Akademi Komunitas
Toyota Indonesia

WBS Number :

Proposal Pull Forward of Purchasing Equipment for Teaching Factory AKTI 2024

Karawang,.....2024

Acknowledged		Approved	Checked		Prepared	
Nandy Julyanto	Bob Azam	Yandri Pardomuan	Edy Susilo D	Mursyid	Suhermanto	Lutfy Eka B

I. Background

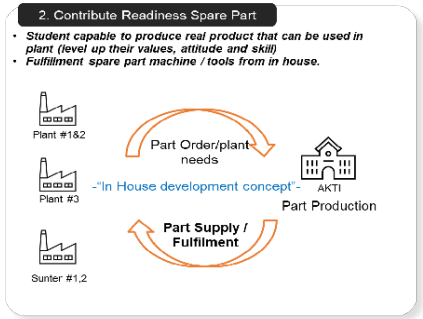
1. TEFA AKTI as part of the **Tridharma of Higher Education (Education, Research, Community Service)**
2. TEFA AKTI Mission to **Support TMMIN Smooth Operation & Level up Quality**
3. Sustainable Business Funding Managements to Secure AKTI **Jiritsuka in Cost Operational through TEFA/AKTI Unit Business**

II. Objective

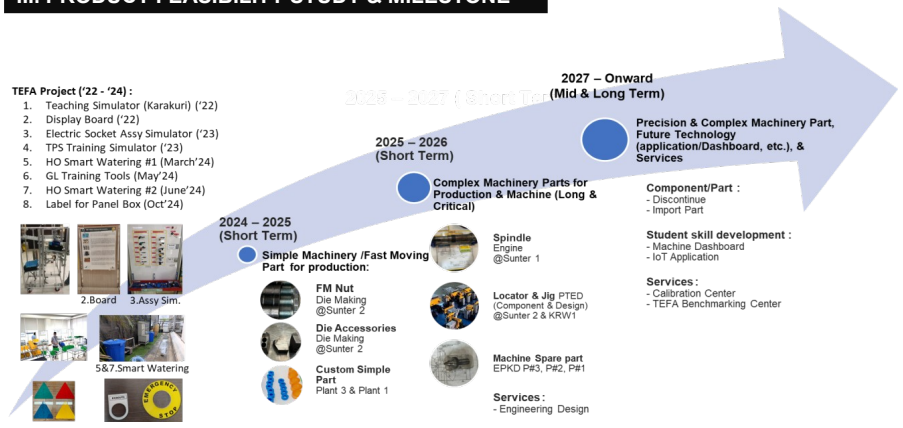
A. ULTIMATE GOAL/ MISSION

Established a Teaching Factory (TEFA) to enhance :

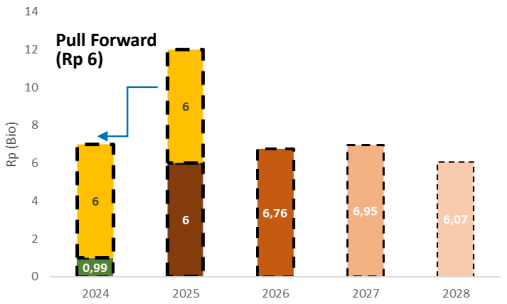
1. **Level Up Capabilities of Student through Project Based Learning**
2. **Contribute Readiness Spare Part machine in TMMIN**



III. PRODUCT FEASIBILITY STUDY & MILESTONE

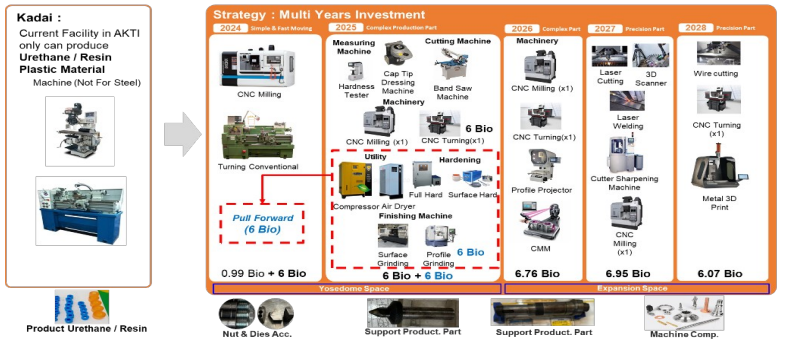


IV. Multi Years Budget Planning



Multi Years Investment for :

1. Utility Equipment :
   a. Compressor & Air dryer
   b. Capacity Up for Electricity
2. Machinery Equipment :
   a. Cutting Machine
   b. Milling & Turning
   c. Hardening Machine
   d. Grinding Machine
3. Measuring Equipment / Tool :
   a. Sigmat, Micrometer, D. Gauge
   b. CMM



2. Schedule Activity

No	Activity	Jul-24	Aug-24	Sep-24	Oct-24	Nov-24	Dec-24	Jan-25	Feb-25	Mar-25
		I II III IV	I II III IV	I II III IV	I II III IV	I II III IV	I II III IV	I II III IV	I II III IV	I II III IV
1	Genba Machine Distributor									
2	Nemawashi to Management									
3	Proposal Budget									
4	Purchase Order & Delivery									
5	Layout Preparation									
6	Instalation & Trial									

3. Budget Need

No	Item Name	Need	Qty	Price	Total Price
1	Software CAD Solidwork	1	Unit	Rp -	Rp -
2	Software CAM HyperMill	1	Unit	Rp -	Rp -
3	Compressor, Air Dryer, & Installation	1	Set	Rp 700.000.000	Rp 700.000.000
4	Surface Grinding Machine	1	Set	Rp 1.000.000.000	Rp 1.000.000.000
5	Cylindrical Grinding Machine	1	Unit	Rp 1.800.000.000	Rp 1.800.000.000
6	Full Hardening Machine	1	Unit	Rp 500.000.000	Rp 500.000.000
7	Induction Hardening Machine	1	Unit	Rp 300.000.000	Rp 300.000.000
8	Tools for Production & Cutter	1	Unit	Rp 700.000.000	Rp 700.000.000
9	Capacity Up Electric Installation	1	Unit	Rp 1.000.000.000	Rp 1.000.000.000
				Total Budget	Rp 6.000.000.000

No	Item Name	Need	Qty	Price	Total Price
1	Software CAD Solidwork	1	Unit	Rp -	Rp -
2	Software CAM HyperMill	1	Unit	Rp -	Rp -
3	Compressor, Air Dryer, & Installation	1	Set	Rp 700.000.000	Rp 700.000.000
4	Surface Grinding Machine	1	Set	Rp 1.000.000.000	Rp 1.000.000.000
5	Cylindrical Grinding Machine	1	Unit	Rp 1.800.000.000	Rp 1.800.000.000
6	Full Hardening Machine	1	Unit	Rp 500.000.000	Rp 500.000.000
7	Induction Hardening Machine	1	Unit	Rp 300.000.000	Rp 300.000.000
8	Tools for Production & Cutter	1	Unit	Rp 700.000.000	Rp 700.000.000
9	Capacity Up Electric Installation	1	Unit	Rp 1.000.000.000	Rp 1.000.000.000
				Total Budget	Rp 6.000.000.000

A. Budget Need : 990 Mio (Dir. Approved)
B. Pull Forward Budget : 6 Bio

Conclusion

AKTI Needs Budget of Rp 990.000.000 to buy CNC Milling, Conventional Lathe Machine and Accessories to Make Simple Supporting Part for Plant Needs.

Skills		Learning Subject			Outcome/Student Placement Projection						
		Basic	Itermediate	Advance	PTED	Prod.	EMD	Eng. Serv.	Maint.	EPKD 3	Quality
DESIGN	Design	Manual Drawing	CAD : SolidWorks	3D Scan	√	√	√	√	√	√	√
	Program.	Input Manual Gcode		CAM : Mastercam	√	√	√	-	-	√	√
MANUFACTURING	Machinery	Milling Conventional	CNC Milling	Wire Cut	√	√	-	-	√	√	-
		Lathe Conventional	CNC Lathe		√	√	-	-	√	√	-
	Finishing	Grinding Conventional (Manual)		Grinding (Auto)	√	√	-	-	√	√	-
	Hardening	Hardening Manual	Hardening Machine		√	√	-	√	√	√	-
QUALITY	Dimension	Micro, Sigmat, H. Gauge	Bore Gauge, Dial Gauge	CMM	√	√	-	√	√	√	√
	Hard Test	Manual Hit		Hardness Tester	√	√	-	√	√	√	√


2. Tools & Elec. Pwr. (1.7 Bio)
- Tools for prod & Cutter (700 Mio)
- Electric Power and Instalation (Bio)
Budget Need : 6 Bio + 6 Bio
Budget Need : 6.76 Bio
Budget Need : 6.95 Bio
Budget Need : 6.07 Bio

Akademi Komunitas
Toyota Indonesia

WBS Number :

Proposal of Purchasing CNC Milling & Conventional Lathe Machine for Teaching Factory AKTI 2024

Karawang,.....2024

Acknowledged	Approved	Checked		Prepared	
Bob Azam	Yandri Pardomuan	Edy Susilo D	Mursyid	Suhermanto	Lutfy Eka B

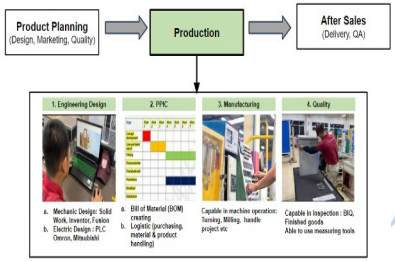
I. Background

1. TEFA AKTI as part of the **Tridharma of Higher Education (Education, Research, Community Service)**
2. TEFA AKTI Mission to **Support TMMIN Smooth Operation & Level up Quality**
3. Sustainable Business Funding Managements to Secure AKTI **Jiritsuka in Cost Operational**

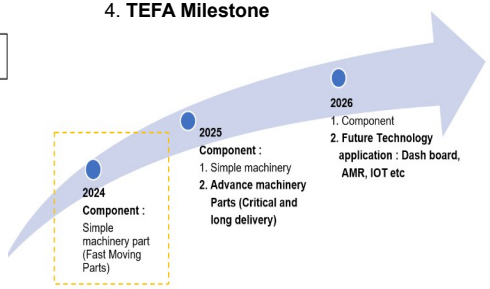
II. Objective

1. Level up Skill Capability of Student through Project Based Leraning Implementation
2. Ulltimate Goal : AKTI is able to support TMMIN Global KPI by supporting readiness of spare part to internal PT. TMMIN

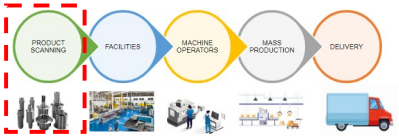
3. TEFA Curriculum



4. TEFA Milestone

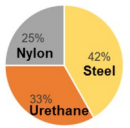


III. Pain Point

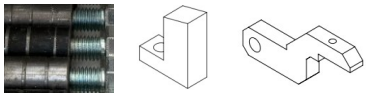


No	Material	Scanning Internal Division PT. TMMIN				
		Sunter #1	Sunter #2	Plant #1	Plant #2	Plant #3
1	Division	Engine	PETD	PETD	Welding	EPK3D
2	PIC	Mr. Toto W	Mr. Daniel W	Mr. Sri W	Mr. Alinasri	Mr.
3	Name Product	Machinery Part	Die Making Accessories	Component Jig Welding	Component Machine	Component Machine
3	Material	Steel, Urethane	Steel	Steel, Urethane, Nylon	Steel, Urethane, Nylon	Steel, Urethane, Nylon

Product material type data



The results of product scanning to divisions in Plant **42% of the materials needed are equipment steel**



TEFA AKTI able to make **advance products steel material for industrial needs**

Target

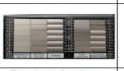
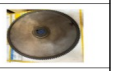
Actual

TEFA AKTI capable of producing **steel material products for industrial needs**

TEFA AKTI is only able to make **simple products urethane material for industrial needs**

IV. Strategy

1. Purchase of TEFA AKTI Equipment needs

Years	2024		2025			
	CNC Milling	Conventional Lathe	CNC Lathe	CNC Milling	Grinding	Hardening
Machine						
Product						
	1. Die Accessories 2. Die Accessories	1. FM Nut	1. Shaft M/C 2. Pin JIG	1. Component M/C 2. Componen Jig	Product Surface Grinding	Level up Hardness

No	CNC Milling Machine		Control Item					
			Made in	Price	Control	Accuracy	BT	Tabel Size	Durability
1		Robodrill D14 Plus	Japan	Rp 850.000.000	Fanuc	6 Micron	30	650 x 400 mm	25 Years
2		Weida VMC 640	China	Rp499.000.000	GSK 988TA	10 Micron	40	920 x 400 mm	5 Years

No	Conventional Lathe Machine		Control Item					
			Made in	Price	Control	Accuracy	Ø Max	Stroke	Durability
1		Kinwa CH-530	China	Rp 250.000.000	Manual	10 Micron	310	650 x 400 mm	5 Years

2. Schedule Activity

No	Activity	Aug-24				Sep-24				Oct-24				Nov-24				Dec-24			
		I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
1	Genba Machine Store																				
2	Proposal Budget																				
3	PO Machine & Indent																				
4	Preparation Competency, Layout																				
5	Instalation & Trial																				

3. Budget Need

No	Item Name	Need	Qty	Price	Total Price
1	CNC Milling Machine	1	Unit	Rp 500.000.000	Rp 500.000.000
2	Conventional Lathe Machine	1	Unit	Rp 250.000.000	Rp 250.000.000
3	Cutting Tools	1	Set	Rp 100.000.000	Rp 100.000.000
4	PC Design Desktop	1	Set	Rp 30.000.000	Rp 30.000.000
5	Software Solidwork CAD CAM	1	Pax	Rp 110.000.000	Rp 110.000.000
				Total Budget	Rp 990.000.000

Conclusion

AKTI Needs Budget of Rp 990.000.000 to buy CNC Milling, Conventional Lathe Machine and Accessories to Make Simple Supporting Part for Plant Needs.

No	Item Name	Need	Qty	Price	
1	CNC Milling Machine	1	Unit	Rp	500,000,000
2	Conventional Lathe Machine	1	Unit	Rp	250,000,000
3	Cutting Tools	1	Set	Rp	100,000,000
4	PC Design Desktop	1	Set	Rp	30,000,000
5	Software Solidwork CAD CAM	1	Pax	Rp	110,000,000
					Total Budget

Machine	Estimation Price (Exclude VAT)	Maker	Controller	M C
Robodrill D14 Plus	Rp900.000.000	Japan	Fanuc (Japan)	N
Weida VMC 640	Rp500.000.000	China	GSK (China)	Hi

No	Item Name	Need	Qty	Price	
1	Software CAD Solidwork	1	Unit	Rp	-
2	Software CAM HyperMill	1	Unit	Rp	-
3	Compressor, Air Dryer, & Installation	1	Set	Rp	700,000,000
4	Surface Grinding Machine	1	Set	Rp	1,000,000,000
5	Cylindrical Grinding Machine	1	Unit	Rp	1,800,000,000
6	Full Hardening Machine	1	Unit	Rp	500,000,000
7	Induction Hardening Machine	1	Unit	Rp	300,000,000
8	Tools for Production & Cutter	1	Unit	Rp	700,000,000
9	Capacity Up Electric Installation	1	Unit	Rp	1,000,000,000
					Total Budget

Total Price	
Rp	500,000,000
Rp	250,000,000
Rp	100,000,000
Rp	30,000,000
Rp	110,000,000
Rp	990,000,000

Mechanical Component	Accuracy (Tolerance)	X	Y	Z	Spindle BT	Table Size	Dur
HK (Japan)	6 Micron	500mm	400mm	400mm	30	650 x 400 mm	25
iwin (China)	10 Micron	600mm	400mm	400mm	40	920 x 400 mm	5 T

Total Price	
Rp	-
Rp	-
Rp	700,000,000
Rp	1,000,000,000
Rp	1,800,000,000
Rp	500,000,000
Rp	300,000,000
Rp	700,000,000
Rp	1,000,000,000
Rp	6,000,000,000

2024	2025	2026	2027	2028
A. Total 1+2 (6.99 Bio) **1. Machine (850 Mio) :** - CNC Milling Machine (500 Mio) - Conventional Lathe Machine (250 Mio) - Cutting Tools (100 Mio) **2. Design Software & Hardware (140 Mio) :** - Solid Work (110 Mio) x1 - PC Desktop (30 Mio) x1 **B. Pull Forward (6 Bio) :** **- Equipment (4.3 Bio)** **- Tools & Elec. Pwr. (1.7 Bio)** Prioritising Advance Facility	**Total (6 Bio)** **1. Machine (4.4 Bio)** - CNC Turning (1,5 Bio x 1) - CNC Milling (1,8 Bio x 1) - Bend saw Machine (350 Mio) - Cap Tip Dressing Machine (500 Mio) - Hardness tester (250 Mio) **2. Software, Hardware & Oasis (1.6 Bio) :** - Mastercam (300 Mio) x1 - Solid Work (225 Mio) x1 - PC Desktop (35 Mio) x1 - Oasis Room & Warehouse (1 Bio) **1. Equipment (4.3 Bio) :** - Compressor, Air Dryer & Installation (700 Mio) - Surface Grinding (1 Bio) - Profile Grinding (1,8 Bio) - Full Hardening (500 Mio) - Surface Hardening (300 Mio) **2. Tools & Elec. Pwr. (1.7 Bio)** - Tools for prod & Cutter (700 Mio) - Electric Power and Installation (1 Bio)	**Total (6.76 Bio)** **1. Machine (5.15 Bio) :** - CNC Turning (1,5 Bio x 1) - CNC Milling (1,8 Bio x 1) - CMM (1.8 bio) - Profile Projector (50 Mio) **2. Software & Hardware (1.61 Bio) :** - Mastercam (300 Mio) x2 - Solid Work (220 Mio) x2 - Cutter (300 Mio) - Measuring & Supporting Tools (200 Mio) - PC Desktop (35 Mio) x2	**Total (6.95 Bio)** **1. Machine (6.7 Bio) :** - Laser Welding (500 Mio) - Laser Cutting (1 Bio) - Cutter Sharpening Machine (1,7 Bio) - 3D Scanner (1.5 Bio) - CNC Milling (2 Bio x 1) **2. Software & Hardware (180 Mio) :** - Update License : 1. Mastercam (40 Mio) 2. Solid Work (40 Mio)	**Total (6.07 Bio)** **1. Machine (5.3 Bio) :** - CNC Turning (1,8 Bio x 1) - Metal 3D Print Machine (1,5 Bio) - Wire cutting (2 Bio) **2. Design Software & Hardware (770 Mio) :** - Mastercam (300 Mio) x1 - Solid Work (220 Mio) x1 - Cutter (250 Mio)
A. Budget Need : 990 Mio (Dir. Approved) **B. Pull Forward Budget : 6 Bio**	**Budget Need : 6 Bio + 6 Bio**	**Budget Need : 6.76 Bio**	**Budget Need : 6.95 Bio**	**Budget Need : 6.07 Bio**

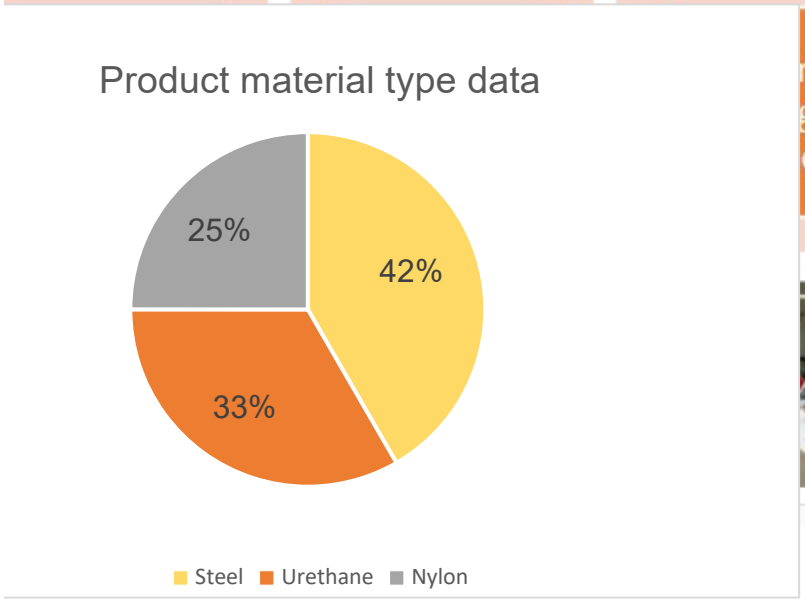
rability
Tahun
Tahun

No	Material	Scanning Internal Division PT. TMMIN				
		Sunter #1	**Sunter #2**	**Plant #1**	**Plant #2**	**Plant #3**
1	Division	Engine	PETD	PETD	Welding	EPK3D
2	PIC	Mr. Toto W	Mr. Daniel W	Mr. Sri W	Mr. Alinasri	Mr.
3	Name Product	Machinery Part	Die Making Accessories	Component Jig Welding	Component Machine	Component Machine
3	Material	Steel, Urethane	Steel	Steel, Urethane, Nylon	Steel, Urethane, Nylon	Steel, Urethane, Nylon

	Steel	Urethane	Nylon
Sunter #1	1	1	0
Sunter #2	1	0	0
Plant #1	1	1	1
Plant #2	1	1	1
Plant #3	1	1	1
Total	5	4	3

	Steel	Urethane	Nylon
%	42%	33%	25%

Sunter 1	Sunter 2	Plant 1	Plant 2
Machinery Parts	Not identified yet	Jig Welding (PETD)	Not identified yet
		n, g, ents	-



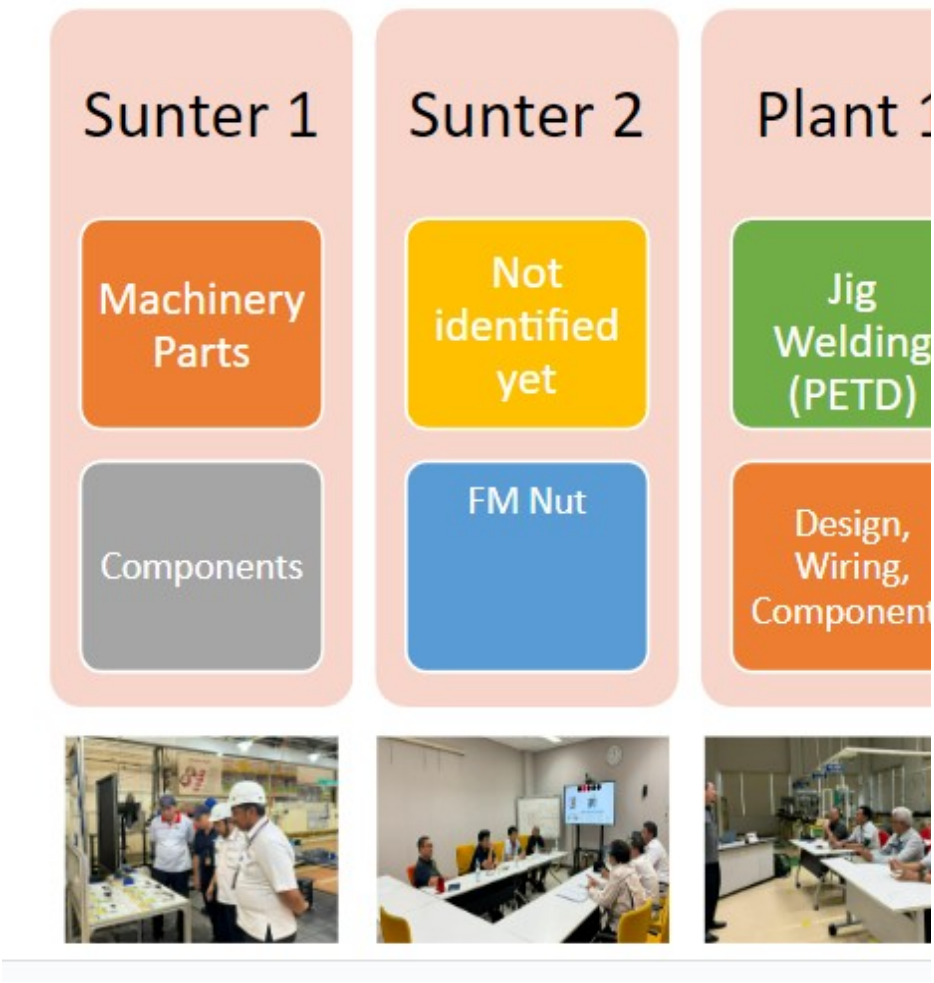
Plant 3

Machinery Urethane Parts

Component

No	Material	Scanning Internal Division PT. TMMIN						
		TIA	GAD	Engine #3	PE	PAD	P&W	A&P
1	Steel	O	O	O	O	O	O	O
2	Urethane	O	O	O	O	O	O	O
3	Arkrilyc	O	O	O	O	O	O	O

Engine Str	**Casting Str**
O	O
O	O
O	O



1	Plant 2	Plant 3
	Not identified yet	Machinery Urethane Parts
ts	-	Component

No	Activity	08/24				09/24				10/24				11/	
		I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II
1	Genba Machine Store														
2	Proposal Budget														
3	PO Machine & Indent														
4	Preparation Competency, Layout														
5	Instalation & Trial														

RUMUS BEP

1. BEP dalam Unit

$$BEP = \frac{FC}{P - VC}$$

2. BEP dalam Rupiah

$$BEP = \frac{FC}{1 - \frac{VC}{S}}$$

KETERANGAN:

BEP: Break Even Point
P: Price per Unit
FC: Fixed Cost
S: Sales Volume
VC: Variable Cost

1. Rumus Menghitung BEP per – unit produk :

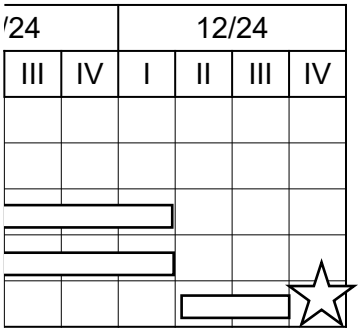
$$BEP = \frac{\text{Biaya Tetap (Fixed Cost)}}{\text{Harga (Price)} - \text{Biaya Variabel (Variabel Cost)}}$$

2. Rumus Menghitung BEP berdasarkan nilai penjualan

$$BEP = \frac{\text{Biaya Tetap (Fixed Cost)}}{(1 - (\text{Biaya Variabel} / \text{Harga})}$$

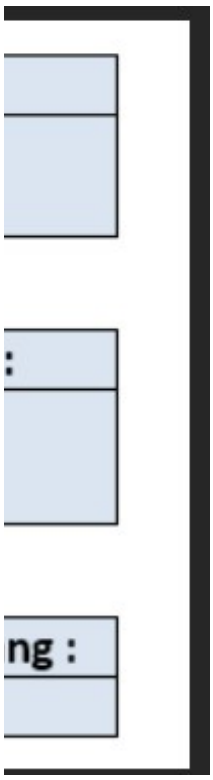
3. Rumus Menghitung BEP berdasarkan satuan mata ua

BEP = Harga Jual per unit x BEP per unit

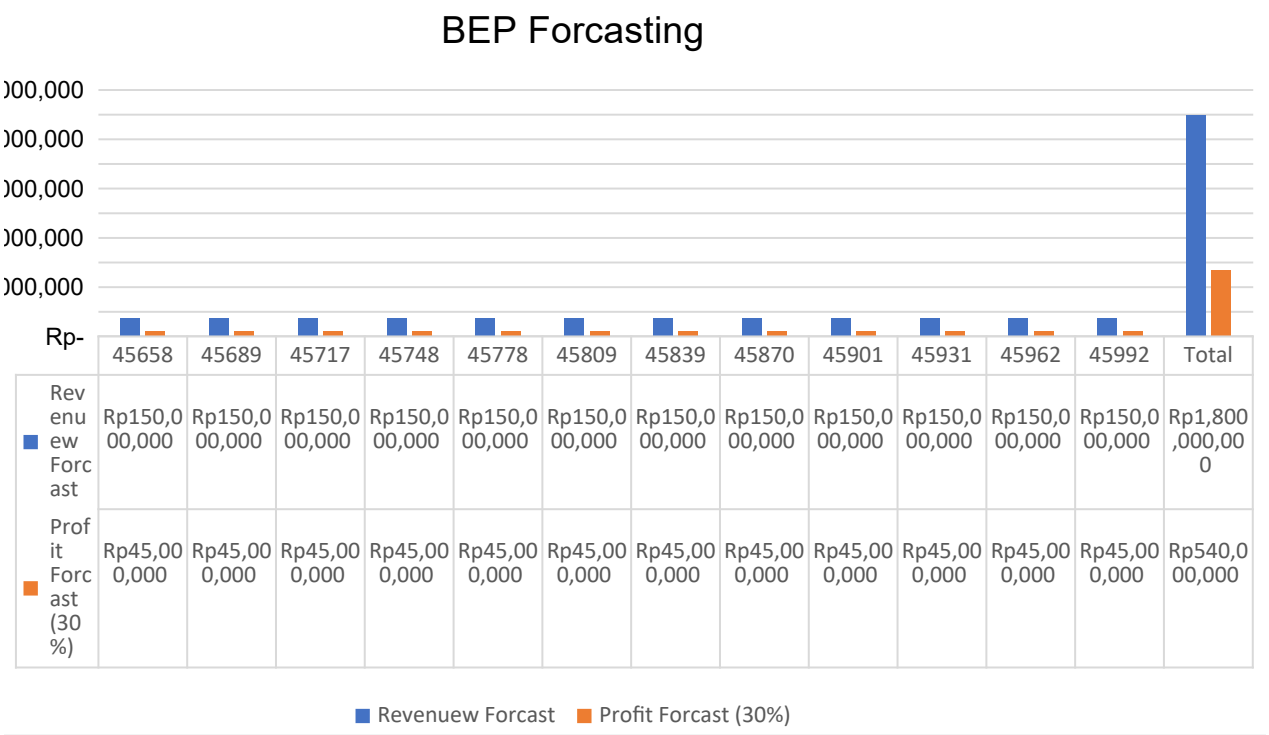


Mont	01/25	02/25	03/25
Revenuew Forcast	Rp 150,000,000	Rp 150,000,000	Rp 150,000,000
Profit Forcast (30%)	Rp 45,000,000	Rp 45,000,000	Rp 45,000,000

Rp2,000,0
Rp1,600,0
Rp1,200,0
Rp800,0
Rp400,0

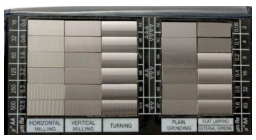


04/25	05/25	06/25	07/25	08/25
Rp 150,000,000	Rp 150,000,000	Rp 150,000,000	Rp 150,000,000	Rp 150,000,000
Rp 45,000,000	Rp 45,000,000	Rp 45,000,000	Rp 45,000,000	Rp 45,000,000



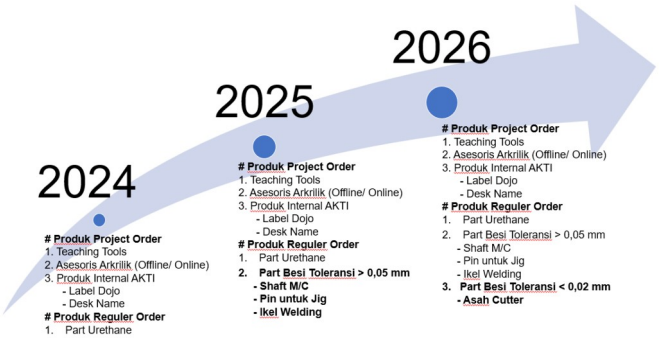
09/25	10/25	11/25	12/25	Total
Rp 150,000,000	Rp 150,000,000	Rp 150,000,000	Rp 150,000,000	Rp 1,800,000,000
Rp 45,000,000	Rp 45,000,000	Rp 45,000,000	Rp 45,000,000	Rp 540,000,000

Years	2024			20
Machine	CNC Milling	Conventional Lathe	CNC Lathe	CNC Milling
				
Product				
	1. Die Accessories	1. FM Nut	1. Shaft M/C	1. Component M/C
	2. Die Accessories		2. Pin JIG	2. Componen Jig

25	
Grinding	Hardening
	
	
Product Surface Grinding	Level up Hardness

No	Mac
1	
2	

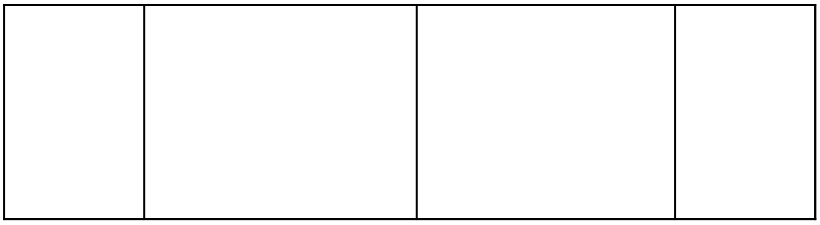
hine	Control Item				
	Made in	**Price**	**Control**	**Accuracy**	**RPM**
Takamaz GSL-10	Japan	Rp 850,000,000	Takamaz & Fanuc	1 Micron	5000
CNC Lathe Headman T50/500	China	Rp 533,650,000	GSK 988TA	5 Micron	4000



Diameter Max	Remark
310 mm	4 Point
320 mm	2 Point

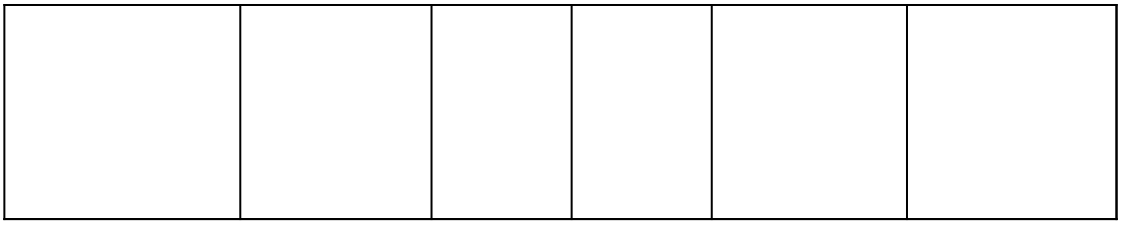
No	Machine		Made in
1		Robodrill D14 Plus	Japan
2		Weida VMC 640	China

No	Machine		Made in
1		Kinwa CH-530	China



Control Item					
Price	**Control**	**Accuracy**	**BT**	**Tabel Size**	**Durability**
Rp 850,000,000	Fanuc	6 Micron	30	650 x 400 mm	25 Years
Rp 499,000,000	GSK 988TA	10 Micron	40	920 x 400 mm	5 Years

Control Item					
Price	**Control**	**Accuracy**	**Ø Max**	**Stroke**	**Durability**
Rp 250,000,000	Manual	10 Micron	310	650 x 400 mm	5 Years



No	Activity	07/24				08/24				09/24				10/	
		I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II
1	Genba Machine Distributor														
2	Nemawashi to Management				Adm Dir.					PUD		ADM Dir.		MFG Dir.	BOGM FD
3	Proposal Budget														
4	Purchase Order & Delivery														
5	Layout Preparation														
6	Instalation & Trial														

RUMUS BEP

1. BEP dalam Unit

$$BEP = \frac{FC}{P - VC}$$

2. BEP dalam Rupiah

$$BEP = \frac{FC}{1 - \frac{VC}{S}}$$

KETERANGAN:

BEP: Break Even Point
P: Price per Unit
FC: Fixed Cost
S: Sales Volume
VC: Variable Cost

1. Rumus Menghitung BEP per – unit produk :

$$BEP = \frac{\text{Biaya Tetap (Fixed Cost)}}{\text{Harga (Price)} - \text{Biaya Variabel (Variabel Cost)}}$$

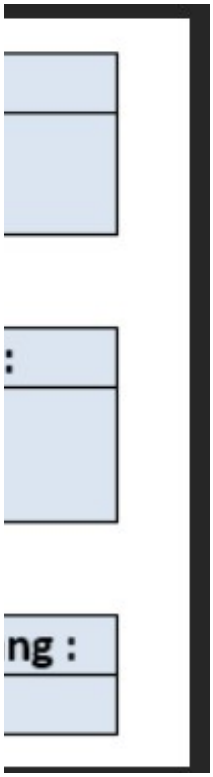
2. Rumus Menghitung BEP berdasarkan nilai penjualan

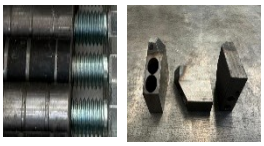
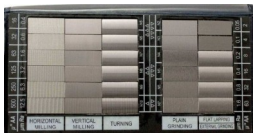
$$BEP = \frac{\text{Biaya Tetap (Fixed Cost)}}{(1 - (\text{Biaya Variabel} / \text{Harga})}$$

3. Rumus Menghitung BEP berdasarkan satuan mata ua

BEP = Harga Jual per unit x BEP per unit

/24		11/24				12/24				01/25				02/25				03/25			
III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV	I	II	III	IV
Sakai																					
XX Dir.	Fin. Dir.	VP PD					BOD														



Years	2024	2025		
Machine	CNC Milling	CNC Lathe	CNC Milling	Grinding
				
Product				
	1. FM Nut	1. Shaft M/C	1. Component M/C	Product Surface Grinding
	2. Die Accessories	2. Pin JIG	2. Componen Jig	

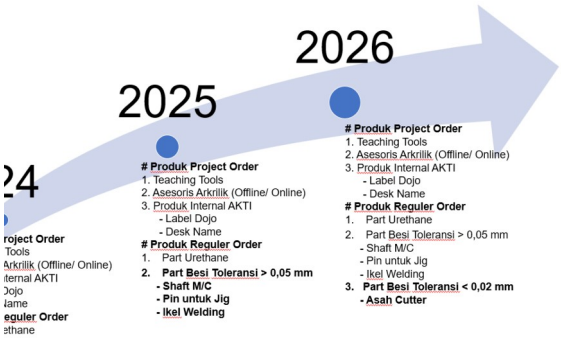
Hardening


Level up Hardness

No	Machine		Made in
1		Takamaz GSL-10	Japan
			O
2		CNC Lathe Headman T50/500	China
			-

Control Item					Remark
Price	**Control**	**Accuracy**	**RPM**	**Diameter Max**	
Rp 850,000,000	Takamaz & Fanuc	1 Micron	5000	310 mm	4 Point
-	O	O	O	-	
Rp 533,650,000	GSK 988TA	5 Micron	4000	320 mm	2 Point
O	-	-	-	O	

Machine	Estimation (Exclude
Robodrill D14 Plus	Rp900.00
Weida VMC 640	Rp500.00



No	Machine		Control It		
			Made in	Price	Control
1		Robodrill D14 Plus	Japan	Rp 850,000,000	Fanuc
			O	-	O
2		Weida VMC 640	China	Rp 533,650,000	GSK 988TA
			-	O	-

Price VAT)	Maker	Controller	Mechanical Component	Accuracy (Tolerance)	X	Y	
0.000	Japan	Fanuc (Japan)	NHK (Japan)	6 Micron	500mm	400mm	4
0.000	China	GSK (China)	Hiwin (China)	10 Micron	600mm	400mm	4

em			Remark
Accuracy	**RPM**	**Diameter Max**	
6 Micron	5000	310 mm	4 Point
O	O	-	
10 Micron	4000	320 mm	2 Point
-	-	O	

Z	Spindle BT	Table Size	Durability
400mm	30	650 x 400 mm	25 Tahun
400mm	40	920 x 400 mm	5 Tahun

Acknowledged		Approved
Nandy Julyanto	Bob Azam	Yandri Pardomuan

Checked		Prepared	
Edy Susilo D	Mursyid	Suhermanto	Lutfy Eka B