THE EFFECT OF AUTONOMOUS MAINTENANCE IMPLEMENTATION ON THE PROUCTIVITY OF THE STRIPPING TYPE SIEBLER 6R MACHINE WITH APPROACH OEE (OVERALL EQUIPMENT EFFECTIVENESS) IN PHARMACEUTICAL INDUSTRY INDONESIAN

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ABSTRACT

PT XYZ is a leading pharmaceutical company in Indonesia. One of the largest pharmaceutical companies in the Southeast Asia region, where the company produces based on the amount of demand from customers, increasing customer demand each year will also increase machine operating time. Continuing machine operation can have an impact on the effectiveness and efficiency of the production machine if it is not supported by proper care and handling of the operator who operates it, which causes losses to the machine which causes productivity to decrease. This research will be carried out on a bottle neck machine that is a Siebler 6R type stripping machine, the right approach in measuring the effectiveness of a machine is by using OEE (Overall Equipment Effectiveness) calculation and the OEE value obtained from the machine is only 52.40% far 85% of the target and then analyzed using Pareto diagrams to determine priority problems and analyzed using cause and effect diagrams and using PM analysis and appropriate actions to restore the condition of the machine back to productive and continue to maintain the best condition of the machine by providing proper care and handling to machines by implementing Autonomous Maintenance, by implementing step-by-step self-maintenance can improve machine maintenance by the operator and special handling by the operator in maintaining machine condition and also make continuous improvements to improve engine performance by conduct self-care activities

KEYWORDS: Six Big Losses, Overall Equipment Effectiveness, Autonomous Maintenance

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INTRODUCTION

Since Indonesia implemented the health BPJS program in early 2014, and currently the entire pharmaceutical industry in Indonesia is competing in producing cost-efficient production with the best quality to compete to meet customer needs, especially generic drugs for health BPJS services (E-Catalog) which are sufficient large, E-catalog is an electronic information system that lists, types, technical specifications and prices of certain goods / services from various government goods / services providers, or so pharmaceutical products that enter into the e-catalog are products that have entered the state subsidy budget To support the running of the health BPJS program, there are currently obstacles that are not fulfilling market demand, including products that enter into E-catalog products, which are increasing every year and engine performance that is less than optimal / less effective so that it cannot meet these demands and occurs in the engine area stripping siebler 6R, There are several things that cause inefficient production are not achieved because some engine parts have begun to experience a decrease in

performance which results in critical breakdown on the machine and result in a decrease in engine productivity and coupled with limited operator knowledge about engine maintenance and handling, so that corrective actions are not taken right on target for the actual problems that result in maintenance and handling of the machine by the operator is not optimal (limited knowledge)

And from this problem arises a very large impact one of which is a fairly large maintenance costs and in a company that the largest contribution of total production costs is sourced from the maintenance costs of machinery and equipment, both directly and indirectly (Borris, 2006) impact on costs production that is enlarged and influences the production costs incurred so that the potential product can lose the largest market, namely from generic products for the BPJS program supporting E-catalog.

Figure 1: Flow Process Line Tableting.

Production lines are based on the stages of the process to separate the process phasing and in general, the production process flow is as follows:

- Powder Mixing: The process of mixing each raw material into an intermediate product (doing material homogeneity)
- Powder Drying: The process of drying the results of mixing in accordance with the provisions of the water content in the product
- Powder Compacting: A coining process where the dried product is put into a die to be formed
- Coating: The process of coating on the results of powder compacting to improve surface properties
- Stripping: The process of wrapping finished products / packaging in direct contact with the product to avoid contamination of the product.
- Secondary Packaging: The process of packaging from the stripping process to protect the results of the stripping process
- In Process Control: The process for checking at each stage of the process (each stage of the process must carry out process control according to certain specifications)

From the Flow Process over the area that becomes the bottle neck is in the area of the Stripping process or primary packaging process using Siebler type 6R (row), but this research will focus more on the implementation of

Autonomous Maintenance, in addition to improving engine performance, the application of Autonomous Maintenance will also have an impact on operator involvement, focus on autonomous maintenance and to perform many tasks. Cross-factory training plays an important role in increasing the operator's ability to care and handle the machine so that the operator can act responsively and proactively in machine maintenance, so that the machine is always at its best performance so that the machine is always located in its best performance (Modgil, 2016).

Based on the background above, the objectives of this study are: The Effect of Autonomous Maintenance Implementation on the productivity of the Siebler 6R stripping machine with the OEE (Overall Equipment Effectiveness) approach.

LITERATURE REVIEW

TPM is a maintenance and manufacturing program that is designed primarily to maximize the effectiveness of machinery and equipment through the participation and motivation of all staff and employees (Nakajima, 1988, Ahuja 2008). TPM itself according to Ahuja (2008) is the key to success of any manufacturing optimization strategies because without a reliable machine all production / manufacturing optimization programs will not be able to run perfectly. Total Productive Maintenance or TPM is one of the maintenance process methods developed to increase productivity in the work area, by making the process more reliable and less waste. This method is part of Lean Manufacturing.

Autonomous Maintenance

Autonomous Maintenance is a Pillar of TPM (Total Productive Maintenance), which is applied in the manufacturing process. Its implementation is carried out with a structured approach to increasing employee skill levels, so that they are able to understand, manage, and improve processes and machines that are in their area of responsibility. always in the best performance. The operator is expected to be able to repair minor damage or simple maintenance of the machine. Thus, maintenance personnel can be more focused for more serious cases of damage

The implementation of autonomous maintenance pillars is divided into 7 steps, and is carried out by a team that uses machines that are the objects of autonomous maintenance. In brief, the seven phases can be explained as follows:

- Step 1 Initial Cleaning (Recondition engine performance)
- Step 2 Counter Measure (Remove sources of contamination)
- Step 3 Temporary Standard (Making a standard temporary machine)
- Step 4 General Inspection (Thorough checks on engine components)
- Step 5 Autonomous Inspection (Self-check on the machine)
- Step 6 Improve of Standard (Organization & housekeeping)
- Step 7 Full Autonomous Maintenance

Overall Equipment Effectiveness

According to Osada (1995), an indicator of the success of Total Productive Maintenance can be measured using overall equipment effectiveness, which is a matrix that focuses on how effective a production operation is carried out. The results

are stated in a general form so as to allow comparisons between manufacturing units in different industries. OEE consists of 3 components that affect: Availability, Performance, and Rate of Quality.

Based on Nakajima (1988: 27), OEE's ideal conditions must range as follows:

Availability	>90%
Performannce	>95%
Rate of Quality	>99%
Overall Equipment Effectiveness (OEE)	>85%

Availability

Is a comparison between the actual operating time (actual operating time) with the availability of operating time (plane operating time) Low downtime is a reflection of poor maintenance. In a simple and basic calculation the Availability or availability are: Availability Rate (A) = $\frac{(\text{Actual Working Time})}{(\text{Target Worktime})} \times 100\%$

Performance

In determining the performance of an equipment or machine describes the operating conditions of the machine where a machine can be operated below the actual capacity of the machine. There is an output or standard time set by the engineering department to determine the length of time a product is processed. However, in practice, the machine is often operated below the standard time or output that has been set.

$$\text{Target Output} = \text{Standard Output / minute} \times \text{Actual Operating Time}$$

From the variables mentioned above, so that the value of Performance or performance efficiency can be calculated as follows: Performance Rate = $\frac{\text{OutputActual}}{\text{OutputTarget}} \times 100\%$

Quality Rate (Kualitas Output)

The determination of the value of this quality product is measured by the ability of a machine to produce a production that meets the quality standards that have been standardized by the company. The variables in the parameters include:

$$\text{Good Output} = \text{Total Output} - \text{Output Reject}$$

From the variables mentioned above, the value of quality products can be calculated using the following formula:

$$\text{Quality Rate (Q)} = \frac{\text{GoodOutput}}{\text{TotalOutput}} \times 100\%$$

The results of these parameters will indicate the productivity of a machine to produce quality products. The higher the quality product produced by a machine, the smaller the defect products produced.

In subsequent calculations, to find out the value of OEE or the effectiveness of the machine itself can be calculated by multiplying the three factors or parameters mentioned above, as follows:

$$\text{OEE (engine effectiveness)} = \text{Availability Value} \times \text{Performance Value} \times \text{Value Quality Rate}$$

Identification

From the data that was obtained above the research will be conducted on a Siebler 6R type stripping machine which is a bottle neck machine so that if the engine operation or maintenance on the machine is not good or wrong, then the possibility of engine damage will often occur. Finally, machine productivity in pursuit of quality and quantity of products produced decreases drastically, so it can be concluded that low productivity of the machine will cause the company to lose market because it is inferior to other companies that can meet customer demand and from these conditions, a thorough evaluation of the machine operating system needs carried out in terms of operation and maintenance carried out by the operator independently as well as periodic maintenance carried out by the maintenance team, so that it is expected to be able to restore the engine's performance even more. will certainly reduce the increase in costs and maintenance as well as company productivity will also increase.

METHODOLOGY

Data

The materials used in this study are data on the amount of production, data on production time, data on machine breakdown time, reject data and rework data. The data taken is 34 months, namely January 2017-October 2019

Research Methode

The research method begins with the formulation of the problem, the determination of objectives followed by data collection and processing. Ends with the analysis and conclusions and suggestions. The data taken is primary data and secondary data. Primary data is data obtained by direct observation in the company, especially interviews with the company. Secondary data is data obtained from company records and reports.

Data Collecting

In this study the data collected was as follows:

- Production data from production plans, products produced, production capacity and number of defective products
- Engine maintenance data, such as six big losses data, maintenance, and replacement of engine components, working hours & workdays.

RESULTS ANDDISCUSSIONS

Overall Equipment Effectiveness Analysis

- OEE calculations are conducted per-shift and conducted in January 2017 as preliminary data
- The system operates 24 hours, expressed as the time available.
- Downtime is a breakdown that occurs on the engine.

$$\begin{aligned}\text{Loading Time (Target Working time)} &= 480 \text{ (1 shift)} - 65 \text{ Minute} \\ &= 415 \text{ Minute}\end{aligned}\tag{1}$$

$$\text{Actual Working Time} = \text{Loading Time} - \text{Total Line Stop (breakdown machine)}\tag{2}$$

$$= 415 - 75 = 340 \text{ Minute}$$

$$\text{Output target} = \text{Actual Working Time} \times \text{Output Production} \quad (3)$$

$$= 340 \text{ Minute} \times 1200 \text{ Pcs/Minute (Standar Capacity/minute)}$$

$$= 408.000 \text{ Pcs}$$

$$\text{Output Good} = \text{Output Actual} - \text{Product Reject} \quad (4)$$

$$= 400.000 \text{ Pcs} - 1860 \text{ Pcs} = 348140 \text{ Pcs}$$

$$\text{AV} = \frac{\text{Actual Working Time}}{\text{Target Working Time}} \times 100\% \quad (5)$$

$$= \frac{340}{415} \times 100\%$$

$$= 81,93\%$$

$$\text{PE} = \frac{\text{OutputActual}}{\text{OutputTarget}} \times 100\% \quad (6)$$

$$= \frac{350.000}{408.000} \times 100\%$$

$$= 85,78\%$$

$$\text{QR} = \frac{\text{Outputbagus}}{\text{OutputActual}} \times 100\% \quad (7)$$

$$= \frac{348.140}{350.000} \times 100\% = 99,46\%$$

$$\text{OEE} = \text{Availability} \times \text{Performance} \times \text{Quality Rate} \quad (8)$$

$$= 81,93\% \times 85,78\% \times 99,46\%$$

$$= 69,90\%$$

Table 1: Calculation Availability Before AM Implemented

BULAN	LOADING TIME	OPERATING TIME	BREAKDOWN	AV%	TARGET
JAN	10494	9201	1293	87,68	90
FEB	8611	7571	1040	87,92	90
MAR	11788	9147	2641	77,60	90
APR	12635	8669	3966	68,61	90
MAY	16523	13499	3024	81,70	90
JUN	10202	8856	1346	86,81	90

Table 2: Calculation Performance Before AM Implemented

BULAN	OPERATING TIME	TARGET OUTPUT	OUTPUT ACTUAL	PE %	TARGET
JAN	9201	11.041.200	6.220.318	56,34	95
FEB	7571	9.085.200	5.926.420	65,23	95
MAR	9147	10.976.400	6.861.393	62,51	95
APR	8669	10.402.800	7.001.545	67,30	95
MAY	13499	16.198.800	10.905.141	67,32	95
JUN	8856	10.627.200	7.056.553	66,40	95

Table 3: Calculation Rate of Quality Before AM Implemented

BULAN	OUTPUT ACTUAL	REJECT	GOOD OUTPUT	RQ%	TARGET
JAN	6.220.318	6719	6.213.599	99,89	99
FEB	5.926.420	5600	5.920.820	99,91	99
MAR	6.861.393	5970	6.855.423	99,91	99
APR	7.001.545	6150	6.995.395	99,91	99
MAY	10.905.141	9010	10.896.131	99,92	99
JUN	7.056.553	4630	7.051.923	99,93	99

Table 4: Achievement OEE Before AM Implemented

BULAN	AV	PE	RQ	OEE	TARGET
JAN	87,68	56,34	99,89	49,34	85,00
FEB	87,92	65,23	99,91	57,30	85,00
MAR	77,60	62,51	99,91	48,46	85,00
APR	68,61	67,30	99,91	46,14	85,00
MAY	81,70	67,32	99,92	54,95	85,00
JUN	86,81	66,40	99,93	57,60	85,00

Figure 2: Achievement OEE Machine Siebler 6R.

Figure 3: Pareto Chart Breakdown Machine Siebler 6R.

Figure 4: Pareto Chart Minor Stop Machine Siebler 6R.

Analysis Pareto Diagram

In Figure 4, can be seen some of the biggest factors causing the Siebler 6R stripping machine to experience losses including:

Breakdown

- Indexing Unit Problem
- Wear Pull Rubberroll
- Cutting Problem
- Dirty Sealing roll

Minor Stop

- Cutting Setting Position
- Tablet Stucked
- Strip unsymetric
- Late Tablet Supply

After that, analyze the root problems that occur in the above problems mentioned:

Table 5: Root Cause Analysis

Problem (Breakdown)	Cause
Indexing Unit Problem	The Part Indexing Unit is experiencing wear and tear because of its mechanism of action
Wear Pull Rubber roll	The Pull Rubber roll station does not have a system adjuster
Cutting Problem	Lifetime maintenance cutting
Dirty Sealing Roll	Abnormal heating system
Problem (Minor Stop)	Cause
Cutting Setting Position	Does not have an efficient system setting
Tablet Stucked	Dirty Indexing unit
Strip Unsymetrical	There are no guiders on the side of the transfer groove
Late Supply Tablet	Abnormal Vibrator

From the data that has been obtained above, then the operator takes data tags on the machine to analyze the findings of abnormalities on the machine, and see the correlation between the findings with the engine pareto breakdown that occurred. The following are findings of abnormalities that occur in the Siebler 6R stripping machine:

Table 6: Tag Findings on the Siebler 6R Machine

LOCATION	FUNCTION	ABNORMALITY FINDINGS	IMPACT IF IT IS NOT SOLVE
Vibrator	Transfer from the Feeding disc to the indexing unit	Vibrator rotation is less than optimal. Supply of indexing tablet units is less than optimal	The magnetic parts of the vibrator are corroded
		Rust vibrator magnet section	Source of Contamination
Tampungangranul	Container remaining granules from tablets	Granules fly to other areas	Source of Contamination
Feeding disc	Track track for tablets	Feeding disc open	Source of Contamination
Body mesin	Engine frame	Many parts of the engine parts are rusted	Source of contamination
Standing Alufoil	Engine alufoil holder	The thread on the stand is bald	Sucu Loss caused by too long alufoil installation
Standing shoe thermocouple	Hot reading media	Suboptimal reading	Thermocouple reading does not match actual temperature
Feeding system	Transfer feeding indexing units to the sealing roll area	Oblating bushing system	The process of releasing tablet variations
Indexing Unit	Path for tablets	The distance between the indexing units to the sealing roll is a large gap	Reject produced a lot
Roll cutter	Splitting the results of the vertical pin	Blunt roll cutter blades	Slip on the roll cutter
N/A	N/A	There is no rejector to detect reject strip results	Potential complaints
Cutter Horizontal	Cut the strip results	Perfect cutting results	Reject strip increases
Body Mesin	Machine body	There is no engine cover yet	Work accident
Roller polycell	Track for polycells	Run out of alufoil and roll strips in the sealing roll area	Material usage usage
Panel Mesin	Operation of the machine		Potential short-circuiting
Panel Motor	Engine drive	The cable in the panel is a mess	Engine breakdown
Ink Jet Printer	Printing batch number information	The gear and the driving chain are rusty	Shortened
Gear Sealing	The prime mover is sealing roll	Cables and hoses are messy	Affects the movement of the sealing roll rotation
FULL MACHNE	N/A	It is dusty and many are flaky or chipped	Breakdown on the engine

Implementation Autonomous Maintenance

From the abnormality tag data on the machine and the breakdown data along with minor stop data that occur in the 6R siebler stripping machine that has been collected and adjusted and interconnected, then an autonomous maintenance is implemented as the initial stages, namely

- **Step 1 (Initial Cleaning)**

Perform repair / replacement of parts to recondition the state of the machine to be productive again and improve engine performance

Table 7: Action Initial Cleaning

ABNORMALITY FINDINGS	ACTION	ABNORMALITY FINDINGS	ACTION
Vibrator rotation is less than optimal. Supply of indexing tablet units is less than optimal	Checking and changing the vibrator magnet	Cutting results are not perfect	Cutting replacement
Rust vibrator magnet section	Cleaning the vibrator magnet and anodizing coating to remove rust	There is no engine cover yet	Machine Cover Making
Granules fly to other areas	Provision of dust collector	Run out of alufoil and roll strips in the sealing roll area	Provision of optical proximity sensor
Feeding disc open	Giving Cover to close the hopper	The cable in the panel is a mess	Rewiring
Many parts of the engine parts are rusted	Re-painting parts	The gear and the driving chain are rusty	Cleansing and lubrication
The thread on the stand is bald	Re-making Nut screw	Cables and hoses are messy	Reinstallation
The heat reading is not optimal	Temperature calibration and manufacture of new thermocouple shoe holders	Channels are dusty and many are chipped or chipped	Repair tablet channels
Bushing feeding system obstruction	Making new feeds	Rusty Bolt	Bolt Substitution
The distance between the indexing unit to the sealing roll is a very large gap	Modification of Angles on indexing units	Aus Shaft Sealing	Substitution of shaft sealing roll

- **Step 2 (Counter Measure)**

Remove sources of contamination to increase the lifetime of machine parts that are affected by engine cleanliness or hard to clean areas.

Table 8: Action Counter Measure

Area	Improvement	Explanation
Dust Collector	Cover Making	Removes the potential for dust to be blown out and pollutes other areas
Residual Storage Containers	Connecting with Dust Collector	Eliminates the potential for dust entering the floating reservoir and other areas
Engine Motor Panel	Making Visual Control	Makes it easy to check cleanliness
Bottom engine cover	Cover Making	Easy cleaning
Feeding Disc	Anodize resurfacing	Make cleaning easy
Gear Sealing	Cover Making	Remove the source of contamination from entering the Shaft

- **Step 3 (Standarization)**

In this phase, the process is aimed at designing a standardized machine to increase operator knowledge of standardization in the area of the Siebler 6R Stripping machine:

Table 9: List of Standards

Standardization Type	Explanation
Mapping Machine	Make it easy to recognize the engine area
Danger Mapping	Provides information on dangerous areas on the machine
Machine hygiene standards	Provide information checking areas that need attention
Machine cleaning standards	Simplifies mapping of the Cleaning area
Tightening Standards	Provides information on the area of the bolt connected bolt
Lubrication Standards	Provides information on the area of the bolt connected bolt
Standard 5R room	Provides information regarding the application of the 5R in the engine area

- **Step 4 (General Inspection)**

This phase is the process of sharing knowledge about the machine with the machine operator to get to know the machine on the components in the machine, including:

- Checksheet Cleanig
- Checksheet Bolt & Nut
- Checksheet Pneumatic
- Checksheet Lubricating
- Checksheet Drive
- Checksheet Electricity
- Checksheet Safety
- Checksheet Process Condition.

Which is poured in the form of a checksheet to facilitate the operator in checking the check. Which is poured in the form of a checksheet to facilitate the operator in checking / inspecting the 6R siebler stripping machine: an / inspection stripping machine siebler 6R:

General Maintenance Ledger										Revisi : 3		Siebler 6 Row		Date		Rev. No.		Job No.																									
TPM										Location : Grey Packaging Mill 1		Circle name : Jengkolabito		Interval																													
Drawing Machine										Kategori Inspeksi		Check Point		Picture		Standard		Method		Tool		Kategori A.B.C		Check		Inspection / Replacement		OPLKONS		D		W		M		Y		PIC		AM		PM
<p>1. Upper Roller 2. Upper Roller 3. Upper Roller 4. Upper Roller 5. Upper Roller 6. Upper Roller 7. Upper Roller 8. Upper Roller 9. Upper Roller 10. Upper Roller 11. Upper Roller 12. Upper Roller 13. Upper Roller 14. Upper Roller 15. Upper Roller</p>										A, B, C, L, K, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z, AA, AB, AC, AD, AE, AF, AG, AH, AI, AJ, AK, AL, AM, AN, AO, AP, AQ, AR, AS, AT, AU, AV, AW, AX, AY, AZ, BA, BB, BC, BD, BE, BF, BG, BH, BI, BJ, BK, BL, BM, BN, BO, BP, BQ, BR, BS, BT, BU, BV, BW, BX, BY, BZ, CA, CB, CC, CD, CE, CF, CG, CH, CI, CJ, CK, CL, CM, CN, CO, CP, CQ, CR, CS, CT, CU, CV, CW, CX, CY, CZ, DA, DB, DC, DD, DE, DF, DG, DH, DI, DJ, DK, DL, DM, DN, DO, DP, DQ, DR, DS, DT, DU, DV, DW, DX, DY, DZ, EA, EB, EC, ED, EE, EF, EG, EH, EI, EJ, EK, EL, EM, EN, EO, EP, EQ, ER, ES, ET, EU, EV, EW, EX, EY, EZ, FA, FB, FC, FD, FE, FF, FG, FH, FI, FJ, FK, FL, FM, FN, FO, FP, FQ, FR, FS, FT, FU, FV, FW, FX, FY, FZ, GA, GB, GC, GD, GE, GF, GG, GH, GI, GJ, GK, GL, GM, GN, GO, GP, GQ, GR, GS, GT, GU, GV, GW, GX, GY, GZ, HA, HB, HC, HD, HE, HF, HG, HH, HI, HJ, HK, HL, HM, HN, HO, HP, HQ, HR, HS, HT, HU, HV, HW, HX, HY, HZ, IA, IB, IC, ID, IE, IF, IG, IH, II, IJ, IK, IL, IM, IN, IO, IP, IQ, IR, IS, IT, IU, IV, IW, IX, IY, IZ, JA, JB, JC, JD, JE, JF, JG, JH, JI, JJ, JK, JL, JM, JN, JO, JP, JQ, JR, JS, JT, JU, JV, JW, JX, JY, JZ, KA, KB, KC, KD, KE, KF, KG, KH, KI, KJ, KK, KL, KM, KN, KO, KP, KQ, KR, KS, KT, KU, KV, KW, KX, KY, KZ, LA, LB, LC, LD, LE, LF, LG, LH, LI, LJ, LK, LL, LM, LN, LO, LP, LQ, LR, LS, LT, LU, LV, LW, LX, LY, LZ, MA, MB, MC, MD, ME, MF, MG, MH, MI, MJ, MK, ML, MM, MN, MO, MP, MQ, MR, MS, MT, MU, MV, MW, MX, MY, MZ, NA, NB, NC, ND, NE, NF, NG, NH, NI, NJ, NK, NL, NM, NN, NO, NP, NQ, NR, NS, NT, NU, NV, NW, NX, NY, NZ, OA, OB, OC, OD, OE, OF, OG, OH, OI, OJ, OK, OL, OM, ON, OO, OP, OQ, OR, OS, OT, OU, OV, OW, OX, OY, OZ, PA, PB, PC, PD, PE, PF, PG, PH, PI, PJ, PK, PL, PM, PN, PO, PP, PQ, PR, PS, PT, PU, PV, PW, PX, PY, PZ, QA, QB, QC, QD, QE, QF, QG, QH, QI, QJ, QK, QL, QM, QN, QO, QP, QQ, QR, QS, QT, QU, QV, QW, QX, QY, QZ, RA, RB, RC, RD, RE, RF, RG, RH, RI, RJ, RK, RL, RM, RN, RO, RP, RQ, RR, RS, RT, RU, RV, RW, RX, RY, RZ, SA, SB, SC, SD, SE, SF, SG, SH, SI, SJ, SK, SL, SM, SN, SO, SP, SQ, SR, SS, ST, SU, SV, SW, SX, SY, SZ, TA, TB, TC, TD, TE, TF, TG, TH, TI, TJ, TK, TL, TM, TN, TO, TP, TQ, TR, TS, TT, TU, TV, TW, TX, TY, TZ, UA, UB, UC, UD, UE, UF, UG, UH, UI, UJ, UK, UL, UM, UN, UO, UP, UQ, UR, US, UT, UY, UZ, VA, VB, VC, VD, VE, VF, VG, VH, VI, VJ, VK, VL, VM, VN, VO, VP, VQ, VR, VS, VT, VU, VV, VW, VX, VY, VZ, WA, WB, WC, WD, WE, WF, WG, WH, WI, WJ, WK, WL, WM, WN, WO, WP, WQ, WR, WS, WT, WU, WV, WW, WX, WY, WZ, XA, XB, XC, XD, XE, XF, XG, XH, XI, XJ, XK, XL, XM, XN, XO, XP, XQ, XR, XS, XT, XU, XV, XW, XX, XY, XZ, YA, YB, YC, YD, YE, YF, YG, YH, YI, YJ, YK, YL, YM, YN, YO, YP, YQ, YR, YS, YT, YU, YV, YW, YX, YY, YZ, ZA, ZB, ZC, ZD, ZE, ZF, ZG, ZH, ZI, ZJ, ZK, ZL, ZM, ZN, ZO, ZP, ZQ, ZR, ZS, ZT, ZU, ZV, ZW, ZX, ZY, ZZ		A, B, C, L, K, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z, AA, AB, AC, AD, AE, AF, AG, AH, AI, AJ, AK, AL, AM, AN, AO, AP, AQ, AR, AS, AT, AU, AV, AW, AX, AY, AZ, BA, BB, BC, BD, BE, BF, BG, BH, BI, BJ, BK, BL, BM, BN, BO, BP, BQ, 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Table 6: Achievement OEE Machine Stripping Siebler 6R

STEP	AV	PE	RQ	OEE	TARGET
0	64,18	81,72	99,91	52,40462	85
1&2	66,50	84,60	99,95	56,22397	85
3	67,37	89,56	99,95	60,3103	85
4	87,19	93,48	99,93	81,45022	85
5	92,09	96,89	99,89	89,12551	85

Figure 13: Achievement OEE Machine Siebler 6R.

- Result Losses

Table 7: Decrease Breakdown Time Machine Stripping Siebler 6R

STEP	TOTAL WAKTU	RATA-RATA
0	13310	2218
1&2	5706	1902
3	5271	1757
4	15545	1727
5	15497	1291

Figure 14: Achievement Decrease Breakdown Time Machine Siebler 6R.

Table 8: Decrease Minor Stop Machine Stripping Siebler 6R

	TOTAL FREKUENSI	RATA-RATA
0	2096	349
1&2	586	195
3	422	141
4	630	70
5	229	19

Figure 15: Achievement Decrease Minor Stop Machine Siebler 6R.

CONCLUSIONS

This research was conducted in the Pharmaceutical industry with the aim to improve engine performance and reduce losses that cause disrupted machine productivity, namely by increasing the operator's ability to perform maintenance, handling machine problems by implementing Autonomous Maintenance by restoring the best performance of the machine, eliminating sources of contamination on machines that can interfere with machine performance, standardize critical parts of the machine, check periodically and conduct training and sharing with operators regarding machine components and critical parameters and do some related improvements that can improve engine performance.

After the application of autonomous maintenance in an industrial area will greatly help increase the productivity and efficiency of a production process and losses that occur on the machine will also be directly proportional to the application of autonomous maintenance in the manufacturing industry which greatly affects the mindset of workers, especially production operators, previously operators could only operate the machine when a problem occurs. It all depends on the technician and the implementation of the autonomous changes of all these things so that the operator is able to perform maintenance on the machine and can also handle problems if there are problems with the machine

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