



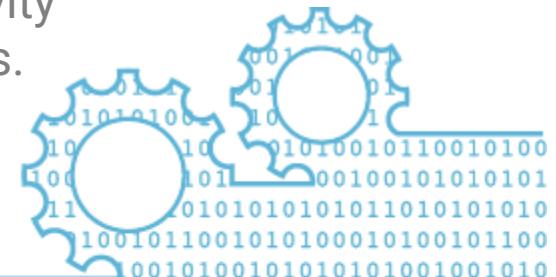
Industry 4.0 applications

**Productivity and quality improvement  
Fair wage system**

Prepared: Consulting department, January 2020

- ..... Industrial Engineering
- ..... Software Engineering
- ..... Electronic Engineering

It is a research and development company that performs productivity and quality improvement projects, especially in labor-cost factories.



Arge Bilişim is a R&D company of 20 years that has served 200+ customers in 6 countries



It closely follows production fashions such as lean production and industry 4.0, selects, blends and applies the suitable techniques for the factory or processes.

## Industry 4.0 applications

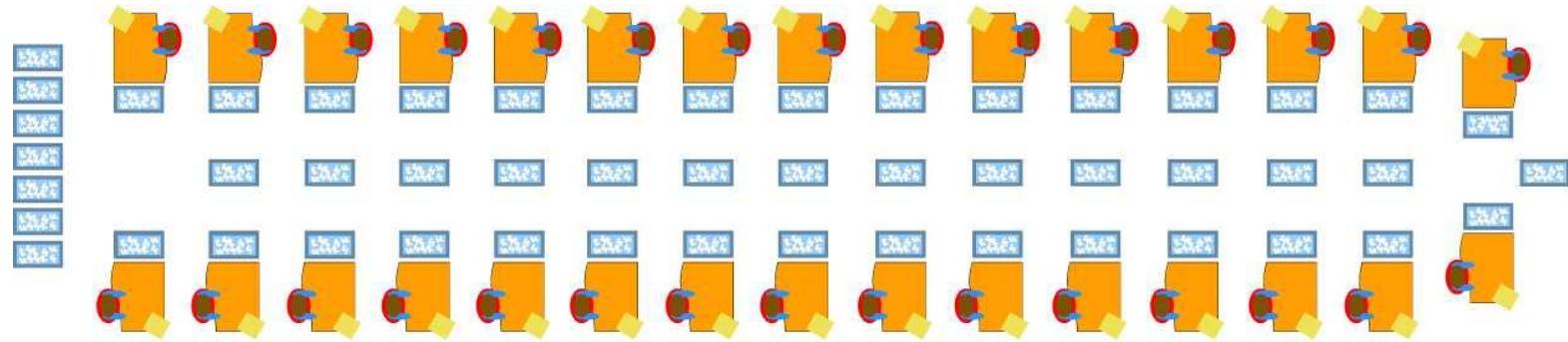


# What is ArgeMAS?

- ..... ArgeMAS is a production management mentality that provides and facilitates the data collection, measurement, analysis and action cycle developed by Arge Bilişim.
- ..... ArgeMAS includes data collection hardwares, MES software modules and consultancy services of Arge Bilişim.



We design and implement a layout plan by complying with the rules such as the material becoming a product by following the smallest road, the shortest transportation, and by following rules like the ones that doesn't affect ergonomics..



# What is the bundle system?



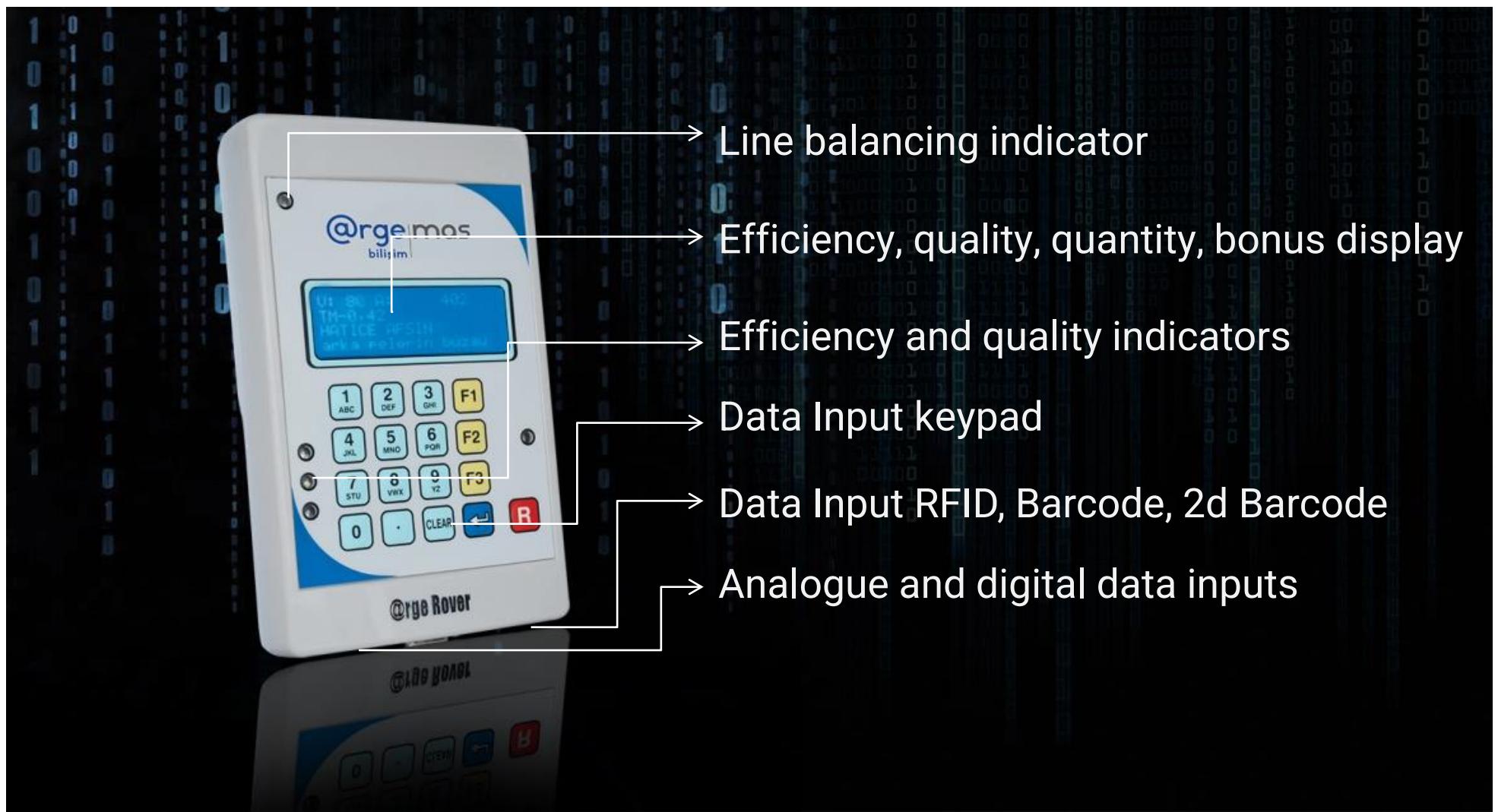
In garment factories;

- .... Barcode
- .... 2d Barcode (QR, Data Matrix etc..)
- .... RFID
- .... Digital or button
- .... Manuel (keypad)
- .... Touch screen



***Data is collected with these methods.***

- .... Analogue data collection. (For predictive maintenance)





## Üretime IOT ; @rge HYPATIA

argebilisim.com

- It is an advanced IoT data collector developed by Arge Bilişim as hardware and software..
- It can be used easily in difficult conditions such as production environment.
- It has resistive and capacitive screen options.
- Picture can be shown and video can be played
- It has 2 usb, one rs232, digital and analog inputs and outputs.
- It can collect RFID, barcode, touch, digital, analog data. It also has digital outputs.
- It has two wireless communication systems, one is wifi and the other is sub-GHz.
- It can be accessed and adjusted via wifi.
- Related to production; efficiency, performance, in-line quality, end-of-line quality, final quality, bonus, standard time, quantity etc. information can be easily viewed on the screen.
- Data can be sent with a virtual keyboard on the screen.
- It has software that provides both operator and quality control personnel screens.
- Has Turkish and English interfaces.

## Standard time measurement, optimization and standardization

What is time study?

Stopwatch  
MTM



## What is time study?

It is the application of techniques developed to determine the time required for an operator, who is qualified to perform the operation, to perform the operation with a defined performance, in order to determine how long the operation can be performed.

## How to measure standard time?

### 1- Method of Stopwatch;

Enough examples of the operation performed with the correct method are measured with a chronometer. Tempo is estimated. Time measured with a chronometer is cleared, averaged, and multiplied by tempo using statistical methods.

Tempo is the speed of the operator during the measurement.



## How to measure standard time?

### 2- With MTM(Methods-Time-Measurement )method;

Methods-Time-Measurement (MTM) It is a procedure that analyzes any manual operation, determines the essential movements required, and assigns each of these movements a predetermined standard time according to the factors affecting it.

- .... 100.000 TMU = 1 Hour
- .... 1666,7 TMU = 1 Min
- .... 27,8 TMU = 1 Sec

# Worksheet Detail

Worksheet Plan Detail

Worksheet Plan

Product Group: PRODUCTS ...  
Season: TEXTILE ...  
Model/Product: 1000-MDL ...  
Model/Prod. Picture: 

Operations:

| Class                                | Sub Class      | Operat... | Open No | Variant |     |
|--------------------------------------|----------------|-----------|---------|---------|-----|
| alt yan dikiş açma                   |                |           |         |         |     |
| alt yan dikme                        |                |           |         |         |     |
| alt yan gaze                         |                |           |         |         |     |
| alt yan titi                         |                |           |         |         |     |
| apolet-yan cep ve arka cebe punteriz |                |           |         |         |     |
| arka yan overlok                     |                |           |         |         |     |
| astar yan dikme                      |                |           |         |         |     |
| beden yan regola                     |                |           |         |         |     |
| <b>cep yan tutturma</b>              |                |           |         |         |     |
| emniyet-t... 2                       | cep yan tut... | 659       | 0       |         |     |
| emniyet-t... 2                       | cep yan tut... | 659       | 1       |         |     |
| emniyet-t... 2                       | cep yan tut... | 659       | 2       |         |     |
| emniyet-t... 2                       | cep yan tut... | 659       | 3       |         |     |
| emniyet-t... 2                       | cep yan tut... | 659       | 5       |         |     |
| emniyet-t... 2                       | cep yan tut... | 659       | 8 düz   | 1       | Yes |
| emniyet-t... 2                       | cep yan tut... | 659       | 10 düz  | 1       | Yes |
| emniyet-t... 2                       | cep yan tut... | 659       | 11 düz  | 1       | Yes |
| emniyet-t... 2                       | cep yan tut... | 659       | 12 düz  | 0,68    | Yes |
| emniyet-t... 2                       | cep yan tut... | 659       | 13 düz  | 1       | Yes |
| emniyet-t... 2                       | cep yan tut... | 659       | 14 düz  | 1       | Yes |
| emniyet-t... 2                       | cep yan tut... | 659       | 15 düz  | 1       | Yes |
| emniyet-t... 2                       | cep yan tut... | 659       | 16 düz  | 1       | Yes |
| emniyet-t... 2                       | cep yan tut... | 659       | 18 düz  | 1       | Yes |
| <b>kol yan gaze</b>                  |                |           |         |         |     |
| manşet yan regola                    |                |           |         |         |     |
| ön cep yan emn.dik.                  |                |           |         |         |     |
| ön cep yan ve üst tu                 |                |           |         |         |     |
| ön yan overlok                       |                |           |         |         |     |
| patlet ve conta yan cep çizme        |                |           |         |         |     |
| pervaz yan ve omuz çatm              |                |           |         |         |     |
| pervaz yan ve omuz çatm ara titi     |                |           |         |         |     |
| sağ ön yan cep gazesi                |                |           |         |         |     |
| yan çatm extem hidrolitik            |                |           |         |         |     |

Model/Prod. Picture: 

Calculations And Machines to be Used

|                     |       |        |                 |                         |
|---------------------|-------|--------|-----------------|-------------------------|
| Model Standard Time | 21,79 | 50     | No of Operators |                         |
| Working Time        | 378   | 867,02 | Target Quantity | düz 49,70               |
| Daily Mi            | 540   | 13     | Target Day      | N-dk-yukü ilk a... 0,30 |
| Target              | 70    | 0      | Total Qty       |                         |

Machine Name:  Quantity:  Calculate:  Tact Time:  No Image

Operations Table:

| Def | Row | Proc. | Opr No | Opr. Name             | Var | Oper Expla...          | Machine Class | Std Time | Alt. Choice | Deduct... | Passive | Output... | End of Line C... | %    | Tablet |
|-----|-----|-------|--------|-----------------------|-----|------------------------|---------------|----------|-------------|-----------|---------|-----------|------------------|------|--------|
|     | 1   | SR    | 34     | ks_serim              | 0   |                        | düz           | 0,5      |             |           |         |           | Bölüm Ç... 8     | 1,00 | Yes    |
|     | 2   | KS    | 35     | ks_kesim              | 0   |                        | düz           | 1        |             |           |         |           | Bölüm Ç... 8     | 1,00 | Yes    |
|     | 3   | KS    | 36     | ks_kesim manuel       | 0   |                        | düz           | 0,0123   |             |           |         |           | Normal 1         | 1,00 | Yes    |
|     | 4   | MT    | 203    | ks_meto               | 0   | 7 parça                | düz           | 0,25     |             |           |         |           | Bölüm Ç... 8     | 1,00 | Yes    |
|     | 5   | HZ    | 103    | ç kemер regula        | 0   |                        | düz           | 0,3      |             |           |         |           | Bölüm Ç... 8     | 1,00 | Yes    |
|     | 6   | HZ    | 86     | ç kemер ekleme        | 0   |                        | düz           | 0,35     |             |           |         |           | Normal 8         | 1,00 | Yes    |
|     | 7   | HZ    | 90     | ç kemeri gözüm        | 1   |                        | düz           | 1,35     |             |           |         |           | Normal 8         | 1,00 | Yes    |
|     | 8   | HZ    | 91     | ç kemeri dikiş açma   | 0   |                        | düz           | 0,15     |             |           |         |           | Normal 8         | 1,00 | Yes    |
|     | 9   | HZ    | 234    | beden etiketi takma   | 0   |                        | düz           | 0,2      | 1V          |           |         |           | Normal 8         | 1,00 | Yes    |
|     | 10  | DK    | 270    | collar turn+on        | 0   |                        | düz           | 1        |             |           |         |           | Normal 1         | 1,00 | Yes    |
|     | 11  | DK    | 273    | collar attach to band | 0   |                        | düz           | 1        |             |           |         |           | Normal 1         | 1,00 | Yes    |
|     | 12  | DK    | 113    | bacak ara çatm        | 0   |                        | düz           | 1,2      | 1           |           |         |           | Normal 1         | 1,00 | Yes    |
|     | 13  | DK    | 271    | collar top_stitch     | 0   |                        | düz           | 1        |             |           |         |           | Normal 1         | 1,00 | Yes    |
|     | 14  | DK    | 274    | collar trimming       | 0   |                        | düz           | 1        |             |           |         |           | Normal 1         | 1,00 | Yes    |
|     | 15  | DK    | 272    | collar band hem       | 0   |                        | düz           | 1        |             |           |         |           | Normal 1         | 1,00 | Yes    |
|     | 16  | DK    | 4439   | agraf takma diş       | 1   |                        | düz           | 1        |             |           |         |           | Normal 1         | 1,00 | Yes    |
|     | ... | DK    | 605    | ağı kesme             | 1   |                        | düz           | 0,0131   |             |           |         |           | Normal 1         | 1,00 | Yes    |
|     | 18  | DK    | 19     | dar titü              | 5   |                        | düz           | 0,022    |             |           |         |           | Normal 1         | 1,00 | Yes    |
|     | 19  | DK    | 275    | collar marking        | 0   |                        | düz           | 1        |             |           |         |           | Normal 1         | 1,00 | Yes    |
|     | 20  | DK    | 115    | arka ağ çatm          | 0   |                        | düz           | 0,4      |             |           |         |           | Normal 1         | 1,00 | Yes    |
|     | 21  | DK    | 78     | j dikiş               | 0   |                        | düz           | 0,22     |             |           |         |           | Normal 1         | 1,00 | Yes    |
|     | 22  | DK    | 252    | pök temizleme         | 0   |                        | düz           | 0,6      |             |           |         |           | Normal 1         | 1,00 | Yes    |
|     | 23  | DK    | 143    | ilk açma              | 0   | ... N-dk-yukü ilk açma | 0,1313        |          |             |           |         |           | Ürün Birg 1      | 1,00 | Yes    |
|     | 24  | DK    | 268    | mark lining           | 0   |                        | düz           | 1,5      |             |           |         |           | Normal 1         | 1,00 | Yes    |
|     | 25  | DK    | 391    | kol gaze              | 1   |                        | düz           | 0,8      |             |           |         |           | Normal 1         | 1,00 | Yes    |
|     | 26  | DK    | 278    | quality control       | 0   |                        | düz           | 1        |             |           |         |           | Normal 1         | 1,00 | Yes    |
|     | 27  | DK    | 74     | a.pat.bed.dik.ve.giz  | 4   | ceylan                 | düz           | 0,35     |             |           |         |           | Normal 1         | 1,00 | Yes    |
|     | 28  | DK    | 269    | collar run-stitch     | 0   |                        | düz           | 1        |             |           |         |           | Normal 1         | 1,00 | Yes    |
|     | 29  | DK    | 22     | kalite kontroll       | 1   | PANTOLON               | düz           | 0,8      |             |           |         |           | Normal 1         | 1,00 | Yes    |
|     | 30  | KL    | 826    | son işlem kontrol     | 0   |                        | düz           | 1        |             |           |         |           | Normal 1         | 1,00 | Yes    |
|     | 31  | KL    | 162    | tekrar kontrol        | 0   |                        | düz           | 0,3      |             |           |         |           | Normal 1         | 1,00 | Yes    |
|     | 32  | KL    | 151    | kalite kontrol        | 0   |                        | düz           | 0,85     |             |           |         |           | Bölüm Ç... 4V    | 1,00 | Yes    |
|     | 33  | HZ    | 694    | line end control      | 0   |                        | düz           | 0,5      |             |           |         |           | Normal 8V        | 1,00 | Yes    |

# Worksheet Report

## WORKSHEET REPORT

PROD. ORDER

:

**TAKT TIME** : 0,36

PROD. GROUP

: PRODUCTS

**DAILY TIME** : 520 **WORK TIME** : 447

MODEL/PROD.

: T-100603

**TOTAL TIME** : 10,75 **TARGET PROD%** : 86

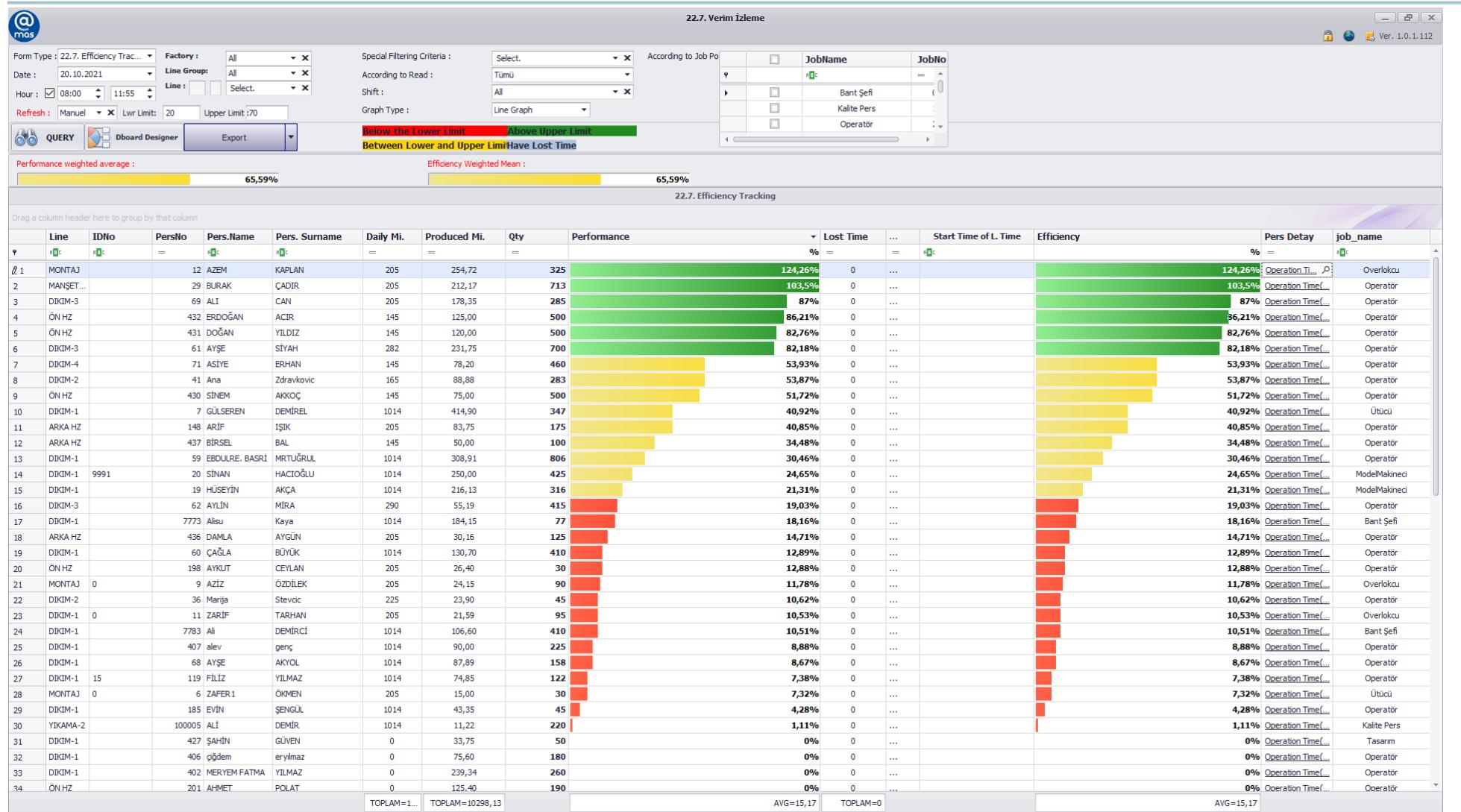
**HOUR TIME** : 16,12 **TARGET QTY** : 1456

| ROW | PROC | OP NO | OPERATION NAME        | VAR | MACHINE NAME | SMV          | ST-S  | WLoad  | H Qty | D Qty  |
|-----|------|-------|-----------------------|-----|--------------|--------------|-------|--------|-------|--------|
| 4   | DK   | 268   | mark lining           | 0   | düz          | 1,5          | 90    | 4,9    | 34    | 298,1  |
| 5   | DK   | 269   | collar run-stitch     | 0   | düz          | 1            | 60    | 3,3    | 52    | 447,2  |
| 6   | DK   | 270   | collar turn-iron      | 1   | iron         | 1            | 60    | 3,3    | 52    | 447,2  |
| 7   | DK   | 271   | collar top_stitch     | 0   | düz          | 1            | 60    | 3,3    | 52    | 447,2  |
| 8   | DK   | 273   | collar attach to band | 0   | düz          | 1            | 60    | 3,3    | 52    | 447,2  |
| 9   | DK   | 274   | collar trimming       | 0   | düz          | 1            | 60    | 3,3    | 52    | 447,2  |
| 10  | DK   | 272   | collar band hem       | 0   | düz          | 1            | 60    | 3,3    | 52    | 447,2  |
| 11  | DK   | 275   | collar marking        | 0   | manuel       | 1            | 60    | 3,3    | 52    | 447,2  |
| 12  | DK   | 278   | quality control       | 0   | düz          | 1            | 60    | 3,3    | 52    | 447,2  |
| 2   | KS   | 35    | ks_Cutting            | 2   | düz          | 0,5          | 30    | 1,6    | 103   | 894,4  |
| 3   | MT   | 203   | ks_Labeling           | 1   | düz          | 0,15         | 9     | 0,5    | 344   | 2981,3 |
| 1   | SR   | 34    | ks_Spreading          | 1   | düz          | 0,6          | 36    | 2      | 86    | 745,3  |
|     |      |       |                       |     |              | <b>TOTAL</b> | 10,75 | 645,00 | 35,40 |        |

### to be USED MACHINES

| Row | Machine Name | Qty   |
|-----|--------------|-------|
| 1   | düz          | 28,49 |
| 2   | iron         | 3,26  |
| 3   | manuel       | 3,26  |

# Efficiency and performance measurement



# Product Input-Output quantity Tracking

20.3. Production Report

Special Filter Criteria : All Start Date : 1.10.2020  Only Output  Display Efficiency According to Job Positio... Lower Limit: 60  
Line : ... Finish Date : 31.10.2020  Production Order Model/Product : ... Upper Limit: 75  
Graph Type : Line Graph Start Hour : 08:00  Model/Product Production Order : ... Lower Limit: 60  
Finish Hour: 18:00  Date Production Order : ... Upper Limit: 70

QUERY Export Dashboard Design Select... Report Refresh Manuel

Drag a column header here to group by that column

| DATE                  | LINENA... | CUSTOMER | PROD.ORDER   | MODELCODE     | INQTY | OUTQTY+ | DAILYMI. | ENDofDAY | TARGETQTY | MODELST | TARGETEFF | UPRICE | TOTALOUTPUT | BUNDLEDEF.QTY | DT       | Prod.Mi. | LOSTT | PERCENTCOMPLETED | graff | Productivity | Performance |
|-----------------------|-----------|----------|--------------|---------------|-------|---------|----------|----------|-----------|---------|-----------|--------|-------------|---------------|----------|----------|-------|------------------|-------|--------------|-------------|
| 3.10.2020 00:00:00    | DIKIM-1   | CUSTFOR  | 000020033279 | 40FP06485.1.1 | 0     | 50      |          | 484      | 46,519    | 86      | 4,50      | 138    | 773         | 540           | 2325,95  | 0        |       | 33               | 38    | 38           |             |
| 2.7.10.2020 00:00:00  | DIKIM-1   | CUSTFOR  | 000020033279 | 40FP06485.1.1 | 0     | 63      |          | 484      | 46,519    | 86      | 4,50      | 138    | 773         | 888           | 2930,697 | 0        |       | 33               | 14    | 14           |             |
| 3.12.10.2020 00:00:00 | DIKIM-1   | CUSTFOR  | 000020033279 | 40FP06485.1.1 | 0     | 25      |          | 484      | 46,519    | 86      | 4,50      | 138    | 773         | 542           | 1162,975 | 0        |       | 33               | 24    | 24           |             |
| 4.13.10.2020 00:00:00 | DIKIM-1   | 01       | 123456       |               | 12    | 74      | 74       | 540      | 990       | 2,15    | 86        | 0,00   | 74          | 204           | 2217     | 159,1    | 0     | 4                | 20    | 20           |             |
| 5.1.10.2020 00:00:00  | DIKIM-1   | 44       | 20033469     | 44-1          | 25    | 0       | 540      | 1125     | 18,79     | 86      | 0,00      | 0      | 476         | 629           | 0        | 0        |       | 0                | 0     | 0            |             |
| 6.29.10.2020 00:00:00 | DIKIM-1   | M00054   | 20077777     | 7771          | 0     | 0       | 600      | 112      | 47,15967  | 90      | 0,00      | 0      | 320         | 140           | 0        | 0        |       | 0                | 87    | 87           |             |
| 7.1.10.2020 00:00:00  | FINISH-1  | 02       | 20033507     | 111222        | 2     | 2       | 540      | 352      | 1,5       | 86      | 0,00      | 2      | 150         | 322           | 3        | 0        |       | 0                | 0     | 0            |             |

Row Count : 7 214,00

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# Automatic line setup (Line Balancing)

Automatic Line Setup(Line Balancing)

Operator Competence Matrix   Automatic Line Setup(Line Balancing)   Multiple Automatic Line Setup   Line Setup with the best Persons   Manual Assignment Setting   Comparing

Model: 7777   Factory: ARGBIL   normalized coefficient: 10   Date: 30.10.2021   Operation Order: In order of assign...

Operation Priority: Workload, Difficulty Score...   LineGroup: DIKIM   Line: DK 1 DIKIM-1   Operator Priority: Weight +Prod%

Corrections   Atama Seçiniz   D.board Designer   Export

OPERATION BASED ASSIGNMENT   OPERATOR BASED ASSIGNMENT

number of iterations: 3 s: TargetQty: 0   Line Prod%: 10,91

Drop Filter Fields Here

| Assignment | LineNum | LineName | MachClass | OpName               | StandartTi... | WorkPlanN... | GroupCode | Workload | Pers-01                |             |                       | Pers-02  |                        |             | Pers-03               |          |                        |
|------------|---------|----------|-----------|----------------------|---------------|--------------|-----------|----------|------------------------|-------------|-----------------------|----------|------------------------|-------------|-----------------------|----------|------------------------|
|            |         |          |           |                      |               |              |           |          | Operator               | Capacity(%) | Opr Distribution(...) | Day Time | Operator               | Capacity(%) | Opr Distribution(...) | Day Time | Operator               |
| 1          | 1       | DIKIM-1  | düz       | kemer krim           | 6,4000        | 24           | D1        | 7,4300   | Saša Stojiljkovic      | 1,3         | 5,31                  | 1379,00  | AYŞE AKYOL             | 1,6         | 6,54                  | 1379,00  | Aleksandra Pavlovic    |
| 2          | 1       | DIKIM-1  | düz       | fırır üst dilim      | 3,2000        | 3            | D1        | 3,7150   | GÜLSEREN DEMİREL       | 4,2         | 33,33                 | 1096,17  | Nemanja Milenovic      | 16,6        | 16,31                 | 148,38   | EBDULRE. BASRI MRTU... |
| 3          | 1       | DIKIM-1  | düz       | yan omuz dilim       | 2,6000        | 131          | D1        | 3,0190   | GÜLSEREN DEMİREL       | 8,3         | 10,93                 | 282,83   | ÇAĞLA BÜYÜK            | 23,1        | 23,50                 | 232,78   | EBDULRE. BASRI MRTU... |
| 4          | 1       | DIKIM-1  | düz       | fermuar astar...     | 1,8500        | 1            | D1        | 2,1480   | ÇAĞLA BÜYÜK            | 11,5        | 50,00                 | 242,70   | EBDULRE. BASRI MRTU... | 30,9        | 50,00                 | 83,84    |                        |
| 5          | 1       | DIKIM-1  | düz       | fermuar tulum        | 1,6000        | 12           | D1        | 1,8580   | ÇAĞLA BÜYÜK            | 11,5        | 50,00                 | 209,88   | EBDULRE. BASRI MRTU... | 30,9        | 50,00                 | 72,54    |                        |
| 6          | 1       | DIKIM-1  | düz       | katlamaa             | 1,0700        | 25           | D3        | 1,2420   | ÇAĞLA BÜYÜK            | 4,3         | 100,00                | 140,38   |                        |             |                       |          |                        |
| 7          | 1       | DIKIM-1  | düz       | yan ve omuz ...      | 1,0000        | 138          | D1        | 1,1610   | ÇAĞLA BÜYÜK            | 23,1        | 50,00                 | 131,14   | EBDULRE. BASRI MRTU... | 61,7        | 50,00                 | 45,37    |                        |
| 8          | 1       | DIKIM-1  | düz       | yan ve omuz ...      | 1,0000        | 139          | D1        | 1,1610   | ÇAĞLA BÜYÜK            | 23,1        | 50,00                 | 131,14   | EBDULRE. BASRI MRTU... | 61,7        | 50,00                 | 45,37    |                        |
| 9          | 1       | DIKIM-1  | düz       | yan ve omuz ...      | 1,0000        | 137          | D1        | 1,1610   | ÇAĞLA BÜYÜK            | 23,1        | 50,00                 | 131,14   | EBDULRE. BASRI MRTU... | 61,7        | 50,00                 | 45,37    |                        |
| 10         | 1       | DIKIM-1  | düz       | kemer kapama         | 0,7700        | 22           | D1        | 0,8940   | ÇAĞLA BÜYÜK            | 11,5        | 50,00                 | 101,08   | EBDULRE. BASRI MRTU... | 30,9        | 50,00                 | 34,89    |                        |
| 11         | 1       | DIKIM-1  | düz       | yırtmaç ucu di...    | 0,6000        | 148          | D1        | 0,6970   | ÇAĞLA BÜYÜK            | 11,5        | 37,20                 | 58,61    | Nemanja Milenovic      | 16,6        | 12,80                 | 14,62    | EBDULRE. BASRI MRTU... |
| 12         | 1       | DIKIM-1  | düz       | yan overlök          | 0,6000        | 133          | D1        | 0,6970   | Nemanja Milenovic      | 16,6        | 50,00                 | 56,95    | EBDULRE. BASRI MRTU... | 30,9        | 50,00                 | 27,17    |                        |
| 13         | 1       | DIKIM-1  | düz       | yan omuz titi        | 0,5000        | 132          | D1        | 0,5810   | Nemanja Milenovic      | 33,2        | 50,00                 | 47,44    | EBDULRE. BASRI MRTU... | 61,7        | 50,00                 | 22,62    |                        |
| 14         | 1       | DIKIM-1  | düz       | paşa başlı           | 0,5000        | 153          | D1        | 0,5810   | Nemanja Milenovic      | 16,6        | 50,00                 | 47,44    | EBDULRE. BASRI MRTU... | 30,9        | 50,00                 | 22,62    |                        |
| 15         | 1       | DIKIM-1  | düz       | arka ağı çatma       | 0,5000        | 58           | D1        | 0,5810   | Nemanja Milenovic      | 16,6        | 50,00                 | 47,44    | EBDULRE. BASRI MRTU... | 30,9        | 50,00                 | 22,62    |                        |
| 16         | 1       | DIKIM-1  | düz       | arka ağı çatm        | 0,4000        | 57           | D1        | 0,4640   | Nemanja Milenovic      | 16,6        | 50,00                 | 37,92    | EBDULRE. BASRI MRTU... | 30,9        | 50,00                 | 18,06    |                        |
| 17         | 1       | DIKIM-1  | düz       | yırtmaç yeri t...    | 0,4000        | 151          | D1        | 0,4640   | Nemanja Milenovic      | 16,6        | 50,00                 | 37,92    | EBDULRE. BASRI MRTU... | 30,9        | 50,00                 | 18,06    |                        |
| 18         | 1       | DIKIM-1  | düz       | kap.pat.bede...      | 0,3000        | 5            | D1        | 0,3480   | Nemanja Milenovic      | 16,6        | 50,00                 | 28,41    | EBDULRE. BASRI MRTU... | 30,9        | 50,00                 | 13,51    |                        |
| 19         | 1       | DIKIM-1  | düz       | arka ağı emniy...    | 0,3000        | 59           | D1        | 0,3480   | Nemanja Milenovic      | 16,6        | 50,00                 | 28,41    | EBDULRE. BASRI MRTU... | 30,9        | 50,00                 | 13,51    |                        |
| 20         | 1       | DIKIM-1  | düz       | kemer dil ucu ...    | 0,3000        | 23           | D1        | 0,3480   | Nemanja Milenovic      | 16,6        | 50,00                 | 28,41    | EBDULRE. BASRI MRTU... | 30,9        | 50,00                 | 13,51    |                        |
| 21         | 1       | DIKIM-1  | düz       | ılık yeri işaret ... | 0,3000        | 17           | D1        | 0,3480   | Nemanja Milenovic      | 16,6        | 50,00                 | 28,41    | EBDULRE. BASRI MRTU... | 30,9        | 50,00                 | 13,51    |                        |
| 22         | 1       | DIKIM-1  | düz       | arka çatma           | 0,3000        | 74           | D1        | 0,3480   | Nemanja Milenovic      | 16,6        | 50,00                 | 28,41    | EBDULRE. BASRI MRTU... | 30,9        | 50,00                 | 13,51    |                        |
| 23         | 1       | DIKIM-1  | düz       | kemer son titi       | 0,2500        | 26           | D1        | 0,2900   | Nemanja Milenovic      | 16,6        | 50,00                 | 23,72    | EBDULRE. BASRI MRTU... | 30,9        | 50,00                 | 11,31    |                        |
| 24         | 1       | DIKIM-1  | düz       | yırtmaç yeri ç...    | 0,2500        | 149          | D1        | 0,2900   | Nemanja Milenovic      | 16,6        | 50,00                 | 23,72    | EBDULRE. BASRI MRTU... | 30,9        | 50,00                 | 11,31    |                        |
| 25         | 1       | DIKIM-1  | düz       | yırtmaç ucu ç...     | 0,2500        | 147          | D1        | 0,2900   | Nemanja Milenovic      | 16,6        | 50,00                 | 23,72    | EBDULRE. BASRI MRTU... | 30,9        | 50,00                 | 11,31    |                        |
| 26         | 1       | DIKIM-1  | düz       | kapalı patlet ü...   | 0,2000        | 21           | D1        | 0,2320   | Nemanja Milenovic      | 16,6        | 50,00                 | 18,89    | EBDULRE. BASRI MRTU... | 30,9        | 50,00                 | 9,10     |                        |
| 27         | 1       | DIKIM-1  | düz       | kap.pat.ferm...      | 0,2000        | 16           | D1        | 0,2320   | Nemanja Milenovic      | 16,6        | 50,00                 | 18,89    | EBDULRE. BASRI MRTU... | 30,9        | 50,00                 | 9,10     |                        |
| 28         | 1       | DIKIM-1  | düz       | yan punteriz         | 0,2000        | 135          | D1        | 0,2320   | Nemanja Milenovic      | 16,6        | 50,00                 | 18,89    | EBDULRE. BASRI MRTU... | 30,9        | 50,00                 | 9,10     |                        |
| 29         | 1       | DIKIM-1  | düz       | N-dk-yukü ilk ...    | 0,1313        | 20           | D1        | 0,1520   | Nemanja Milenovic      | 16,6        | 50,00                 | 12,41    | EBDULRE. BASRI MRTU... | 30,9        | 50,00                 | 5,93     |                        |
| 30         | 1       | DIKIM-1  | düz       | kapalı patlet k...   | 0,1000        | 4            | D1        | 0,1160   | Nemanja Milenovic      | 16,6        | 50,00                 | 9,52     | EBDULRE. BASRI MRTU... | 30,9        | 50,00                 | 4,55     |                        |
| 31         | 1       | DIKIM-1  | düz       | kapalı patlet o...   | 0,1000        | 18           | D1        | 0,1160   | Nemanja Milenovic      | 16,6        | 50,00                 | 9,52     | EBDULRE. BASRI MRTU... | 30,9        | 50,00                 | 4,55     |                        |
| 32         | 1       | DIKIM-1  | düz       | fermuar yeri t...    | 0,1000        | 8            | D1        | 0,1160   | Nemanja Milenovic      | 16,6        | 50,00                 | 9,52     | EBDULRE. BASRI MRTU... | 30,9        | 50,00                 | 4,55     |                        |
| 33         | 1       | DIKIM-1  | düz       | kemer meto al...     | 0,1000        | 19           | D1        | 0,1160   | Nemanja Milenovic      | 16,6        | 50,00                 | 9,52     | EBDULRE. BASRI MRTU... | 30,9        | 50,00                 | 4,55     |                        |
| 34         | 1       | DIKIM-1  | düz       | kapalı patlet ç...   | 0,1000        | 11           | D1        | 0,1160   | Nemanja Milenovic      | 16,6        | 50,00                 | 9,52     | EBDULRE. BASRI MRTU... | 30,9        | 50,00                 | 4,55     |                        |
| 35         | 1       | DIKIM-1  | düz       | arka beden m...      | 0,0500        | 61           | D1        | 0,0580   | Nemanja Milenovic      | 16,6        | 50,00                 | 4,69     | EBDULRE. BASRI MRTU... | 30,9        | 50,00                 | 2,21     |                        |
| 36         | 1       | DIKIM-1  | düz       | yt hazırlık          | 0,0026        | 6            | D1        | 0,0030   | EBDULRE. BASRI MRTU... | 0,4         | 100,00                | 0,28     |                        |             |                       |          |                        |

# RT in-line, end-of-line, final quality control

7.10. RT Quality Tracking

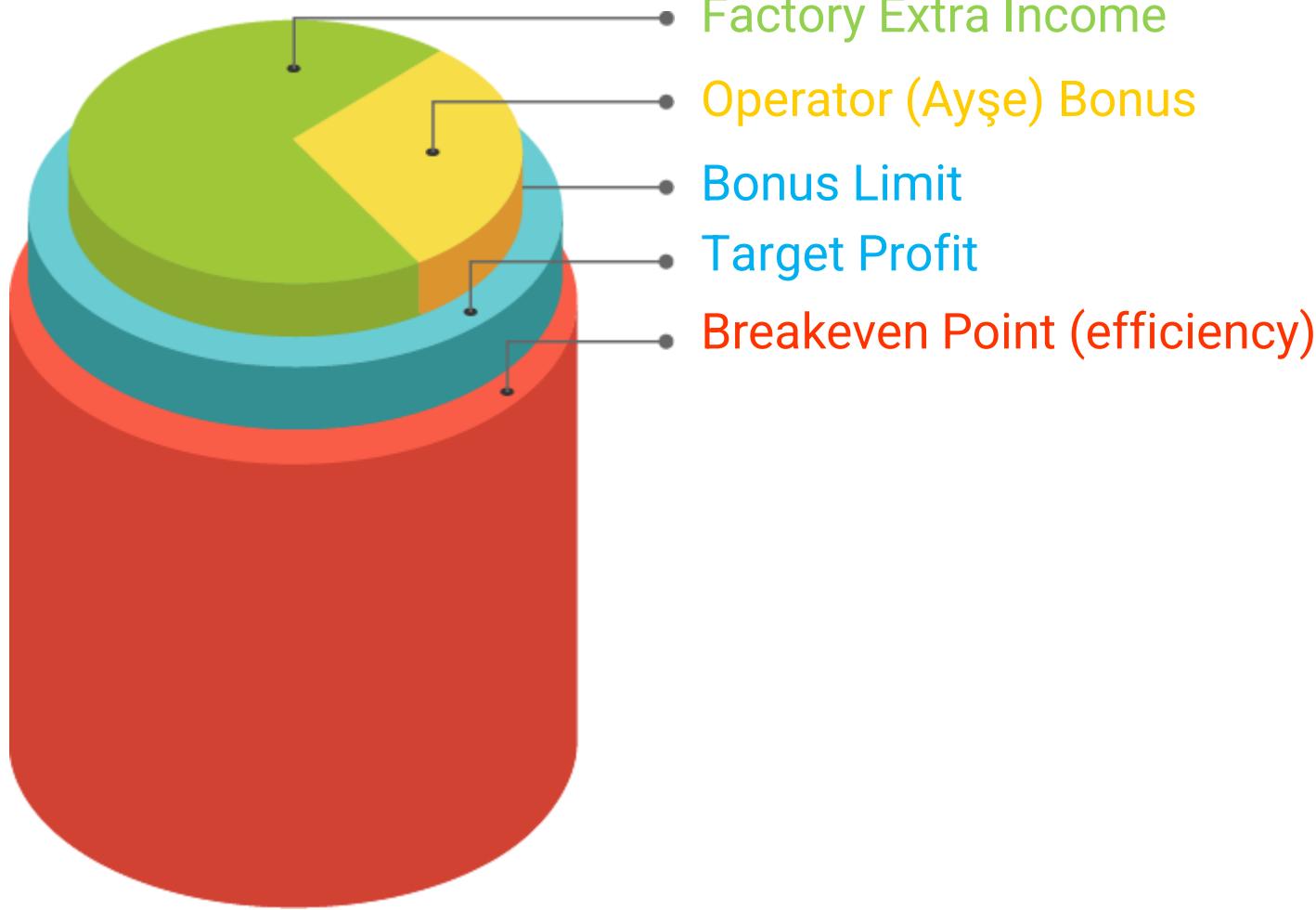
| PRODORDERNO | QualityPers | QualityPersName | OPERNAME        | OPER VARIANT                  | CLASS CODE | SUB CLASS CODE | CONTROL QTY | DEFECT QTY | QUALITY%progress |        |
|-------------|-------------|-----------------|-----------------|-------------------------------|------------|----------------|-------------|------------|------------------|--------|
| 182         | ELYON-1     | 70              | ALANUR TURAN    | ön roba gaze                  | 0          | ZZZZ           | YOK         | 33         | 0                | 100,00 |
| 183         | ELYON-1     | 70              | ALANUR TURAN    | ön çatma                      | 0          | ZZZZ           | YOK         | 33         | 0                | 100,00 |
| 184         | ELYON-1     | 70              | ALANUR TURAN    | patet punteriz                | 0          | ZZZZ           | YOK         | 33         | 0                | 100,00 |
| 185         | ELYON-1     | 70              | ALANUR TURAN    | pat üstü dikiş                | 0          | ZZZZ           | YOK         | 33         | 0                | 100,00 |
| 186         | 2007777     | 145             | asda adasd      | paket-burse                   | 0          | ZZZZ           | YOK         | 20         | 0                | 100,00 |
| 187         | ELYON-1     | 70              | ALANUR TURAN    | rivett                        | 1          | ZZZZ           | YOK         | 8          | 0                | 100,00 |
| 188         | 2007777     | 7782            | Burçın Sertkaya | yaka ayağı regule             | 3          | ZZZZ           | YOK         | 20         | 0                | 100,00 |
| 189         | 2007777     | 145             | asda adasd      | yaka ayağı regule             | 3          | ZZZZ           | YOK         | 20         | 0                | 100,00 |
| 190         | 001         | 68              | AYŞE AKYOL      | sallantı kart takma           | 1          | ZZZZ           | YOK         | 3          | 0                | 100,00 |
| 191         | ELYON-1     | 70              | ALANUR TURAN    | yan emniyet dikiş             | 0          | ZZZZ           | YOK         | 33         | 0                | 100,00 |
| 192         | ELYON-1     | 70              | ALANUR TURAN    | yan kapalı patet takma        | 0          | ZZZZ           | YOK         | 31         | 0                | 100,00 |
| 193         | ELYON-1     | 70              | ALANUR TURAN    | yan punteriz                  | 0          | ZZZZ           | YOK         | 33         | 0                | 100,00 |
| 194         | 7777        | 68              | AYŞE AKYOL      | bacak ara çatm                | 0          | ZZZZ           | YOK         | 112        | 1                | 99,11  |
| 195         | 7777        | 68              | AYŞE AKYOL      | ilk yeri işaret alma          | 0          | ZZZZ           | YOK         | 216        | 2                | 99,07  |
| 196         | 7777        | 68              | AYŞE AKYOL      | kapalı patet krim             | 0          | ZZZZ           | YOK         | 174        | 2                | 98,85  |
| 197         | 7777        | 68              | AYŞE AKYOL      | kapalı patet çevirm           | 0          | ZZZZ           | YOK         | 164        | 2                | 98,75  |
| 198         | ELYON-1     | 70              | ALANUR TURAN    | yıkama talmış takma           | 1          | ZZZZ           | YOK         | 34         | 1                | 97,05  |
| 199         | ELYON-1     | 70              | ALANUR TURAN    | dar titü                      | 5          | ZZZZ           | YOK         | 33         | 1                | 96,97  |
| 200         | ELYON-1     | 70              | ALANUR TURAN    | askılı tuturma                | 0          | ZZZZ           | YOK         | 33         | 1                | 96,97  |
| 201         | ELYON-1     | 70              | ALANUR TURAN    | arka roba tulum üstü ıftibune | 0          | ZZZZ           | YOK         | 33         | 1                | 96,97  |
| 202         | ELYON-1     | 70              | ALANUR TURAN    | kapalı patet tulum/çevirme    | 0          | ZZZZ           | YOK         | 33         | 1                | 96,97  |
| 203         | ELYON-1     | 70              | ALANUR TURAN    | katlama                       | 1          | ZZZZ           | YOK         | 33         | 1                | 96,97  |
| 204         | ELYON-1     | 70              | ALANUR TURAN    | ön cep ağız dikiş             | 0          | ZZZZ           | YOK         | 33         | 1                | 96,97  |
| 205         | 7777        | 68              | AYŞE AKYOL      | fermuar yeri tela             | 0          | ZZZZ           | YOK         | 164        | 5                | 96,95  |
| 206         | 7777        | 68              | AYŞE AKYOL      | kapalı patet overlo           | 0          | ZZZZ           | YOK         | 112        | 4                | 96,43  |
| 207         | ELYON-1     | 70              | ALANUR TURAN    | rivett                        | 1          | 5              | krdnl       | 25         | 1                | 96,40  |
| 208         | ELYON-1     | 70              | ALANUR TURAN    | uç boy çatm                   | 0          | 201            | POTLUK      | 25         | 1                | 96,40  |
| 209         | ELYON-1     | 70              | ALANUR TURAN    | beden ayrmaya                 | 1          | 200            | kayma       | 25         | 1                | 96,40  |
| 210         | 2003349     | 68              | AYŞE AKYOL      | bacak ara çatm                | 0          | ZZZZ           | YOK         | 29         | 2                | 93,10  |
| 211         | 2003349     | 68              | AYŞE AKYOL      | frfr üst dikiş                | 0          | ZZZZ           | YOK         | 28         | 2                | 92,86  |
| 212         | ELYON-1     | 68              | AYŞE AKYOL      | yan çatma                     | 0          | ZZZZ           | YOK         | 50         | 6                | 98,00  |
| 213         | ELYON-1     | 70              | ALANUR TURAN    | yan çatma                     | 0          | ZZZZ           | YOK         | 32         | 4                | 97,50  |
| 214         | 7777        | 68              | AYŞE AKYOL      | kapalı patet overlo           | 0          | ZZZZ           | YOK         | 16         | 2                | 97,50  |
| 215         | 2003349     | 68              | AYŞE AKYOL      | fermuar yeri tela             | 0          | ZZZZ           | YOK         | 29         | 4                | 86,21  |
| 216         | 7777        | 68              | AYŞE AKYOL      | kemer krim                    | 0          | ZZZZ           | YOK         | 17         | 3                | 82,35  |
| 217         | 7777        | 68              | AYŞE AKYOL      | bacak ara çatm                | 0          | ZZZZ           | YOK         | 42         | 8                | 80,95  |
| 218         | 7777        | 68              | AYŞE AKYOL      | kemer meto alma               | 0          | ZZZZ           | YOK         | 26         | 5                | 80,77  |
| 219         | 7777        | 68              | AYŞE AKYOL      | ilk yeri işaret alma          | 0          | ZZZZ           | YOK         | 31         | 6                | 80,65  |
| 220         | 001         | 68              | AYŞE AKYOL      | katlama                       | 1          | ZZZZ           | YOK         | 3          | 1                | 66,67  |
| 221         | 123456      | 68              | AYŞE AKYOL      | ağj kesme                     | 2          | ZZZZ           | YOK         | 1          | 1                | 0,00   |

Row Count : 33      Row Count : 231



if a profit income above the target profit is obtained from the employee, sharing a part of the income above the target profit with the employee is called 'giving a bonus'.

# What is Bonus?



# Machine breakdown, maintenance, predictive maintenance

10.2. Mechanical Breakdown Tracking

Factory : All Department : All Line : Select. Breakdown Type : Select.

Production Order C... Country Code Production Order Co... Delivery Date Order Date Customer Order No Qty was Put in... Ürün Model Name

Backlog Approved Breakdowns/Stock Machines Machine Movement Tracking Machine Class/Barcode

**Backlog**

**Click to Add a New Entry**

|   | Breakdown ... | Breakdown C... | Class Code      | mak_num_mak2 | Machine Serial ... | Brand | MachineModel...   | PersNoAsk... | Notified by       | Breakdown...    | Process/ L... | Line      | Notification Date | Notification Ho... | Lost Ti...  | status | Start Date | Start Hour | Finish Date | Finish Hour |
|---|---------------|----------------|-----------------|--------------|--------------------|-------|-------------------|--------------|-------------------|-----------------|---------------|-----------|-------------------|--------------------|-------------|--------|------------|------------|-------------|-------------|
| * | 13            | 210184         | A-dk-düz ...    | 7            | DLNBG45059         |       | A104-DLN 5410 ... | 12           | AZEM KAPLAN       | Seçiniz.        | Seçiniz.      |           | 22.01.2021        | 11:30              | MAKINE ...  | Yeni   | 22.01.2021 | 04:00      | 22.01.2021  | 05:00       |
|   | 22            | 210726-226     | A-dk-düz ...    | 5            | DLNBG45065         |       | A102-DLN 5410 ... | 70           | ALANUR TURAN      | Seçiniz.        | Seçiniz.      |           | 26.07.2021        | 09:41              | MAKINE ...  | Yeni   | 26.07.2021 | 09:41      | 26.07.2021  | 09:41       |
|   | 23            | 210809-227     | A-dk-düz ...    | 0            | PLANMAKİNESİ       |       | PLANMAKİNESİ      | 238          | ADEM BEKTAS       | Seçiniz.        | Seçiniz.      |           | 09.08.2021        | 14:26              | MAKINE ...  | Yeni   | 09.08.2021 | 14:26      | 09.08.2021  | 14:45       |
|   | 24            | 210810-228     | P-dk -juki ...  | 308          | LKODC61921         |       | P22-LK 1900       | 238          | ADEM BEKTAS       | Seçiniz.        | Seçiniz.      | FINISH-3  | 10.08.2021        | 15:26              | MAKINE ...  | Yeni   | 10.08.2021 | 15:26      | 10.08.2021  | 15:26       |
|   | 25            | 210810-229     | A-dk-düz ...    | 1            | sdc                |       | A03-DLN 5410 N-7  | 238          | ADEM BEKTAS       | Seçiniz.        | Seçiniz.      |           | 09.08.2021        | 15:00              | MAKINE ...  | Yeni   | 09.08.2021 | 15:28      | 09.08.2021  | 17:28       |
|   | 26            | 210810-231     | demo            | 8999         | JK-8800            | JUKI  | JK-A              | 238          | ADEM BEKTAS       | Seçiniz.        | Seçiniz.      |           | 10.08.2021        | 15:36              | MAKINE ...  | Yeni   | 10.08.2021 | 15:36      | 10.08.2021  | 15:36       |
|   | 27            | 210810-232     | A-dk-düz ...    | 0            | PLANMAKİNESİ       |       | PLANMAKİNESİ      | 201          | AHMET POLAT       | Seçiniz.        | Seçiniz.      |           | 10.08.2021        | 15:39              | MAKINE ...  | Yeni   |            |            |             |             |
|   | 28            | 210810-233     | ÜTÜ PAKET       | 803          | YUKIUPUNTEREZ...   |       | YUKIUPUNTEREZ...  | 51           | Aleksandra Hli... | Seçiniz.        | Seçiniz.      | DIKIM-5   | 10.08.2021        | 15:41              | MAKINE ...  | Yeni   |            |            |             |             |
|   | 29            | 210810-234     | I-dk -pask...   | 540          | 40169              |       | I16-HALKAN UP1... | 58           | Aleksandra Hli... | Seçiniz.        | Seçiniz.      |           | 10.08.2021        | 15:43              | MAKINE ...  | Yeni   |            |            |             |             |
|   | 30            | 210810-235     | ÜTÜ PAKET       | 743          | GENISPASKARA-6     |       | GENISPASKARA-6    | 58           | Aleksandra Hli... | Seçiniz.        | Seçiniz.      | MAHSET HZ | 10.08.2021        | 15:43              | MAKINE ...  | Yeni   |            |            |             |             |
|   | 31            | 210816-238     | T-dk - pro...   | 368          | AMSZH22762         |       | T22-AMS 210 DHL   | 70           | ALANUR TURAN      | Seçiniz.        | 5.BANT        |           | 16.08.2021        | 09:38              | MAKINE ...  | Yeni   |            |            |             |             |
|   | 32            | 210816-239     | A-dk-düz ...    | 2            | DLNZB31079         |       | A06-DLN 5410 N-7  | 128          | Aleksandra Pr...  | Seçiniz.        | Seçiniz.      |           | 16.08.2021        | 09:10              | MAKINE ...  | Yeni   |            |            |             |             |
|   | 33            | 210824-240     | A-dk-düz ...    | 2            | DLNZB31079         |       | A06-DLN 5410 N-7  | 63           | ABBAS ARSLAN      | Electricity ... | 5.BANT        |           | 24.08.2021        | 15:58              | MAKINE ...  | Yeni   | 24.08.2021 | 15:58      | 24.08.2021  | 15:58       |
|   | 34            | 2109-1         | A-dk-düz dkş... | 3            | DLNZB31083         |       | A09-DLN 5410 N-7  | 426          | HÜLÜSİ AYLUÇTA... | Seçiniz.        | DIKIM-2       |           | 15.09.2021        | 14:30              | MAKINE A... | Yeni   |            |            |             |             |
|   | 36            | 2109-3         | S-dk -kemer ... | 349          | U972420010         |       | S09-309 U 406 A-7 | 70           | ALANUR TURAN      | Seçiniz.        |               |           | 23.09.2021        | 09:27              | MAKINE A... | Yeni   |            |            |             |             |
|   | 37            | 2109-4         | A-dk-düz dkş... | 2            | DLNZB31079         |       | A06-DLN 5410 N-7  | 426          | HÜLÜSİ AYLUÇTA... | Seçiniz.        | DIKIM-2       |           | 29.09.2021        | 16:50              | MAKINE A... | Yeni   |            |            |             |             |
|   | 38            | 2109-5         | A-dk-düz dkş... | 2            | DLNZB31079         |       | A06-DLN 5410 N-7  | 426          | HÜLÜSİ AYLUÇTA... | Seçiniz.        | DIKIM-2       |           | 30.09.2021        | 15:35              | MAKINE A... | Yeni   |            |            |             |             |
|   | 39            | 2110-1         | A-dk-düz dkş... | 2            | DLNZB31079         |       | A06-DLN 5410 N-7  | 423          | ZARIF TARHAN      | Seçiniz.        | UTUPAKET      |           | 08.10.2021        | 12:09              | MAKINE A... | Yeni   |            |            |             |             |

Row Count : 18

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# What is Traceability?

- ..... The product, which can be accessed material, labor and quality control information, is a traceable product..
- ..... Traceability is the basis of measurability.
- ..... Production must be traceable so that productivity and quality can be measured..



- ..... MTM
- ..... Stopwatch
- ..... Template
- ..... Productivity & Quality etc. Reports
- ..... Machine Breakdown & Maintenance Tracking

# Thanks

O..... Thank you...