

KSA-TPM OJT Guidance



Best Practice and Highest Performance !

KSA 한국표준협회

TPM•Production Innovation Team

Plant Innovation by TPM

- **Make-up of environment for innovation**
- **Motivation for positive action of employees**
- **Improvement in corporate culture by TPM**

aMake-up of environment for innovation

- Motivation for positive action of employees

- In

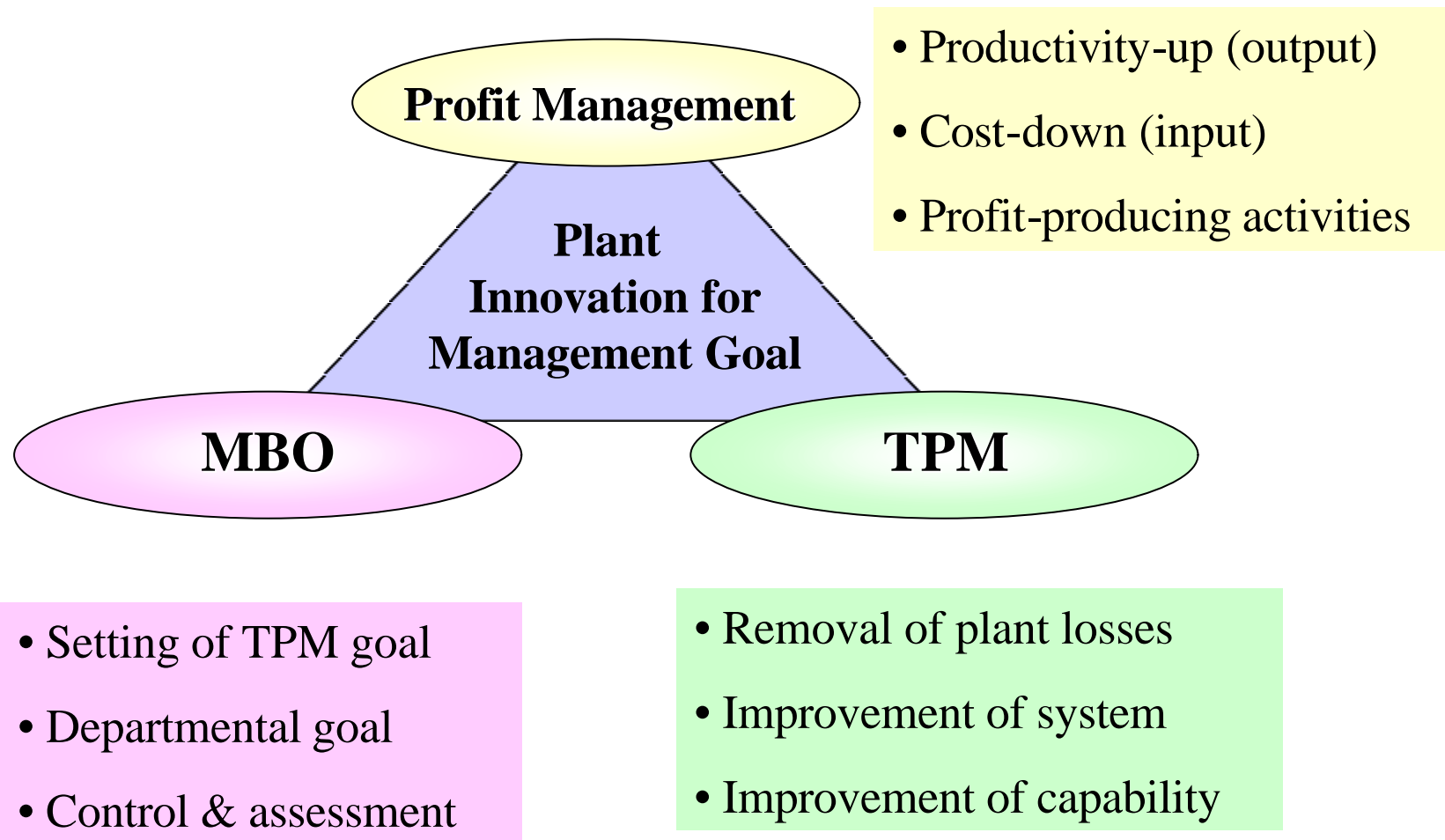
Innovation of equipment productivity

Visual change in overall production plant

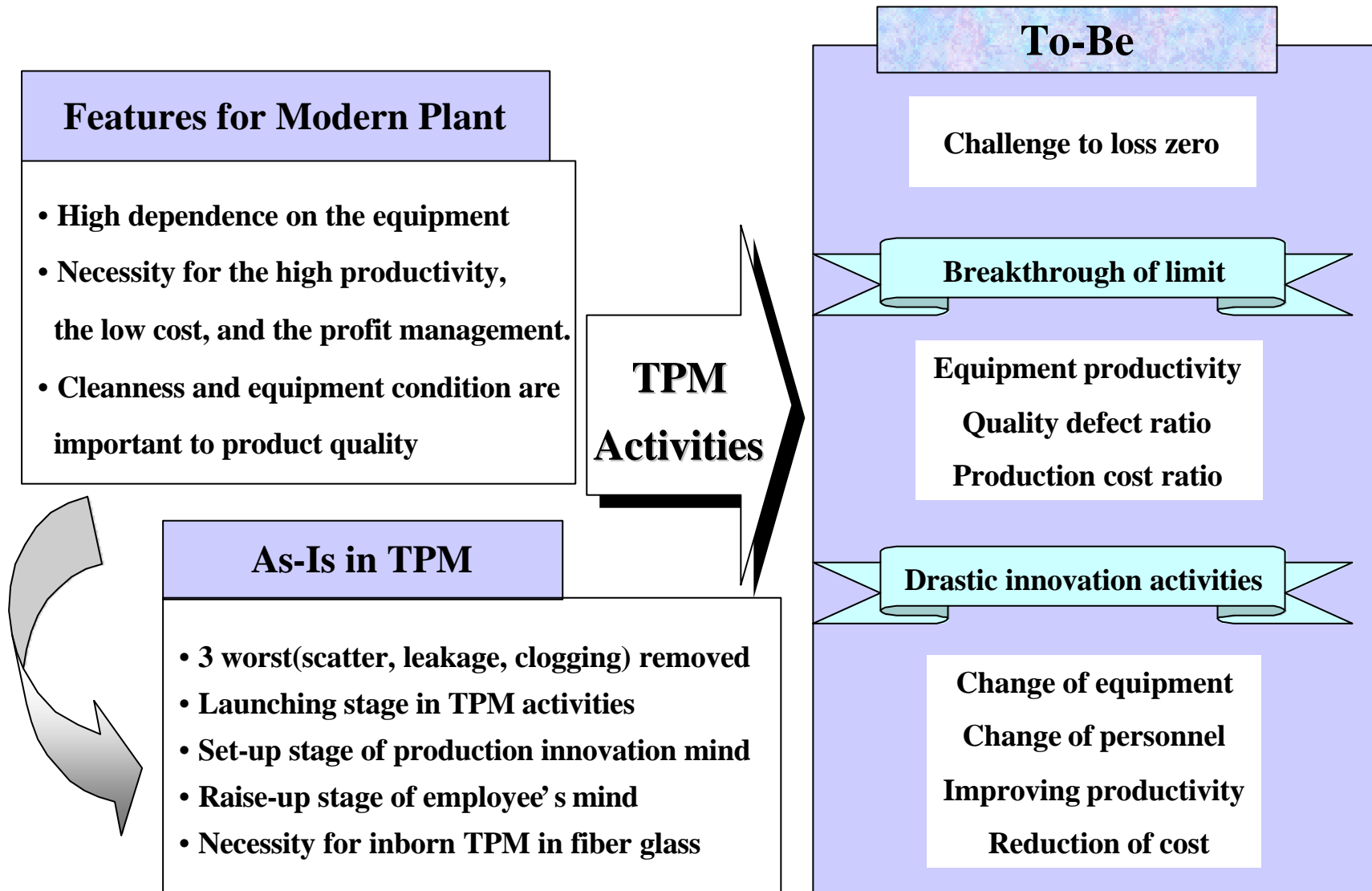
High efficiency of manufacturing manpower

Change in employee's innovation mind

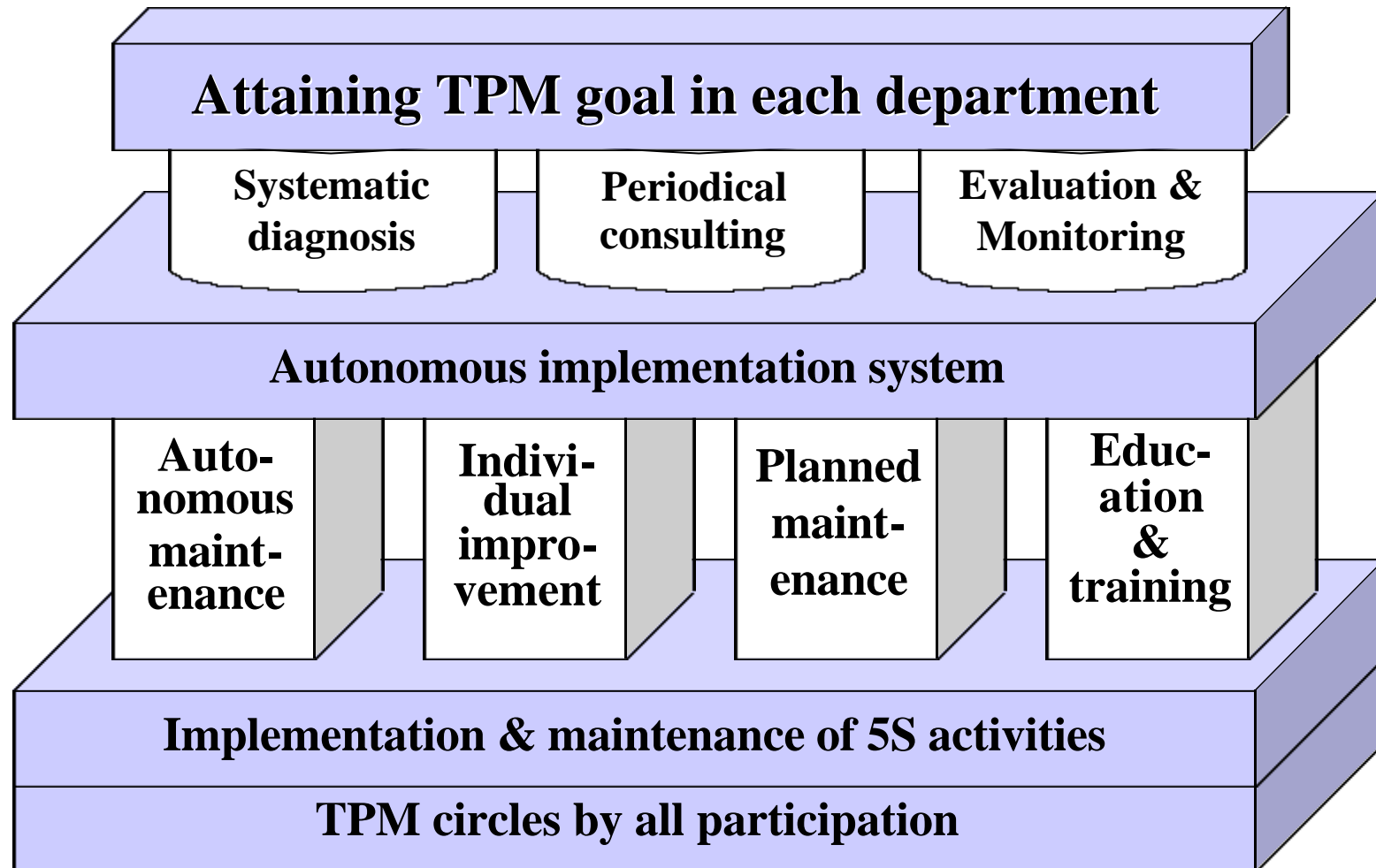
Correlation of Innovation Activities



Direction for Production Innovation



Sphere of TPM Activities



Direction of TPM Activities

Cost innovation

- Loss removal by individual improvement
- Improvement action for cost composition causes
- Improvement action for profit producing

Equipment innovation

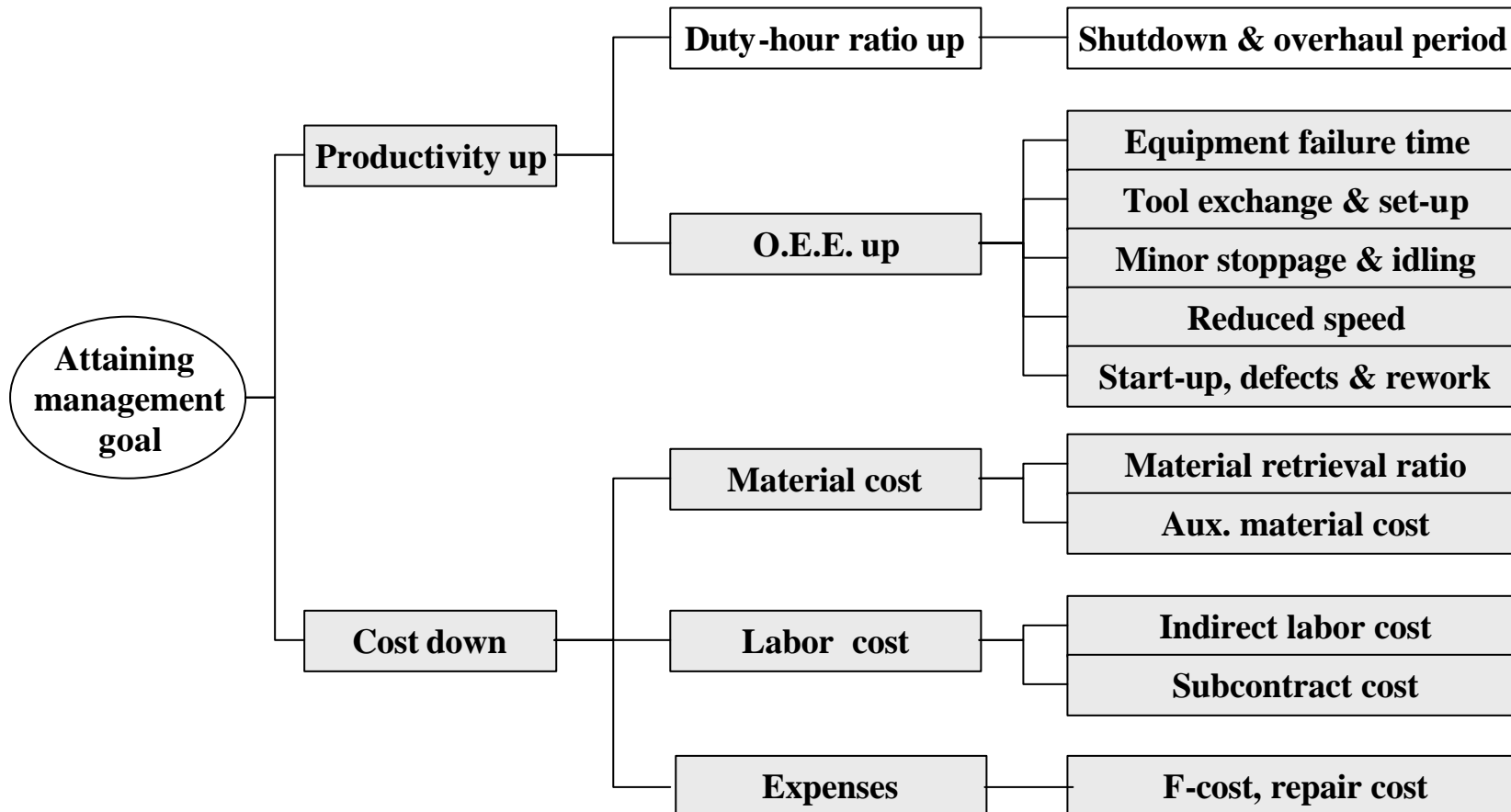
- Set-up of autonomous and planned maintenance
- Implementation for equipment clean-up
- Up-raise of output by increasing the availability and productivity.

Mind innovation

- Mind improvement by TPM education and training
- Improvement of standard implementing capability
- Autonomous competition for TPM implementation
- Periodical diagnosis, evaluation, and conference

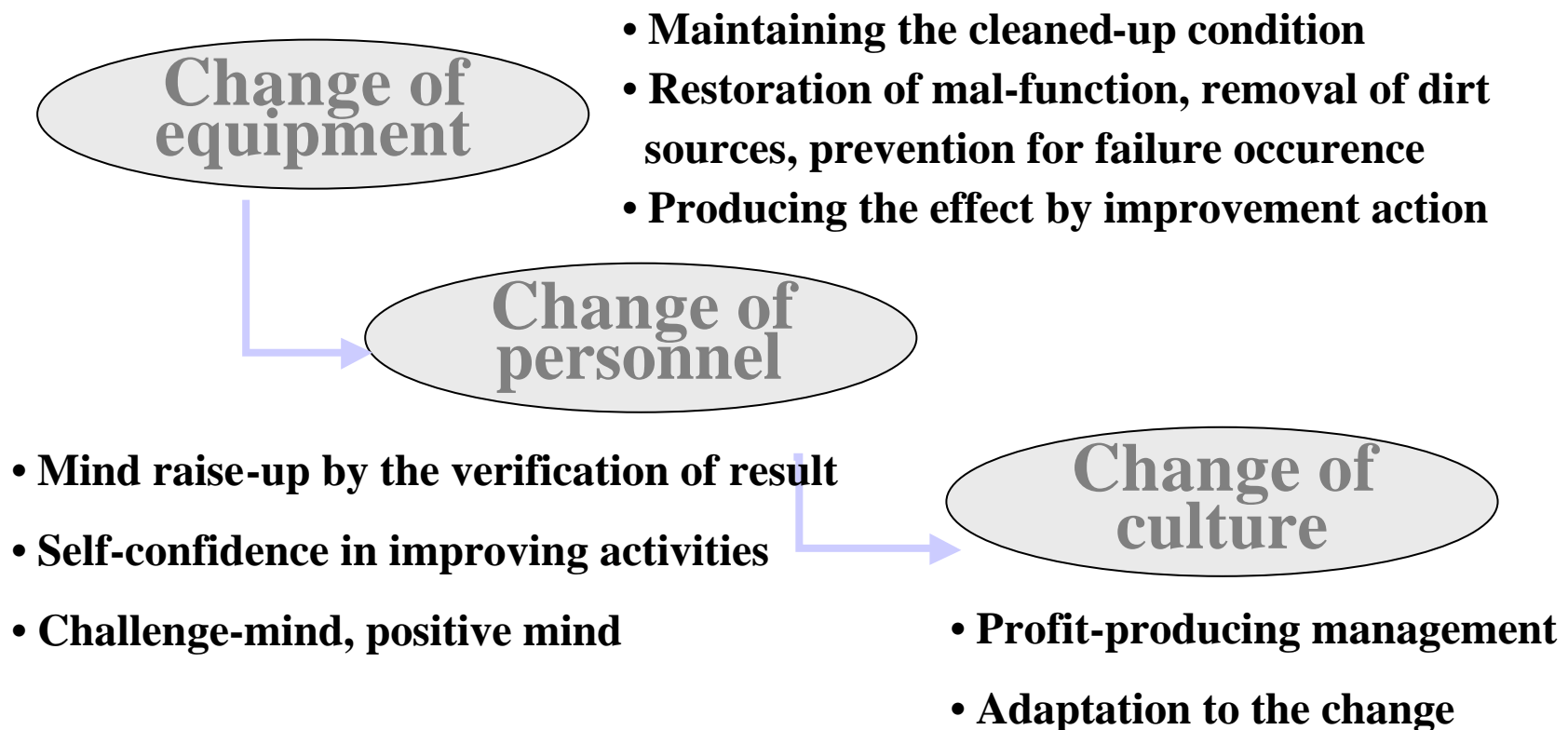
TPM Activities Direction for Increasing Profit

Not only TPM activities based on clean-up and environmental improvement but also TPM activities as a tool to attain the management goal, cost reduction, improvement of productivity, quality, and production control system are the main purposes.



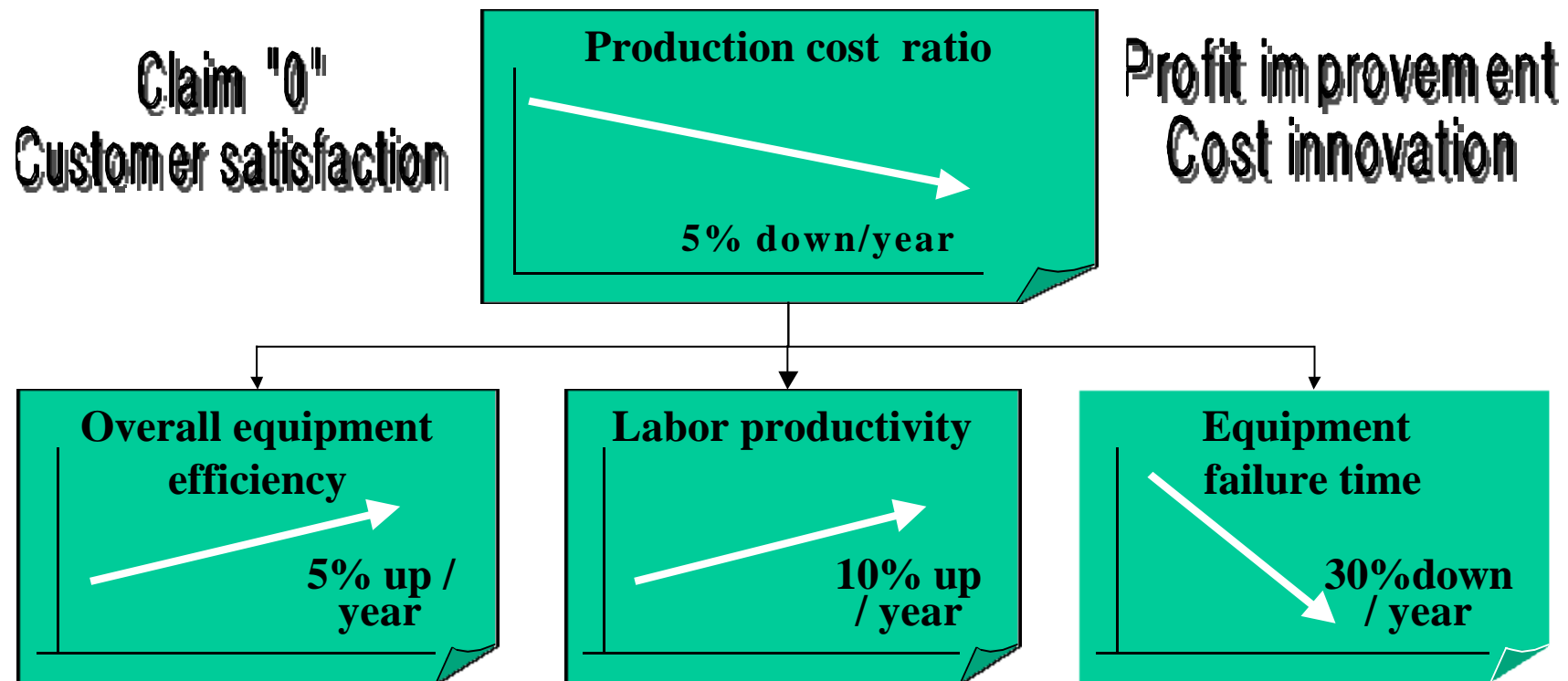
Purpose of TPM Activities

**Equipment changed, and then Personnel changed !
And finally Corporate culture improved !**



Goal of TPM Activities

For profit-producing TPM activities, TPM goal setting to be performed at the preparation stage before TPM kick-off. (Below bench-marking model showed)



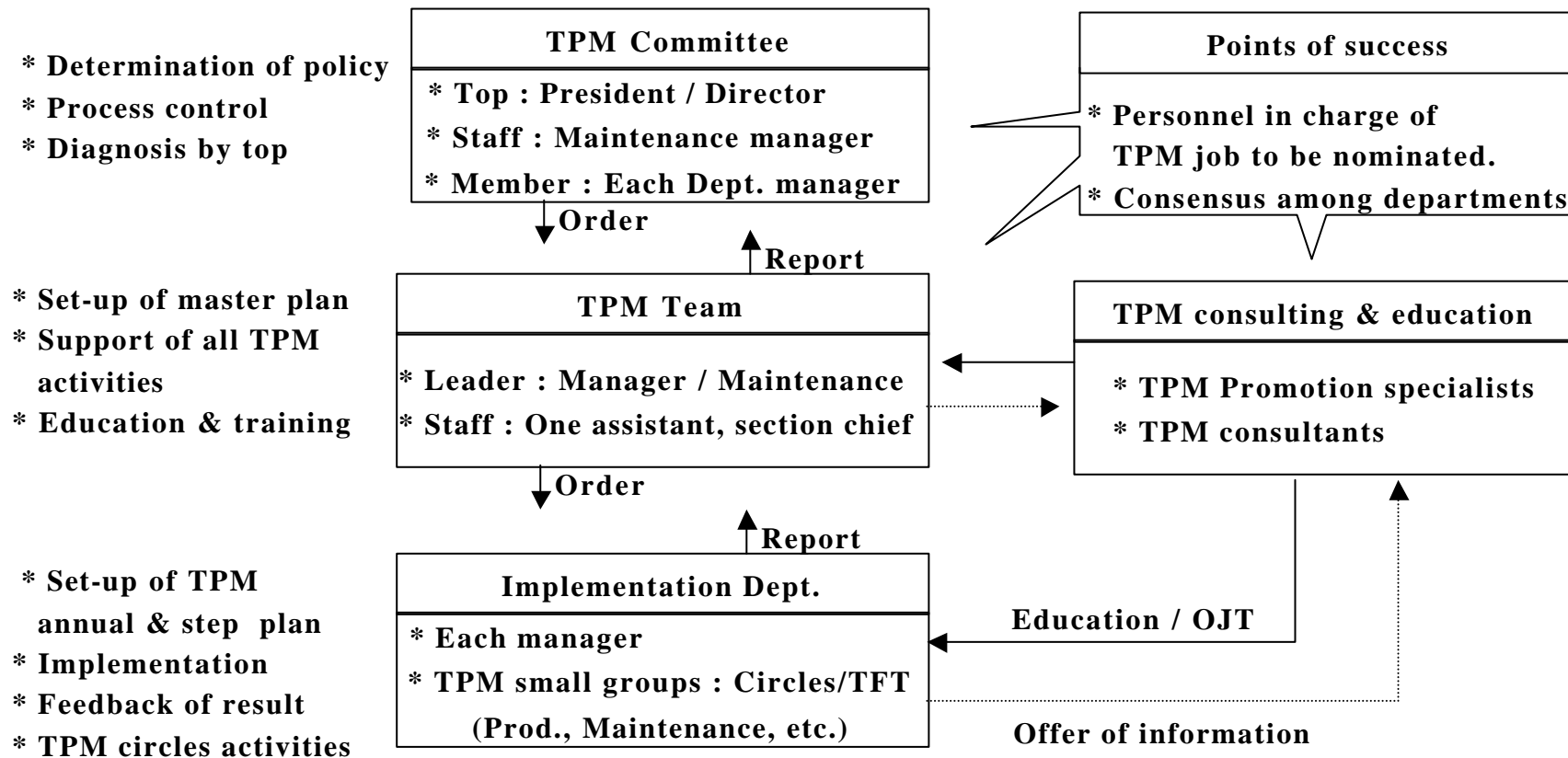
Progress of TPM Activities

Direction	Set-up of innovation base	Systematic approach of all activities					Consolidation and improvement	
TPM team	<ul style="list-style-type: none">• Preparation• Campaign• Organization• Workshop• Master plan• TPM manual• Goal setting• Kick-off• Mind education• 5S activities	Preparation for TPM initial sys Diagnosis and consulting			Assisting to all TPM activities / R & D for TPM activities Bench marking for excellent companies in TPM			
Autonomous maintenance		Initial clean-up	Problem sources removal	Tentative standard	General inspection	Process inspection	Autonomous Maint. system	Autonomous control
Individual improvement		Countermeasures for losses and supporting the activities for autonomous maintenance				Removal activities for minor losses such as failure, quality defects, and process losses, etc.		
Planned maintenance		Equipment evaluation Present status grasping		Deterioration restored Weakness improvement		Maint. information sys Periodical maint. system		Predictive M. system Evaluation PM system
Education & training		TPM elementary course TPM manual/Maintenance text			TPM practice course General inspection manual		TPM application course Equipment manual for each process	
Initial control		Preparation of MP manual Systemization of MP information			MP design activities & initial control for model project		MP design activities & initial control for all projects	
Quality maintenance		Removal of problem sources causing the quality defects			Removal of quality defects loss and minor problems		Quality maintenance for quality defect-zero	
TPM in office		5S activities in office			Document filing sys. Facility in charge cleaned		Activities for job efficiency Cost down activities	

Organization of TPM Activities

TPM to be implemented after set-up of organization based on all member's participation and consensus, identification of departmental duties, responsibilities and roles.

TPM organization and role



Education for the Departmental TPM Staffs

OJT Consulting and education will be followed to the key men to perform TPM activities in each department and the TPM staffs to lead the company-wide TPM.

Contents

- * The ability for setting-up of TPM implementation plan and program.
- * The checking ability for the TPM performance.
- * The setting-up ability for the problem-solving and countermeasures.
- * The ability to diagnose the completion of step activities.
- * The ability to educate and to train the departmental TPM activities.

Related person

- * The company-wide leading TPM staffs and the departmental TPM staffs

Interval

- * One time per a month, for 2 or 3 hours.

Method

- * Periodical analysis of TPM activities, education and discussion.



Key Points for the Major TPM Fields

Division	Purpose	Key points of TPM activities
Autonomous maintenance	<ul style="list-style-type: none"> * My machine & area * Observance of equipment condition (Cleaning, oiling, retightening) 	<ul style="list-style-type: none"> * Sequential activities with step-by-step autonomous maintenance. * Motivation to the my area and my machine spirit. * 0ST(Preparation and 5S activities), 1ST(Initial cleaning), 2ST(Countermeasures for the sources of problem), 3ST(Preparation of tentative cleaning, oiling and inspection standard), 4ST(General inspection), 5ST(Process inspection), 6ST(Autonomous maintenance system), 7ST(Autonomous control). * Preliminary education and training for step implementation manual.
Individual Improvement & Cost Reduction	<ul style="list-style-type: none"> * Upraising of overall equipment efficiency by removing the 6 major equipment losses * Reduction of production cost ratio 	<ul style="list-style-type: none"> * Countermeasures for the causes of dirt equipment and the hardness to clean (1 ~ 3 step), removal of hidden losses(4 step and after). * Activities for attaining TPM goal by loss reduction. * Activation of small group activities such as TPM circles, TFT. * Scientific analysis and drastic removal of trouble-causing sources. * TPM small group activities to reduce the production cost. * Cost reduction activities in accordance with individual improvement techniques.
Quality maintenance	<ul style="list-style-type: none"> * Setting and control of equipment condition not to cause the various defects 	<ul style="list-style-type: none"> * Phase 1 : Countermeasures for the causes of quality-defects. * Phase 2 : Small group activities to reduce the defect losses. * Phase 3 : Quality maintenance activities to attain the zero-defect by PM and know-why analysis.

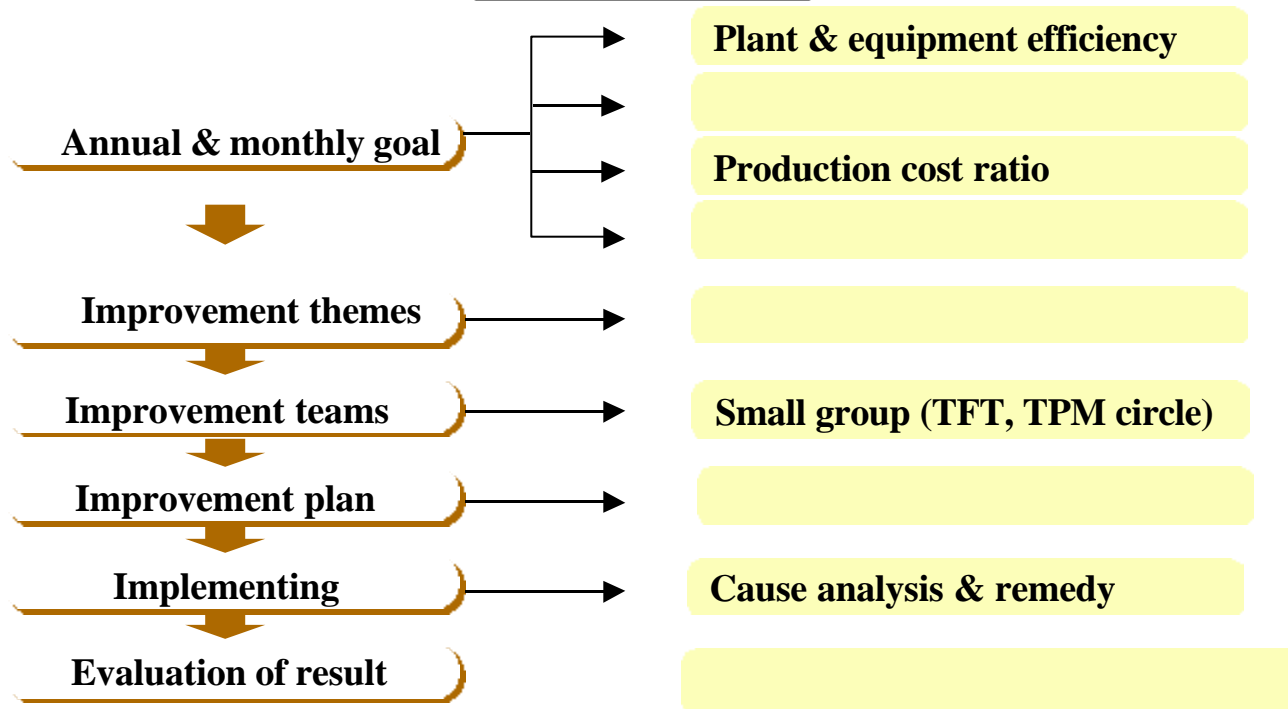
Division	Purpose	Key points of TPM activities
Planned maintenance	Availability raise-up by technical periodical maintenance and predictive maintenance	<ul style="list-style-type: none"> * Activities with step-by-step planned maintenance(from 1 to 6 step). * Major contents ; Goal-setting of technical maintenance, equipment rank, failure rank, maintenance record, drawing revision, supporting of autonomous maintenance, maintenance standardization, maintenance interval and TBM, maintenance information system, materials, lubricating, tools, precision, maintenance budget, CBM, and the availability improvement. * Reduction activities of failures and troubles. * Check and maintenance system for the optimistic equipment condition . * Timely maintenance and repair of B grade assembly and equipment t.
Education & training	Improvement of TPM mind and maintenance skill	<ul style="list-style-type: none"> * Education and training for TPM activities know-how (managers, key men, leaders, workmen in sequence). * Maintenance techniques(fundamental elements, general inspection of equipment, all sorts of equipment in charge). * Study by one point lesson(OPL) sheet. * Multi-skill education for operators and maintenance men.
MP design & Initial control	Practical MP design for new plant and equipment	<ul style="list-style-type: none"> * Decision for investment priority by economic engineering analysis. * Set-up of initial control system for MP information, MP design standard, debugging system from import to trial test of equipment.
TPM in office	Improvement in office productivity and office environment	<ul style="list-style-type: none"> * Simplification of job processing sequence and method, realization of creative office. * 5S in office, filing system, raise-up of office efficiency, set-up of TPM-related standard.

Performance and Output Control System in TPM

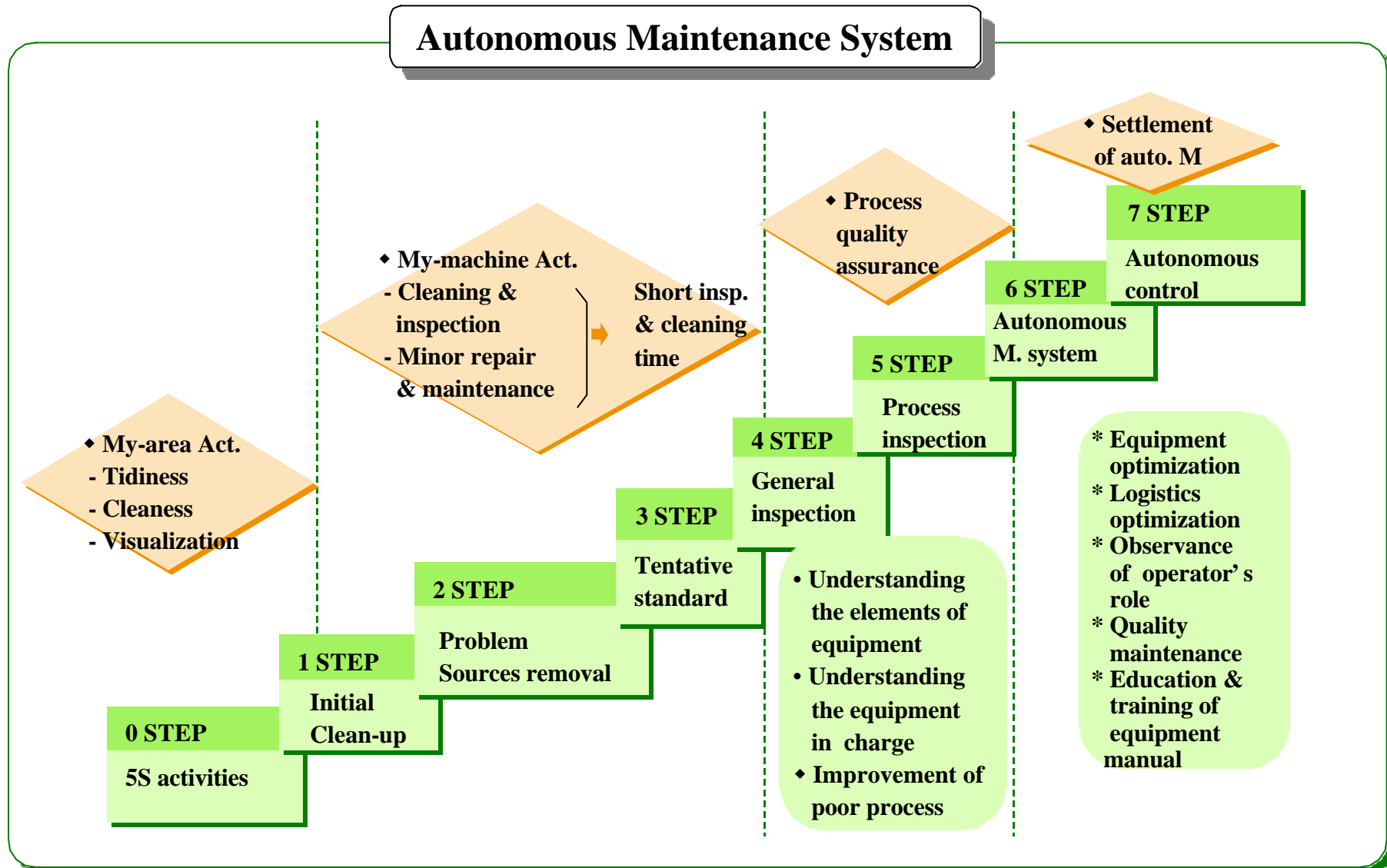
Purpose

To attain the annual management goal, departmental and stratified goals to be settled and to be evaluated periodically - monthly and quarterly . TPM activities are performed as the method or tool of the management goal attaining .

System

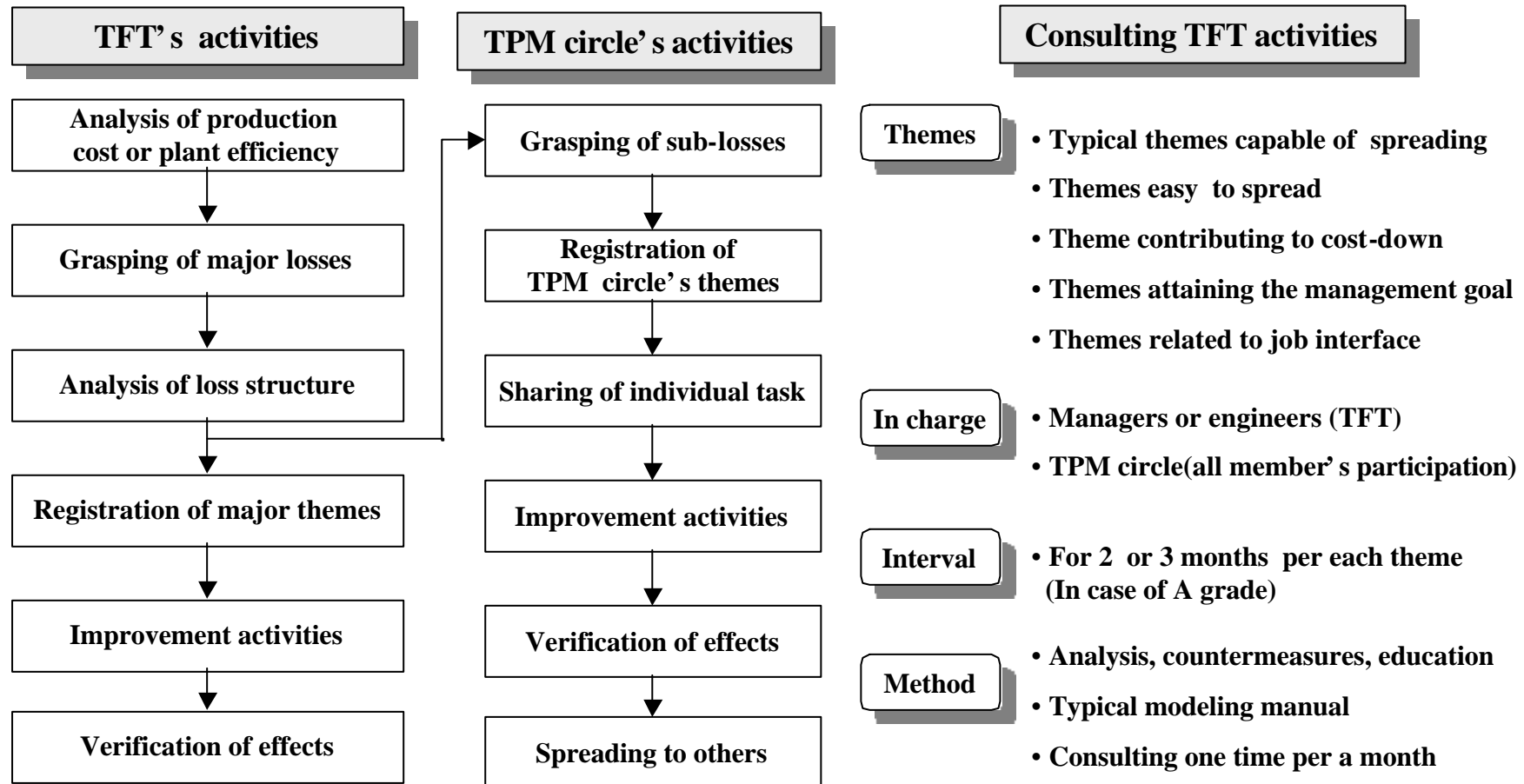


Activities for Autonomous Maintenance

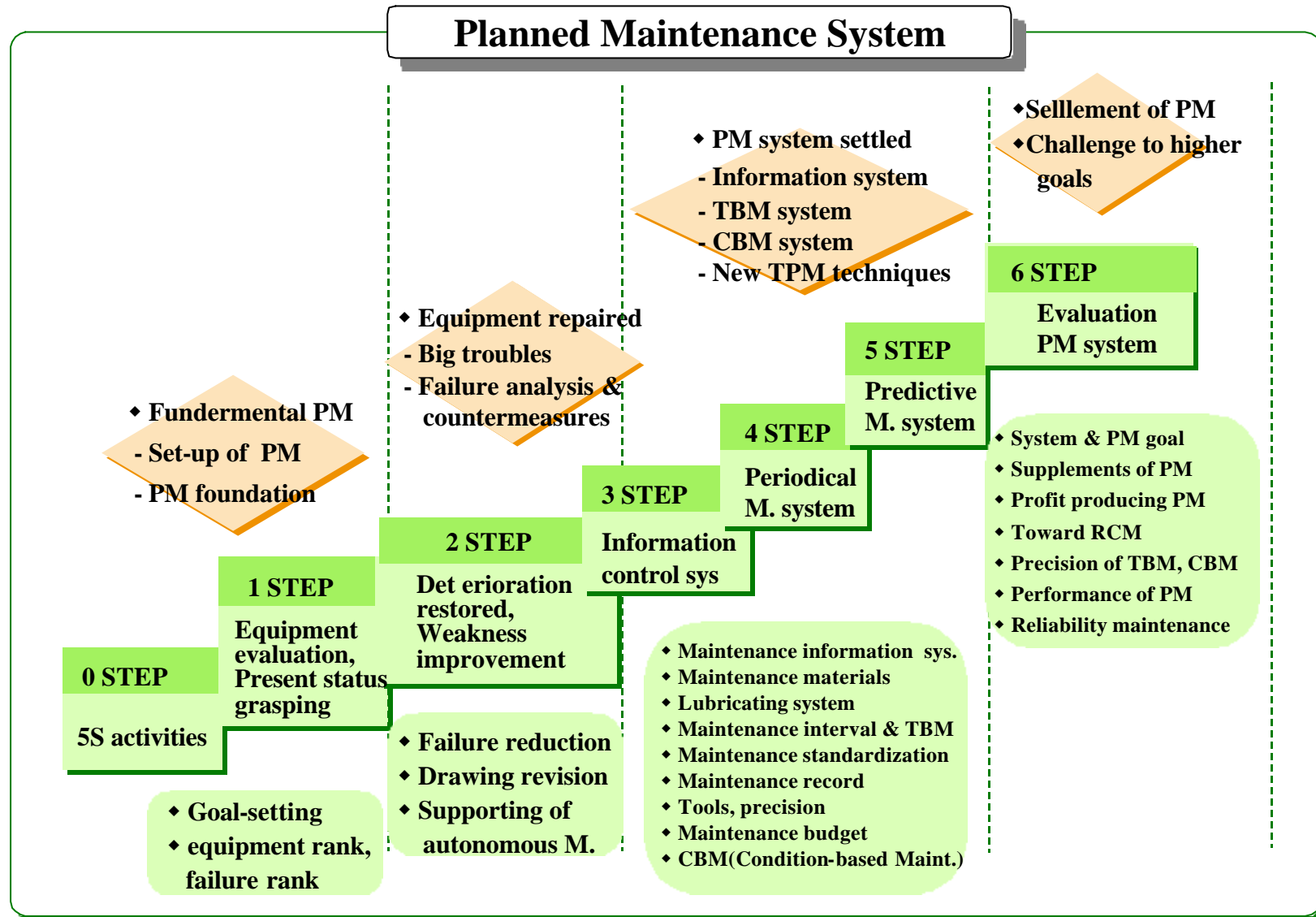


Activities for Individual Improvement

Individual improvement to be performed by TPM small group(TFT, TPM circle) to attain the management goal such as production cost ratio, labor productivity after the loss analysis of production cost and plant efficiency.

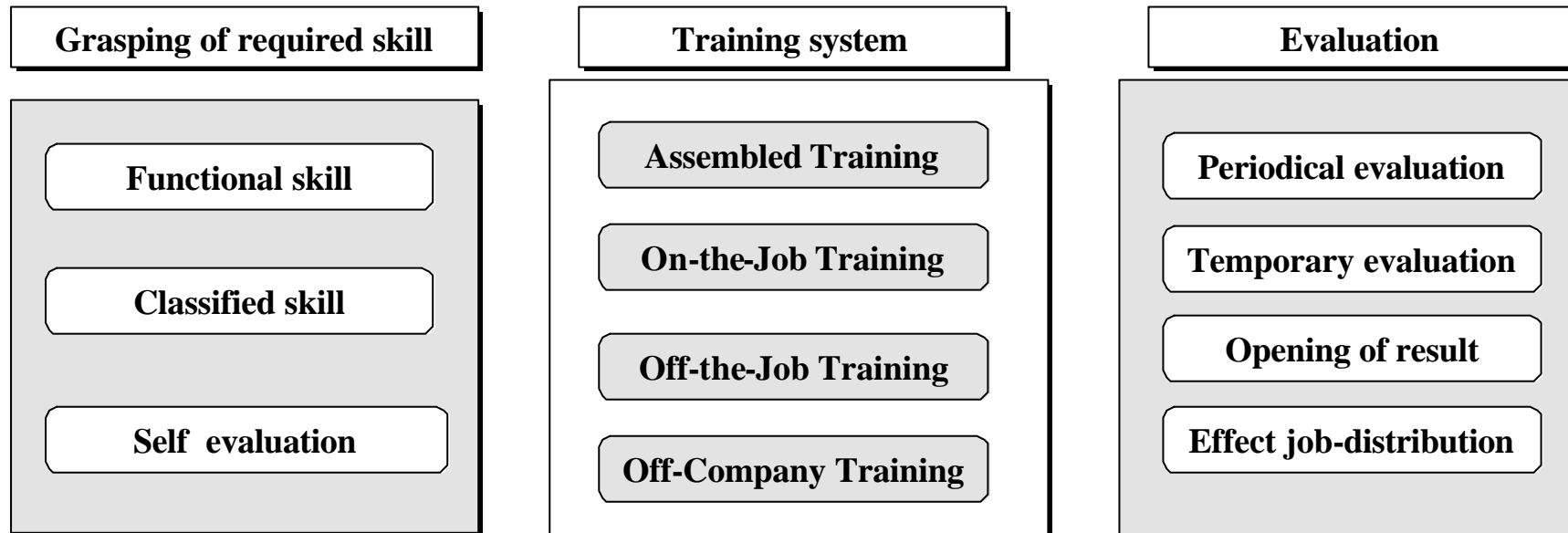


Activities for Planned Maintenance



Activities for Skill-up Education and Training

Essential and fundamental education and training for mechanical element, driving and transmission, lubricating, hydraulic and pneumatic, electric and instrument to be performed to prevent the frequent and major troubles.



Description	PHASE I	PHASE II	PHASE III	PHASE IV
Operator	Fundamental	Elementary	Intermediate	Superior
Maint. men	Fundamental	Elementary	Intermediate	Superior

KSA-TPM OJT Supporting Scheme

The purpose of TPM OJT supporting by KSA

To attain failure-zero, defect-zero, accident-zero effectively by the rapid settlement of TPM system and the activation of TPM activities through OJT and education in the problem-solving techniques periodically.

The necessity of TPM OJT supporting by KSA

Bringing-up of the effective problem-solving abilities

- * The lack of manpower to study TPM techniques to be released.**
- * The TPM duration by preventing the trial and error to be reduced.**
- * The communication problem between bottom and top to be released.**

The active stimulus to the workers and foremen to be offered periodically.

The opportunity to learn the TPM know-how and TPM techniques to be offered.

The sphere of TPM OJT supporting by KSA

The all parts of TPM system.

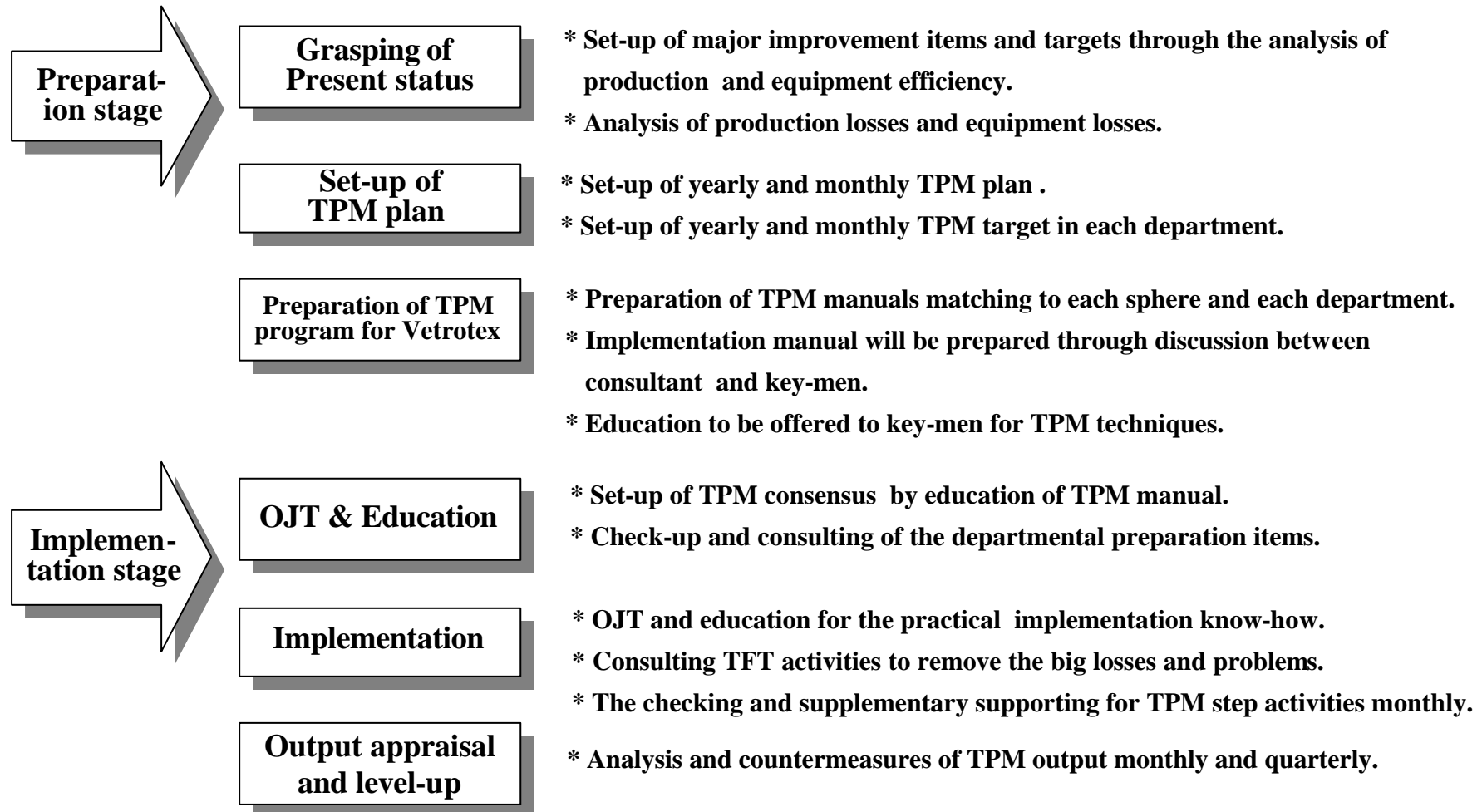
- * All parts of TPM system such as planning, use, technical maintenance, and support fields of equipment.**

The production and facility innovation techniques

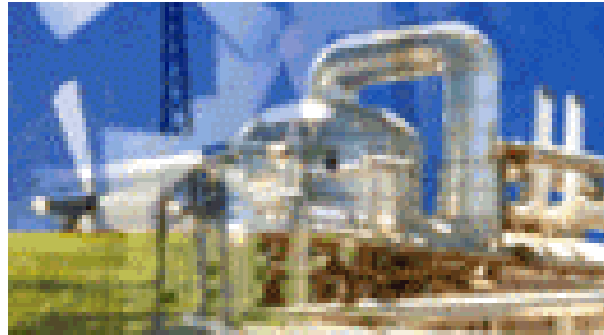
- * Maintenance techniques, statistical methods, process control, RCM, reliability, etc.**

KSA-TPM OJT Supporting Procedure and Method

Before TPM kick-off and implementation stage, TPM preparation activities (about for 2 months) to be necessary as follows.



KSA-TPM OJT Supporting



Feature for KSA-TPM OJT Supporting

Profit - producing effective OJT supporting by the theoretical, empirical and practical TPM deploying know-how

Supporting for set-up of improvement methodology in problem-solving of major production and equipment losses by TPM OJT consultants' careers

Supporting for TPM deploying methodology in all sorts of manufacturing companies by the best practice in TPM intangible and tangible effects

KSA 한국표준협회

*We will response the questions and more
information for the KSA-TPM OJT guidance!*



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