SUCCESS THRO'
JAPANESE MANAGEMENT PRACTICES

TPM IN SPINNING MILLS

CONSULTANT / ARCHITECT

Dr. R. BALAKRISHNAN

SUCCESS THRO'
JAPANESE MANAGEMENT PRACTICES

TPM IN
SPINNING MILLS

CONSULTANT'S OUTCOME AFTER TRAINING & IMPLEMEMNTATION

CONSULTANT / ARCHITECT

Dr. R. BALAKRISHNAN

SRI VISHNU SHANKAR MILL LIMITED
RAJAPALAYAM

TOTAL PRODUCTIVE MAINTENANCE (TPM)

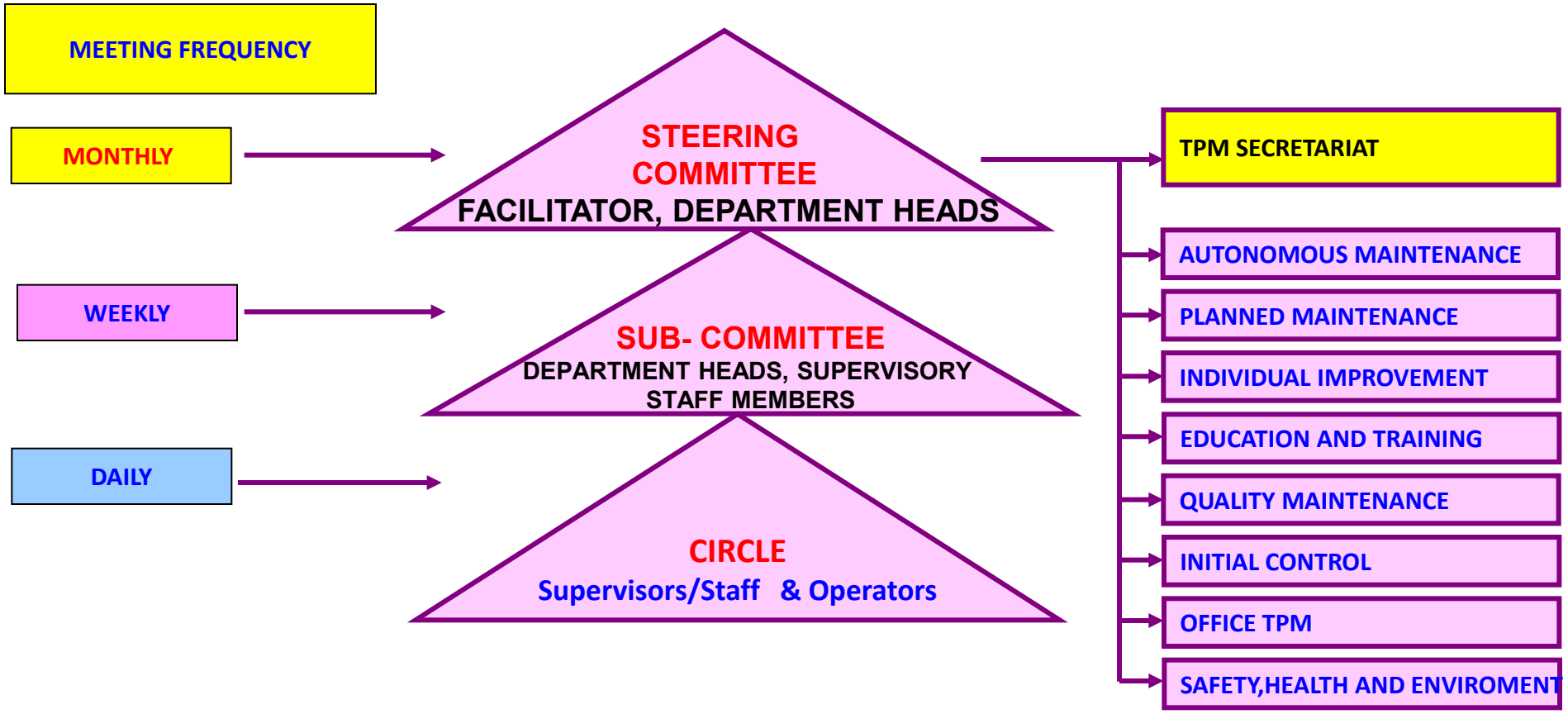
AUDIT DATE – 20/07/2019

PRESENTATION BY CO-ORDINATOR :
P. VELMURUGAN


RAMCO GROUP
TEXTILE DIVISION
TPM
8 PILLARS
AUTONOMOUS MAINTENANCE
INDIVIDUAL IMPROVEMENT
PLANNED MAINTENANCE
QUALITY MAINTENANCE
INITIAL CONTROL
OFFICE TPM
EDUCATION & TRAINING
SAFETY, HEALTH & ENVIRONMENT
5S

TPM REVIEW CHART

- To meet the targets we formed TPM steering committee lead by Champion
- Department heads as a sub-committee leader
- The members have been selected across the organization and formed Circles



COMPANY VISION

TO BE A LEADING TEXTILE MANUFACTURER IN THE WORLD, DELIVERING UNIQUE PRODUCTS WITH CONSISTENT QUALITY TO DELIGHT OUR CUSTOMERS

TPM POLICIES

RGTD POLICY

We build trust with customers by achieving zero defect, zero delay, zero waste, creating safe and happy work place through total employee participation to ensure customer satisfaction.

TPM POLICY

We build trust with customer by achieving consisting Quality, Cost and on time delivery of all our products by improving

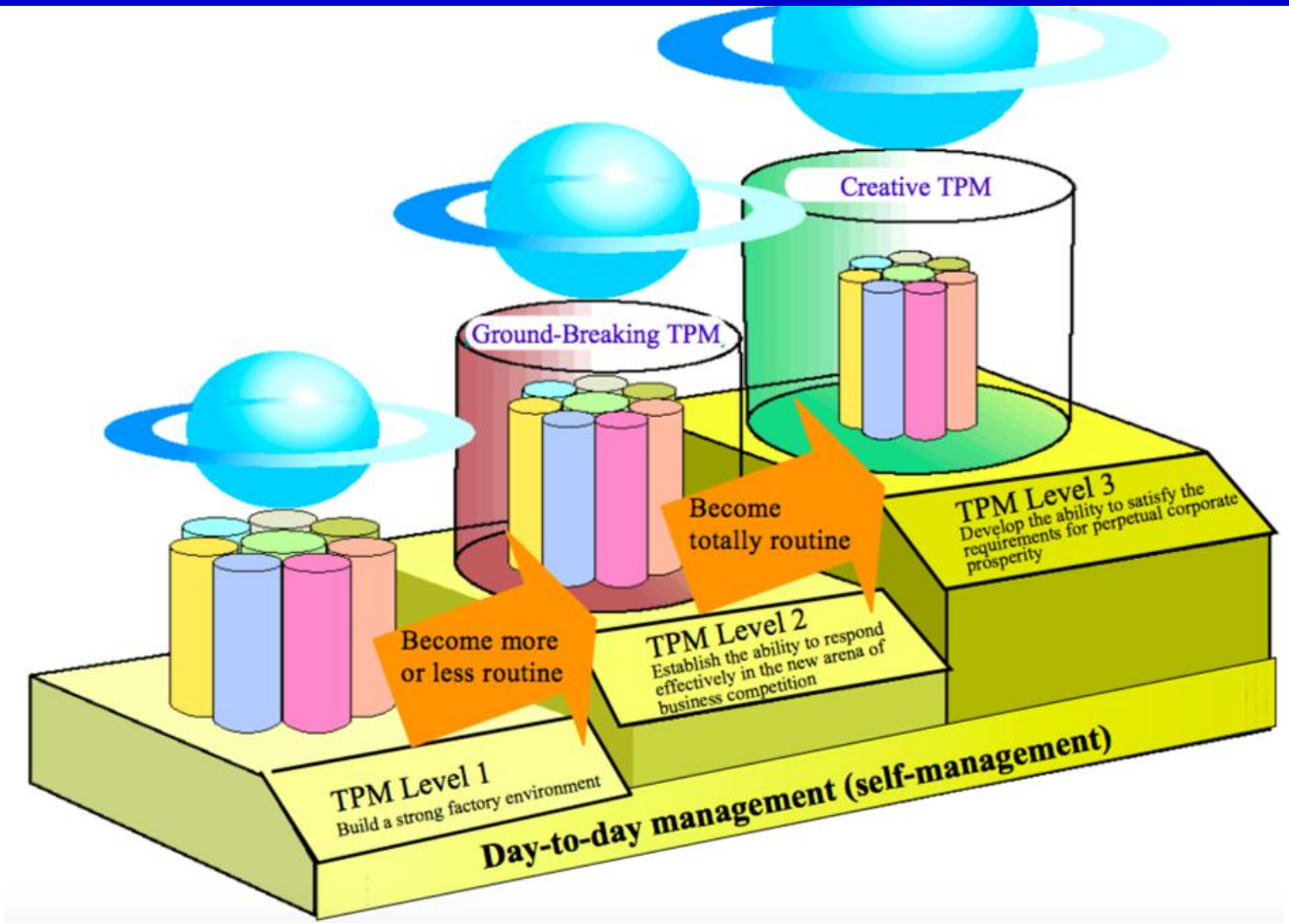
- Zero Breakdowns
- Zero Defects
- Zero Accident

and creating Safe and Lively workplace through '5S' practices and Kaizen activities with Total people involvement.

GOALS

* To attain Zero Breakdown in all Machines.
* To eliminate defects in all our products.
* To reduce the losses in the machine operation and maintenance.
* To eliminate injuries in the work place.
* To eliminate delay in supplying the products.

Evolution of TPM Practices



JIPM : TPM Awards in 3 levels

LEVEL-1: TPM Excellence,

LEVEL-2: Consistency and

LEVEL-3: Special Award.

LEVEL-1:

*Build a strong factory environment

Concept:

Reduce the production cost

a)Equipment operating losses
b)Work organization losses
c)Resource utilization losses

Production cost = Raw materials cost + processing cost + Waste value cost + Machine depreciation cost.

LEVEL – 2:

The principal aim of TPM Level 2 is to reduce total product cost.

Total product cost = production cost + energy cost +distribution cost +development cost +sales cost+general administrative expenses, etc.

Total product cost includes all forms of cash outflow (money leaving the business).

LEVEL -3:

Special Award for TPM Achievement, is to 'generate profits by eliminating and preventing the constraints and losses that stand in the way of reducing total product cost'.

'whatever is made can be sold' to 'make only what can be sold'.

TPM IMPLEMENTATION ROAD MAP

No	Activity Description	MONTH – JAN. – DEC. 2018												MONTH – JAN.2019 – MAY 2019					
		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J
1	TPM Awareness Training Program to facilitators and operators / fiters.																		
2	Selection of critical machines in each area as Model machine.																		
3	Formation of teams in each area & Tentative TPM Target based on current status																		
4	TPM Structure / committee Formation																		
5	Training on Autonomous Maintenance, Kobetsu Kaizen pillars.																		
6	Implement Autonomous Maintenance Steps 1, 2 &3 in selected machines																		
7	Institute Continuous Education & Training																		
8	Auditing the steps JH Steps 1,2 & 3																		
9	Loss identification in each machine																		
10	Action plan to reduce current losses and increase OEE																		
11	Loss reduction activities Implementation process																		
12	Audit the loss reduction activities																		
13	Measuring and displaying the Autonomous maintenance activities and loss reduction activities results.																		
14	TPM KICK OFF CEREMONY																		

PLAN **In PROGRESS** **COMPLETED**

TPM IMPLEMENTATION ROAD MAP

No	Activity Description	MONTH – JAN. – DEC. 2018												MONTH–JAN.2019 – MAY 2019					
		J	F	M	A	M	J	J	A	S	O	N	D	J	F	M	A	M	J
15	Training on Planned Maintenance and Quality Maintenance pillars																		
16	Implementation of Planned Maintenance – Step-1 to 7.																		
17	Auditing the Planned Maintenance activities																		
18	Implementation of Quality Maintenance pillar																		
19	Auditing the Quality Maintenance activities																		
20	Training program on OTPM and SHE pillars																		
21	Auditing the OTPM and SHE pillar activities																		
22	Displaying / Communicating the TPM pillars achievements																		
23	Preparation of TPM procedures MANUAL for each pillar																		

PLAN **In PROGRESS** **COMPLETED**

PQCDSM RESULT

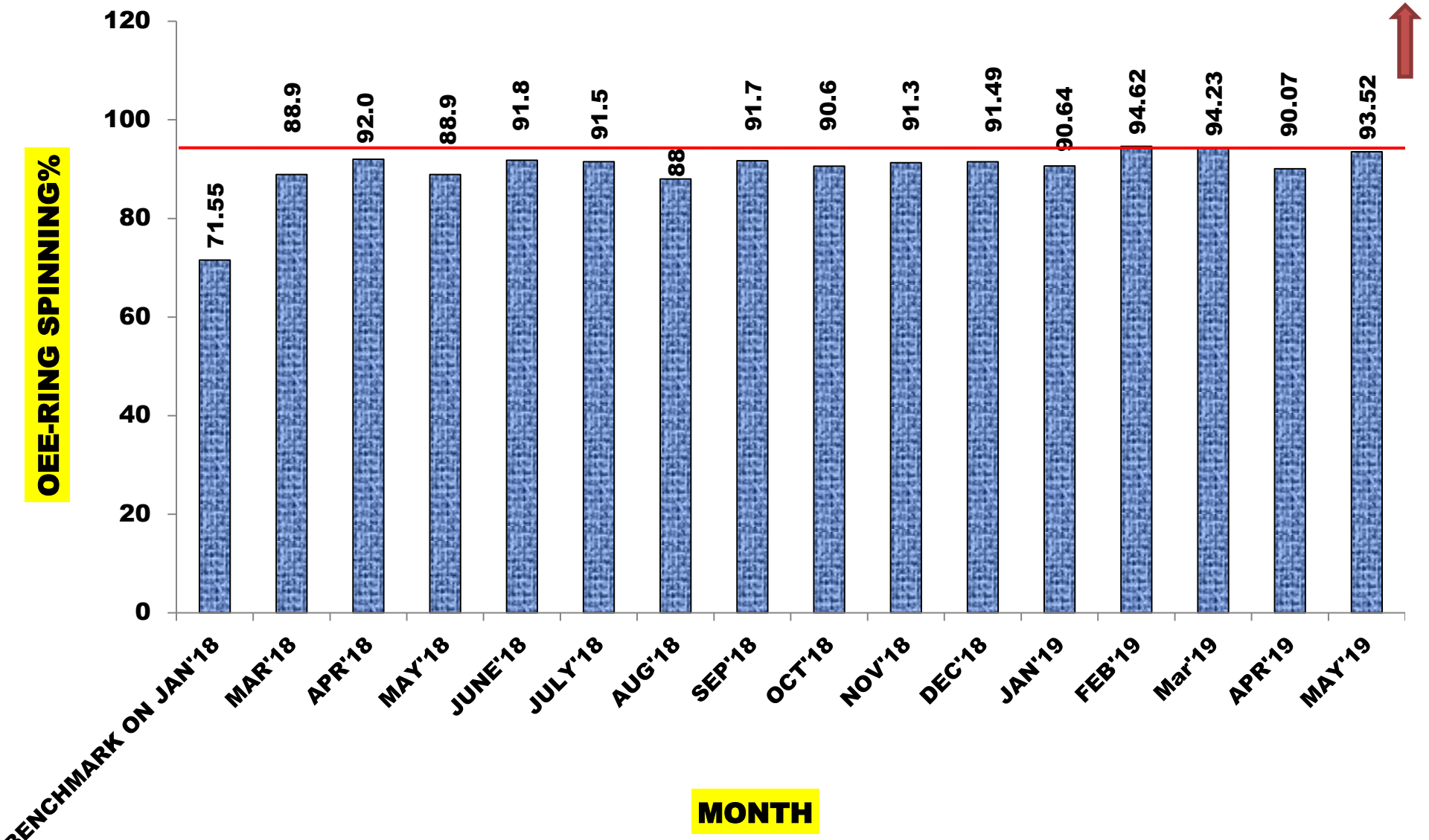
Category	Parameters	UOM	Benchmark On Jan'18	AVG (Feb'18 to Dec'18)	Target Dec'2018	Benchmark On DEC'18	Jan'19	Feb'19	Mar'19	Apr'19	May'19	Target Dec'19	Source
P	OEE – Ring Spinning	Avg / Month	83.50%	90.48	92.0%	90.48	90.64	94.62	94.23	90.07	93.52	95.0 %	ERP
	OEE – OE Spinning	Avg / Month	70.80%	84.83	85.0%	84.83	92.31	93.56	77.32	80.40	80.23	95.0%	ERP
	GPS Index	Gms/spl/ shift	97.55	99.26	100	99.26	101.3	102.5	101.9	101.7	101.3	100	ERP
	Spinning Breakdown	% per annum	0.15%	0.03	0.10%	0.03	0.05	0.05	0.08	0.01	0.01	0.05	ERP
	Spg Waste%	Avg / Day in %	1.20%	1.07	0.90%	1.07	1.35	1.23	1.29	0.99	0.93	0.85	ERP
	Prep.Soft Waste %	Avg / Day in %	4.50%	2.49	2.0%	2.49	1.65	2.02	2.1	2.2	2.0	1.8	ERP
Q	Customer complaint	Nos / Month	1	1	0	0	1	0	0	0	1	0	MAIL
	Alarm Cops	Avg / Day in %	1.70%	1.9	1.6	2.17	1.52	1.47	1.81	1.89	1.71	1.50	CONE EXPERT
C	Spg. Utilization	% / Month	94.39%	95.11%	98.50%	95.11%	97.1%	96.9%	96.8%	97.1%	96.6% 😭	98.5%	ERP
	HOK Upto Spinning	Nos/ Month	15.8	16.71	15	16.71	17.09	17.13	17.10	17.19	15.90	15	ERP

PQCDSM RESULT

CATEGORY	PARAMETERS	UOM	Benchmark On Jan'18	AVG (Feb'18 to Dec'18)	Target Dec' 2018	Benchmark On DEC'18	Jan'19	Feb'19	Mar'19	Apr'19	May'19	Target Dec'19	Source
D	On time delivery	%	50%	67%	95%	67%	75%	80%	85%	90%	90%	95%	SYSTEM
S	Accidents (Minor)	Nos / Annum	4	8	0	8	0	1	1	1	1	0	SYSTEM
	Near Miss Report	Nos / Annum	-	42	500	42	10	20	10	10	10	500	SYSTEM
M	Kaizen Implemented	Nos/ Month	0	132	100	132	14	18	24	12	11	100	SYSTEM
	Suggestion Received	Nos/ Month	250	664	300	664	70	36	70	20	20	300	SYSTEM
	Poke-yoke Implementation	Nos/ Month	-	3	15	3	0	1	2	1	0	15	SYSTEM

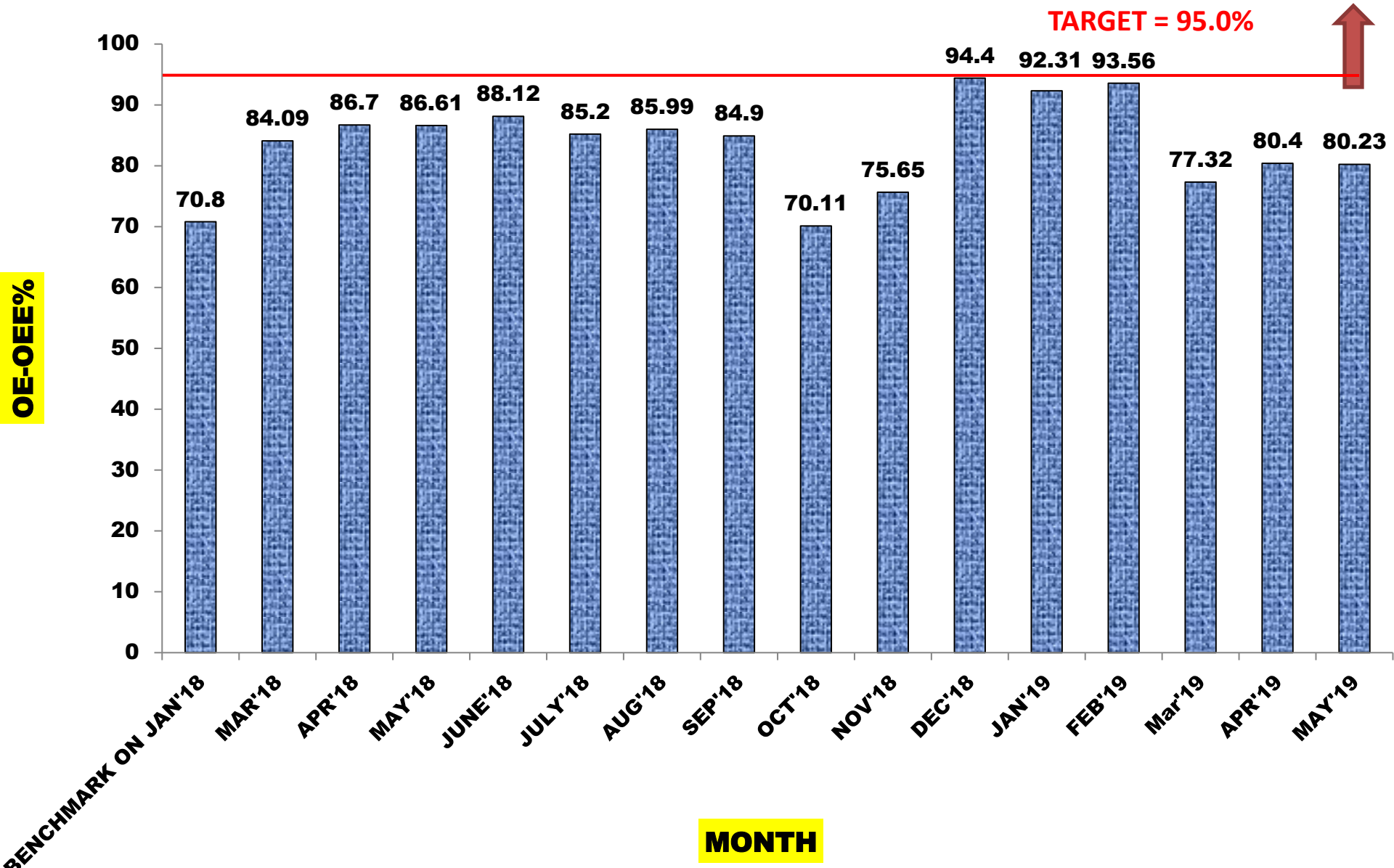
P-PRODUCTIVITY

OEE % – OVERALL EQUIPMENT EFFECTIVENESS FOR RING SPINNING



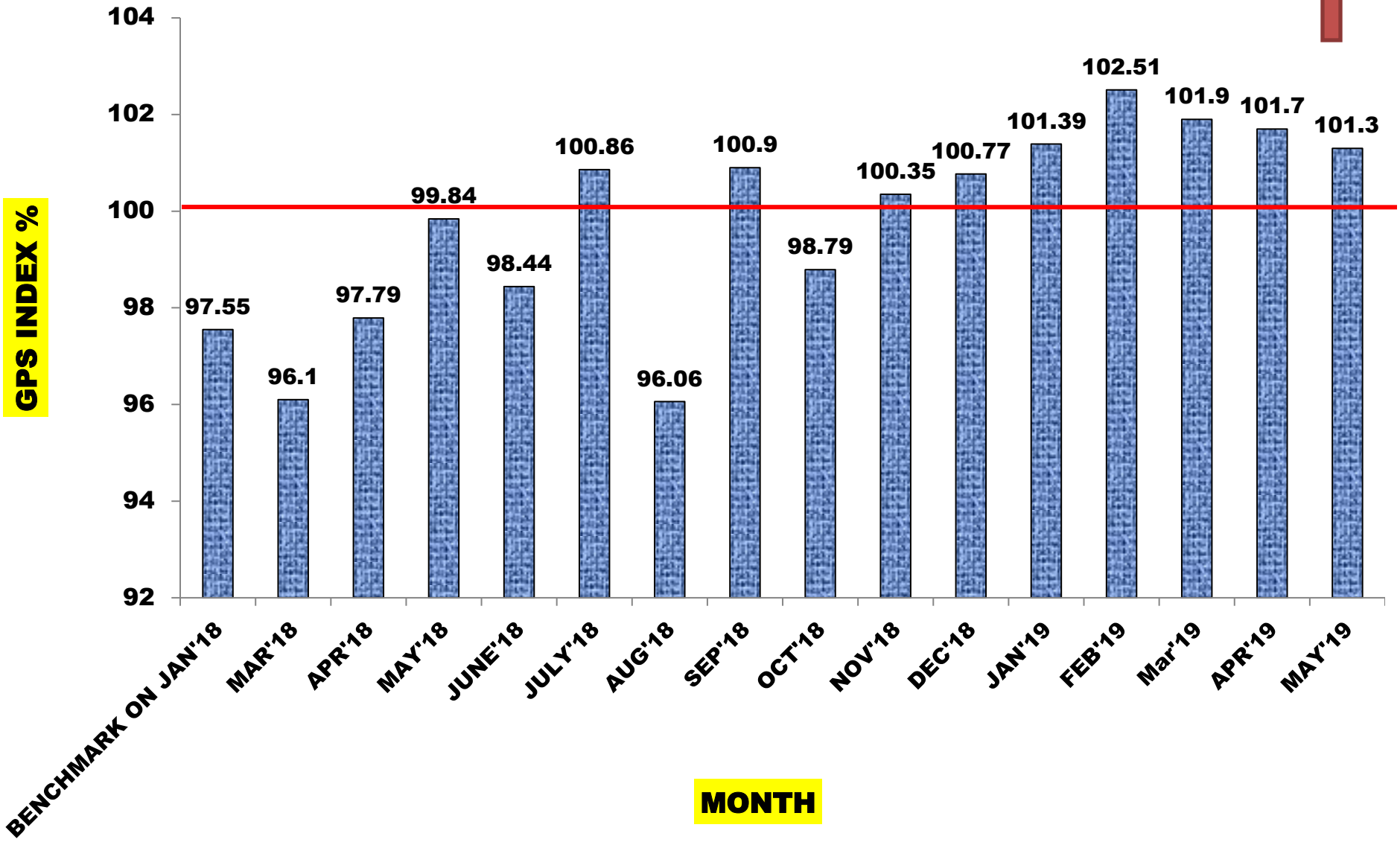
P-PRODUCTIVITY

OEE % – OVERALL EQUIPMENT EFFECTIVENESS FOR OE SPINNING



P-PRODUCTIVITY

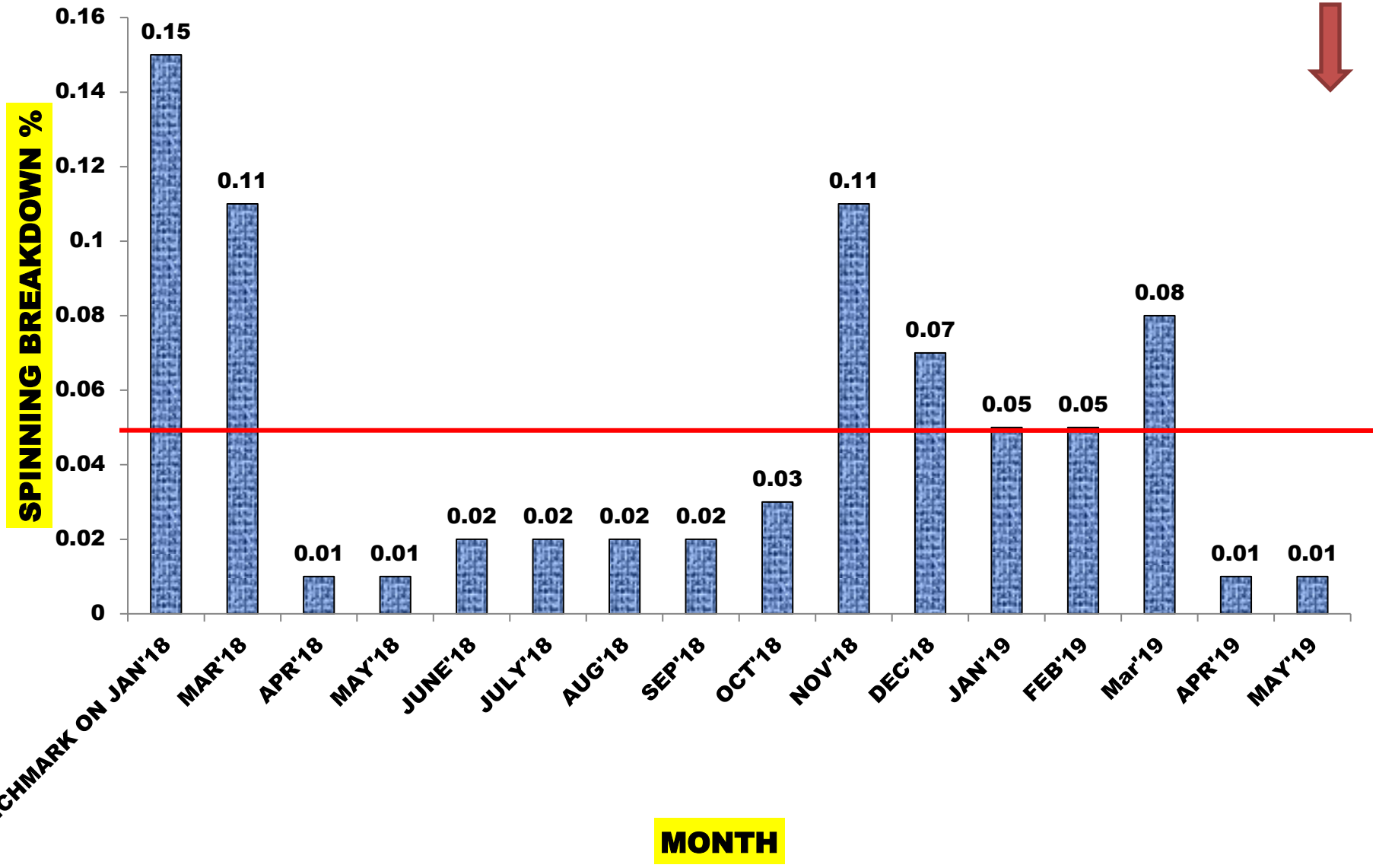
GPS INDEX



P-PRODUCTIVITY

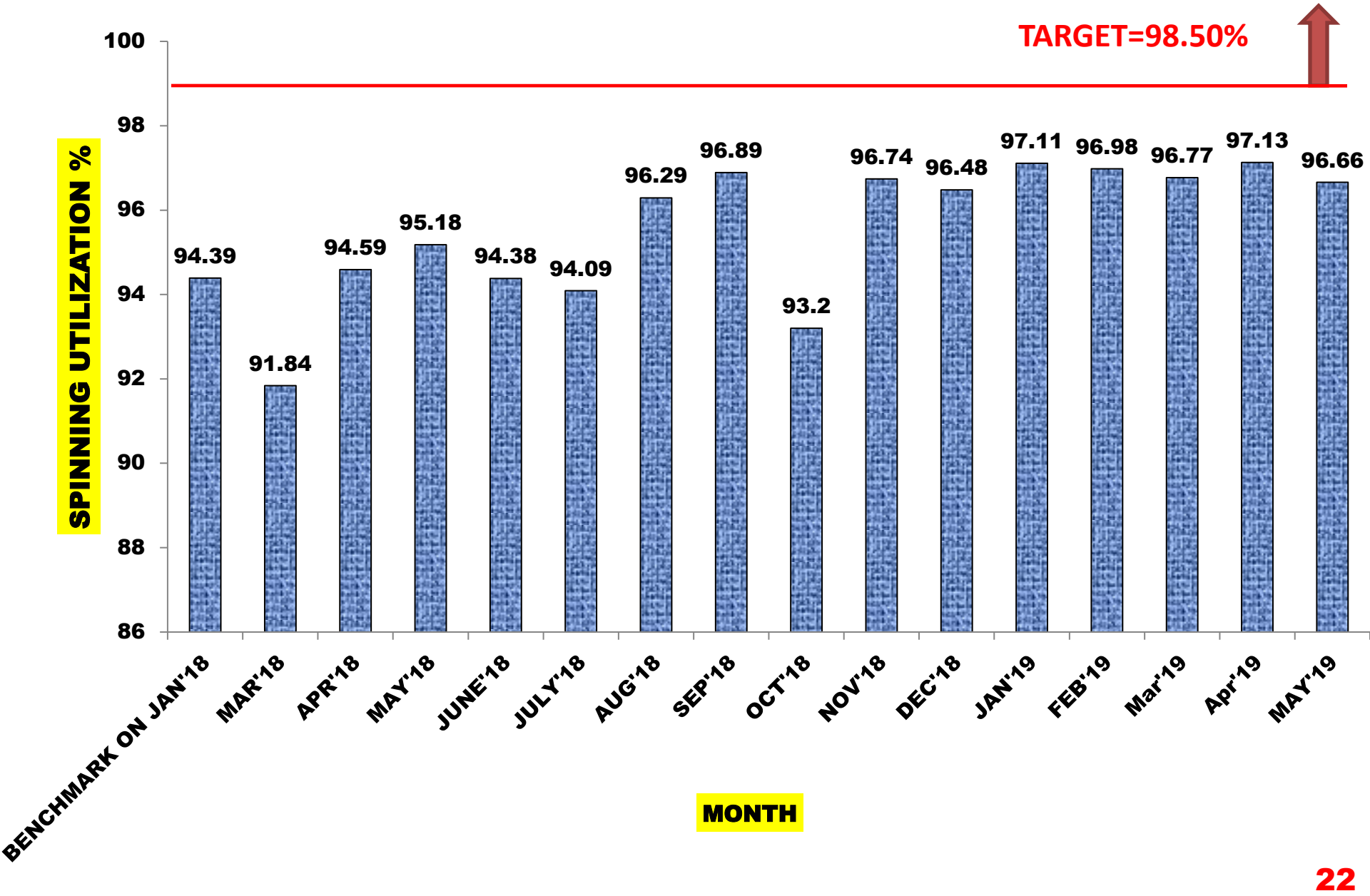
SPINNING BREAKDOWN %

TARGET=0.05



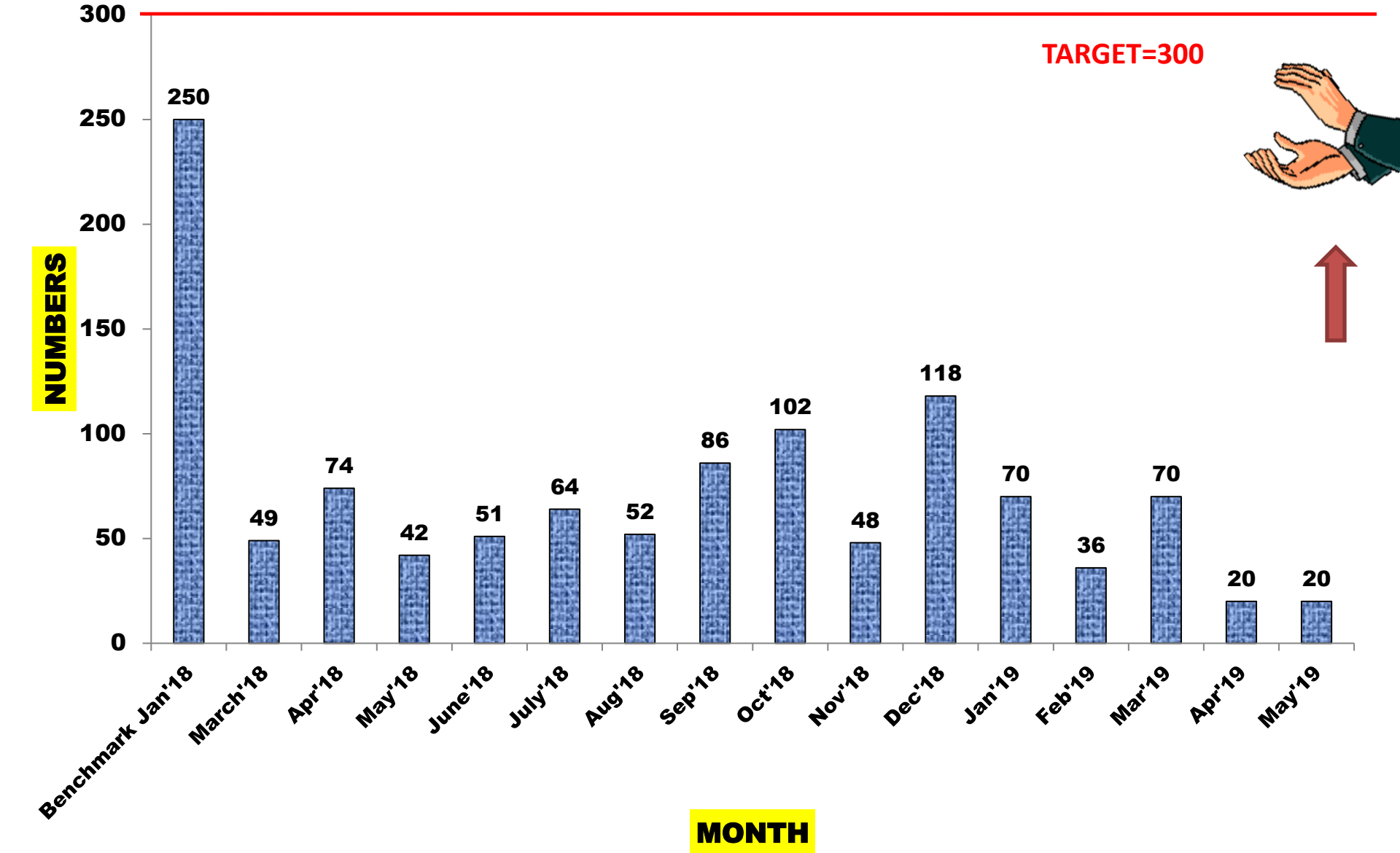
P-PRODUCTIVITY

SPINNING UTILIZATION %

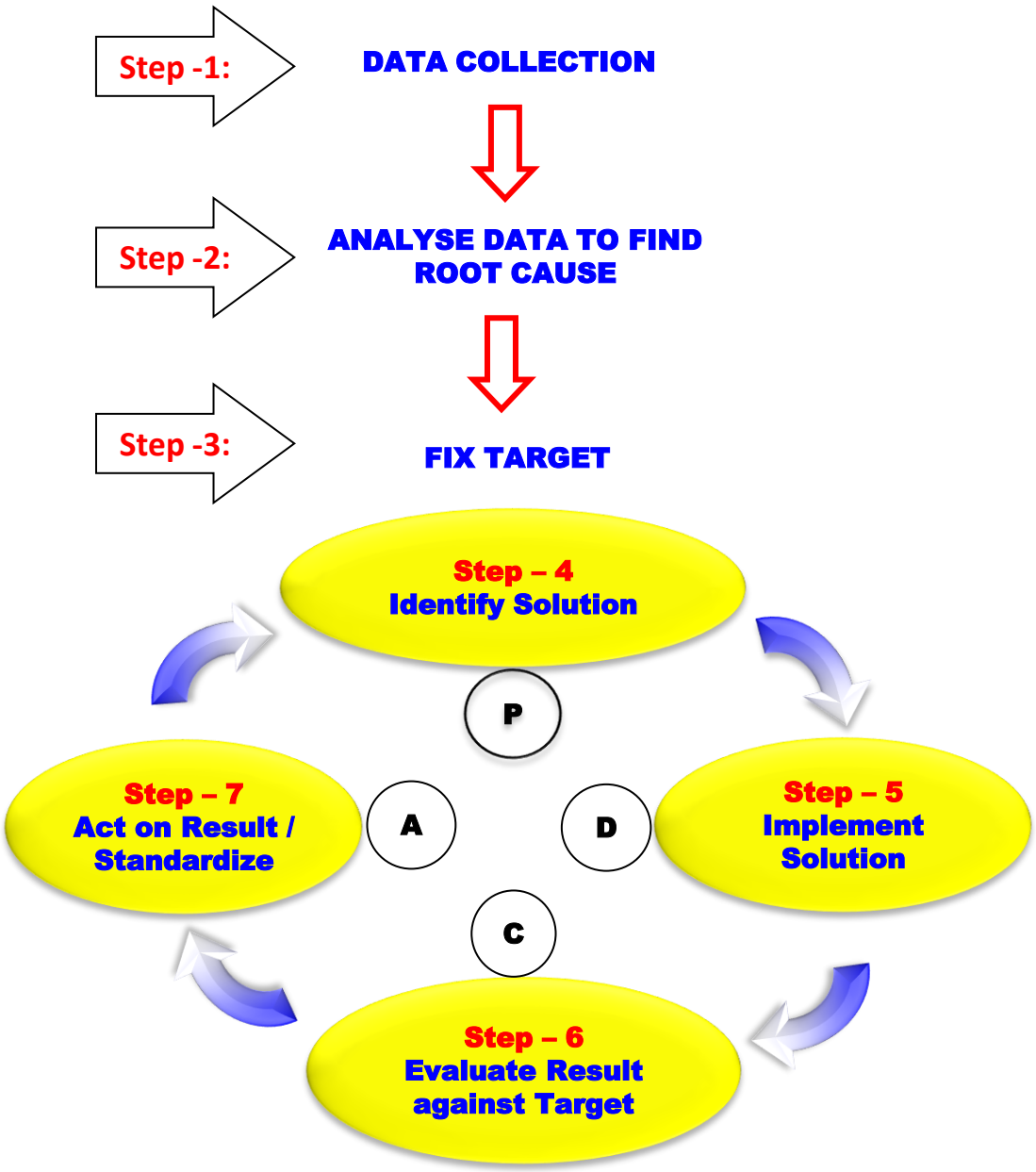


M-MORALITY

SUGGESTIONS



METHODOLOGY (PDCA Approach)



VALUABLE COST SAVING KAIZENS

COST SAVING / INNOVATIVE KAIZEN

1S	2S	3S	4S	5S

P	Q	C	S	M

ZONE : COMBER

DATE : 20/04/2022

PROBLEM : In comber U tube suction is less when running 100 % indian cotton due to higher noil % is extraction due to lower capacity of waste collection system.

ACTION TAKEN : Instead of purchasing new waste collection system to solve the problem, high speed motor is changed in the waste collection system to delivered the collected noil quickly to maintain the suction in the machine

BENEFITS : **Cost savings of Rs 9.5 Lakhs**

COST SAVING KAIZEN

1S	2S	3S	4S	5S

P	Q	C	S	M

ZONE : CARDING

DATE : 20/02/2022

BEFORE

AFTER

PROBLEM: separate 0.5 HP Motor is used for doffer stripping roller drive

suggestion: Motor can be removed and drive is given from licker in

BENEFITS :

Elecrical power savings : 0.5 units per hour per cards

No of cards implemented : 10 Nos

Total units savings per month : 3000 units @ Rs 7.6 / unit (Rs 22800 per month)

Total savings upto April 2023 = 3.0 Lakh

COST SAVING / INNOVATIVE KAIZEN

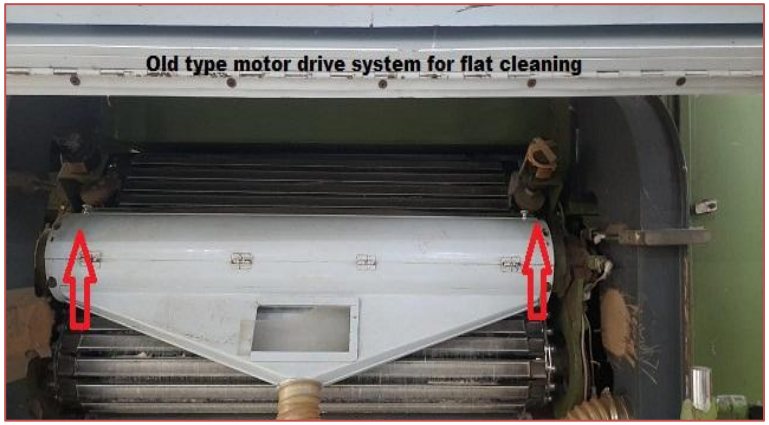
1S	2S	3S	4S	5S

P	Q	C	S	M

ZONE : CARDING

DATE : 20/02/2022

BEFORE



AFTER

PROBLEM: more micro dust accumulated in the flat zone due to frequent failure of drive motor Flat setting open during running which inturn inconsistent yarn quality

suggestion: replacing of motor drive tomechanical drive system

BENEFITS :

No micro dust accumulation in flat area.

Consistent in yarn quality

PRESENTATION OF ALL PILLAR CONSOLIDATION

PILLARS	DESCRIPTION	Total Nos. from Feb'18 to Dec'18	Total Nos. on Jan'19	Total Nos. on Feb'19	Total Nos. on Mar'19	Total Nos. on Apr'19	Total Nos. on May'19	TOTAL
AM	Tags attached	655	47	35	25	37	43	842
	Tags Removed	655	47	35	25	37	43	842
QM	3M Analyze in QM Pillar	6	3	0	0	0	1	10
	POKA YOKE	3	2	1	2	1	-	9
AM,QM & SHE	No. of OPL	49	6	9	5	6	7	82
COMMON TO ALL PILLAR	No. of Kaizen	184	20	18	24	12	11	269
E & T	No. of Multiskill	89	1	12	16	-	-	118
	No. of Trainer	8	1	1	-	-	-	10
SHE	SHE Tags attached	95	20	10	8	10	8	151
	SHE Tags removed	95	20	10	8	10	4	147

NEXT MONTH – May'19 ACTION PLAN

S.NO	PILLAR	ACTIVITY	RESPONSIBLE PERSON	TARGET DATE
1	AM	Kaizen For Eliminate the Problem sources	ALL PILLAR TEAM	14.07.2019
2	ALL PILLAR	Kara – Kuri kaizen implementation	Circle Leader & Circle member	21.07.2019
3	KK	Loss cost matrix data collection through ERP	RGTD ERP TEAM	29.07.2019
4	PM	A5 Size board arrange to Evaluate the MTTR & MTBF	PM PILLAR TEAM	22.07.2019
5	SHE	Identify & Rectify the Unsafe Act & Unsafe condition	Pillar Leader & Circle Leader	31.07.2019
6	SHE	To Increase Green Belt area	Gardening Incharge	31.07.2019
7	E & T	Department wise types of Bolt and nuts display to be arrange	Pillar & Circle Leader	29.07.2019

THANK YOU