----|
| Payvandlash manufactory | 1177630,2                          | 39  |
| PPU manufactory         | 1151745,2                          | 38  |
| Payvandlash plot        | 426346,6                           | 14  |
| Sewing manufactory      | 286261,3                           | 9   |
| Overall                 | 3041983,3                          | 100 |

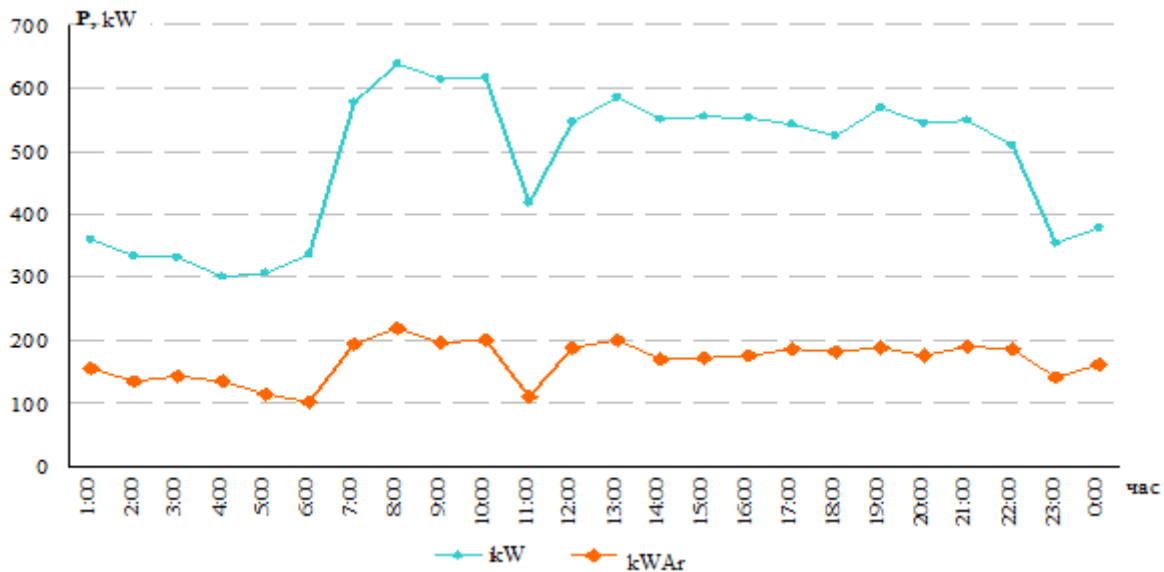


1-picture. Balance of electricity consumption by Enterprise

Daily consumption of active and reactive energy is presented in Table 3.

3- table

| hours | Active energy,<br>kW | Reactive energy,<br>kVAR |
|-------|----------------------|--------------------------|
| 1:00  | 360,45               | 155,5056                 |
| 2:00  | 334,08               | 134,3988                 |
| 3:00  | 331,38               | 143,9208                 |
| 4:00  | 301,3344             | 135,5436                 |
| 5:00  | 306,5868             | 115,29                   |
| 6:00  | 336,3516             | 103,158                  |
| 7:00  | 577,728              | 195,1704                 |
| 8:00  | 639,414              | 218,0376                 |
| 9:00  | 614,826              | 196,1676                 |
| 10:00 | 617,094              | 200,9592                 |
| 11:00 | 416,736              | 110,664                  |
| 12:00 | 547,434              | 187,6716                 |
| 13:00 | 585,434              | 200,8548                 |
| 14:00 | 550,26               | 168,9336                 |
| 15:00 | 555,21               | 172,7928                 |
| 16:00 | 551,88               | 176,3172                 |
| 17:00 | 542,592              | 185,5368                 |
| 18:00 | 523,998              | 181,26                   |
| 19:00 | 569,736              | 187,5024                 |
| 20:00 | 544,914              | 175,2012                 |
| 21:00 | 548,82               | 190,4328                 |
| 22:00 | 508,662              | 186,0984                 |
| 23:00 | 354,6648             | 141,6996                 |
| 0:00  | 378,216              | 161,1864                 |



1-picture. Typical daily load chart for maximum load of equipment

In the transformer substations, reactive power compensation devices are installed.

4- table

| Device location | Transformer capacity | Compensation device | Working mode |
|-----------------|----------------------|---------------------|--------------|
| TP-1            | TMZ 1000 kVA         | 500 kVAR            | Automatic    |
| TP-2            | TM 1000 kVA          | 150 kVAR            | manual       |
| TP-2            | TM 630 kVA           | -                   |              |
| TP-2            | 150 kVA              | -                   |              |

### III. CONCLUSION

The total capacity of compensation devices is 650 kW. The actual power coefficient of

$$tg\varphi = 0,54 \quad \cos\varphi = 0,88$$

the enterprise.

With regard to factors that affect energy consumption, we take into account that the enterprise operates in a stable mode regardless of the season, the volume of products produced and the consumption of energy resources varies slightly from month to month. There are no factors that can lead to an increase or decrease in the consumption of energy resources.

### REFERENCES

- [1]. Khoshimov F.A., Dzeventsky A.Ya., Ibragimov K.H. "Multivariate solution of problems of analysis, forecasting and rationing of power consumption at industrial enterprises producing heterogeneous products" – M.: // "Industrial power engineering", 2000, № 5
- [2]. Dzeventsky A.Ya., Zahidov R.A., Baratov N.A., Hashimov F.A. Energy saving in industry. – T.: // "Fan" 1993, 140 p.
- [3]. Hashimov F.A. Methodological foundations for the development of energy saving management parameters. – T.: // International Scientific and Technical Conference "Innovation-2010", 2010.
- [4]. Khoshimov F.A., Dzeventsky A.Ya., Ibragimov K.H. "Method of analysis and calculation of energy intensity of products of enterprises using complex electric energy and energy of secondary energy carriers" – M.: // "Industrial power engineering", 2001, № 4
- [5]. S.G.Mironchik. Rationing of electricity consumption in industry. - Chisinau. // "Kartya Moldoyenyaske". 1979, 205 p.