Amazing Power of Daily Management and its difficulties

**Yukihiro Ando
TQM Consultant
Saitama, Japan**

1. Amazing power of Daily Management

2. What is Daily Management.

3. Difficulties in Daily Management.

1. Amazing power of Daily Management

1.1 Some cases in some processes

1.2 Some cases as the total organization

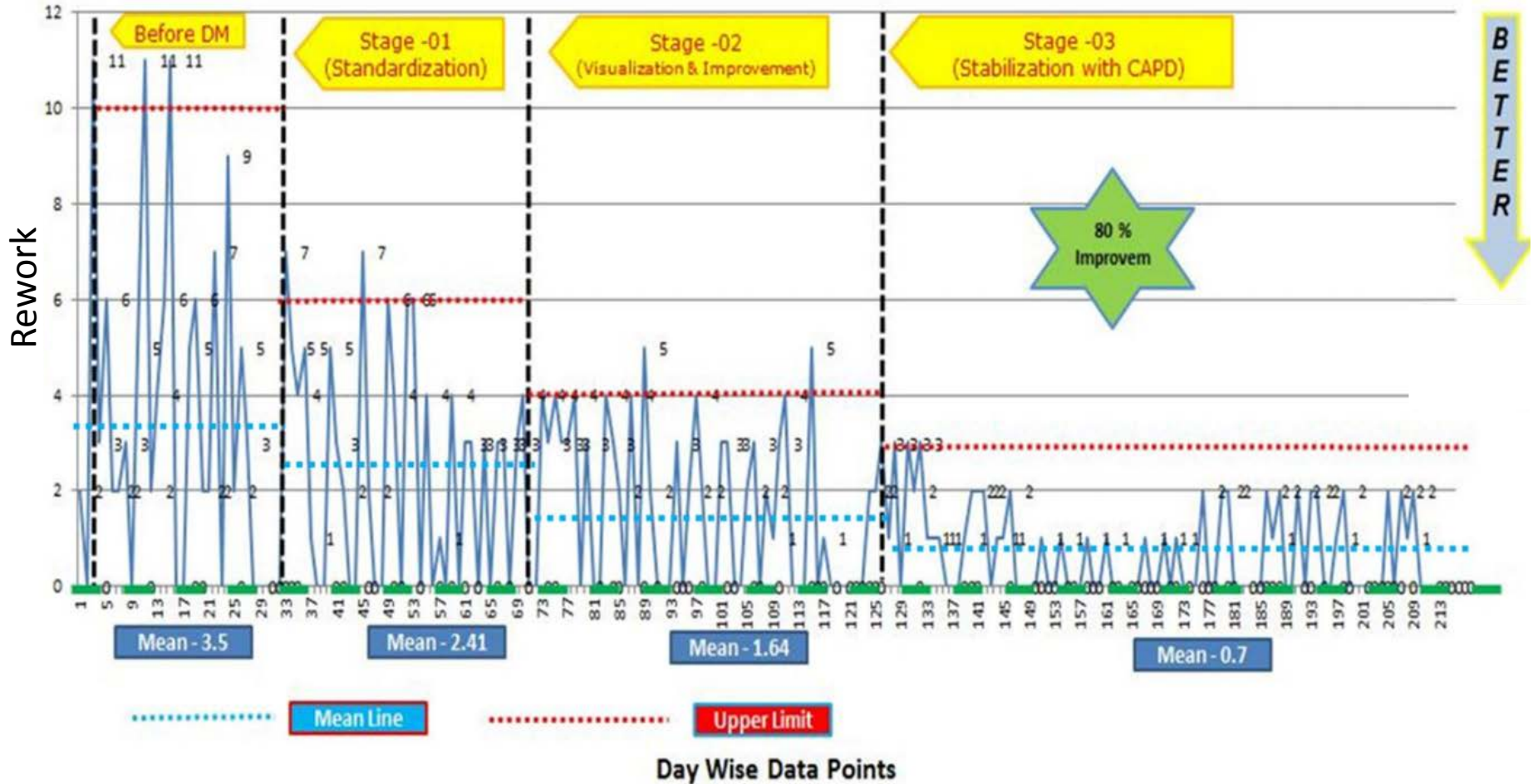**1.3 Mental Impacts for the individuals**

Improvement achieved
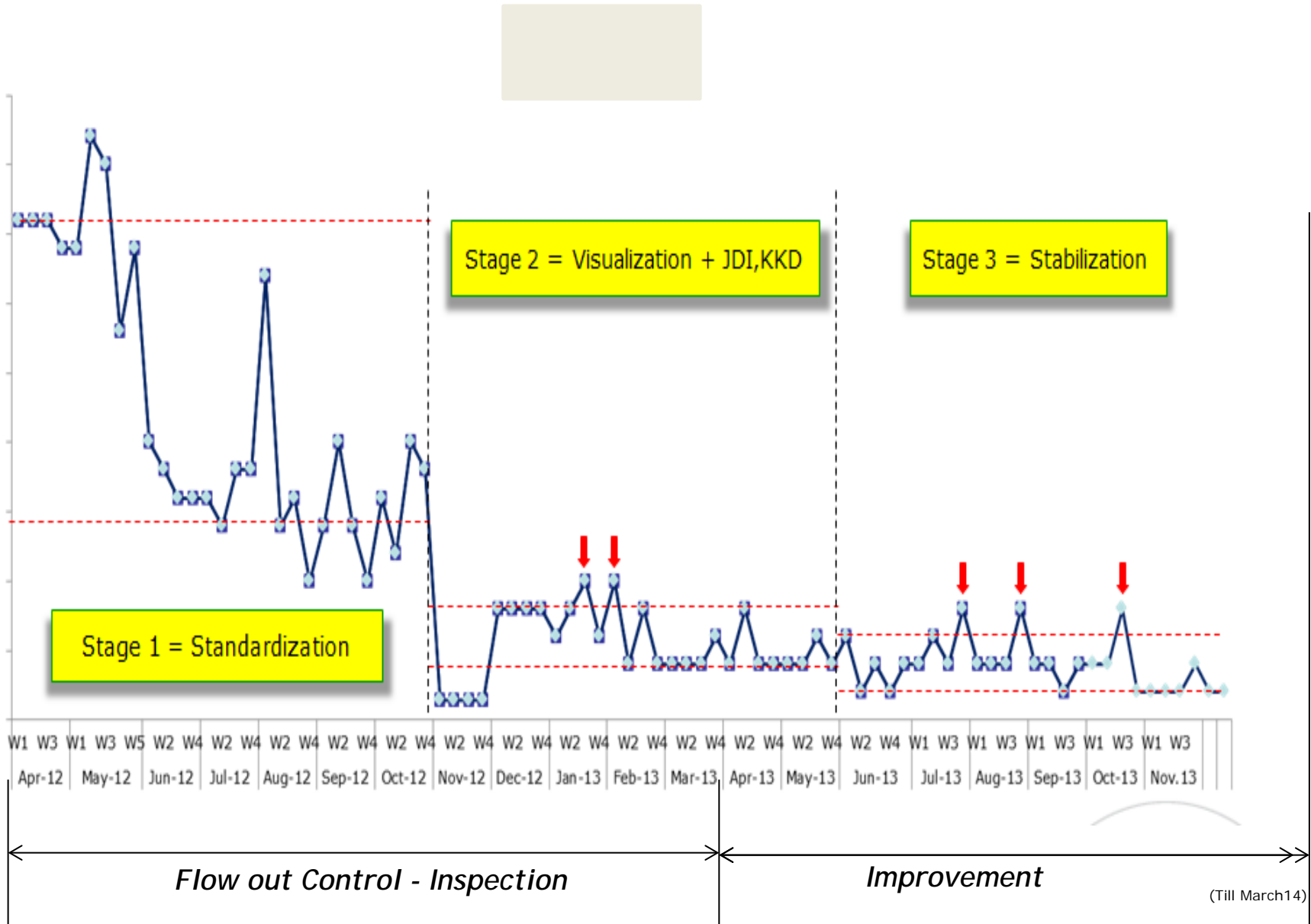## Reduction in Process Related Rework before   XXXX

Day Wise Data Points

Defectives per XXX

Stage 1 = Standardization

Stage 2 = Visualization + JDI,KKD

Stage 3 = Stabilization

| W1 | W3 | W1 | W3 | W5 | W2 | W4 | W2 | W4 | W2 | W4 | W2 | W4 | W2 | W4 | W2 | W4 | W2 | W4 | W2 | W4 | W2 | W4 | W2 | W4 | W2 | W4 | W2 | W4 | W1 | W3 | W1 | W3 | W1 | W3 | W1 | W3 | W1 | W3 | | | |

| Apr-12 | May-12 | Jun-12 | Jul-12 | Aug-12 | Sep-12 | Oct-12 | Nov-12 | Dec-12 | Jan-13 | Feb-13 | Mar-13 | Apr-13 | May-13 | Jun-13 | Jul-13 | Aug-13 | Sep-13 | Oct-13 | Nov.13 |

Flow out Control - Inspection

Improvement

(Till March14)

5

Snapshot of improvement achieved

XXX Cost Reduction :

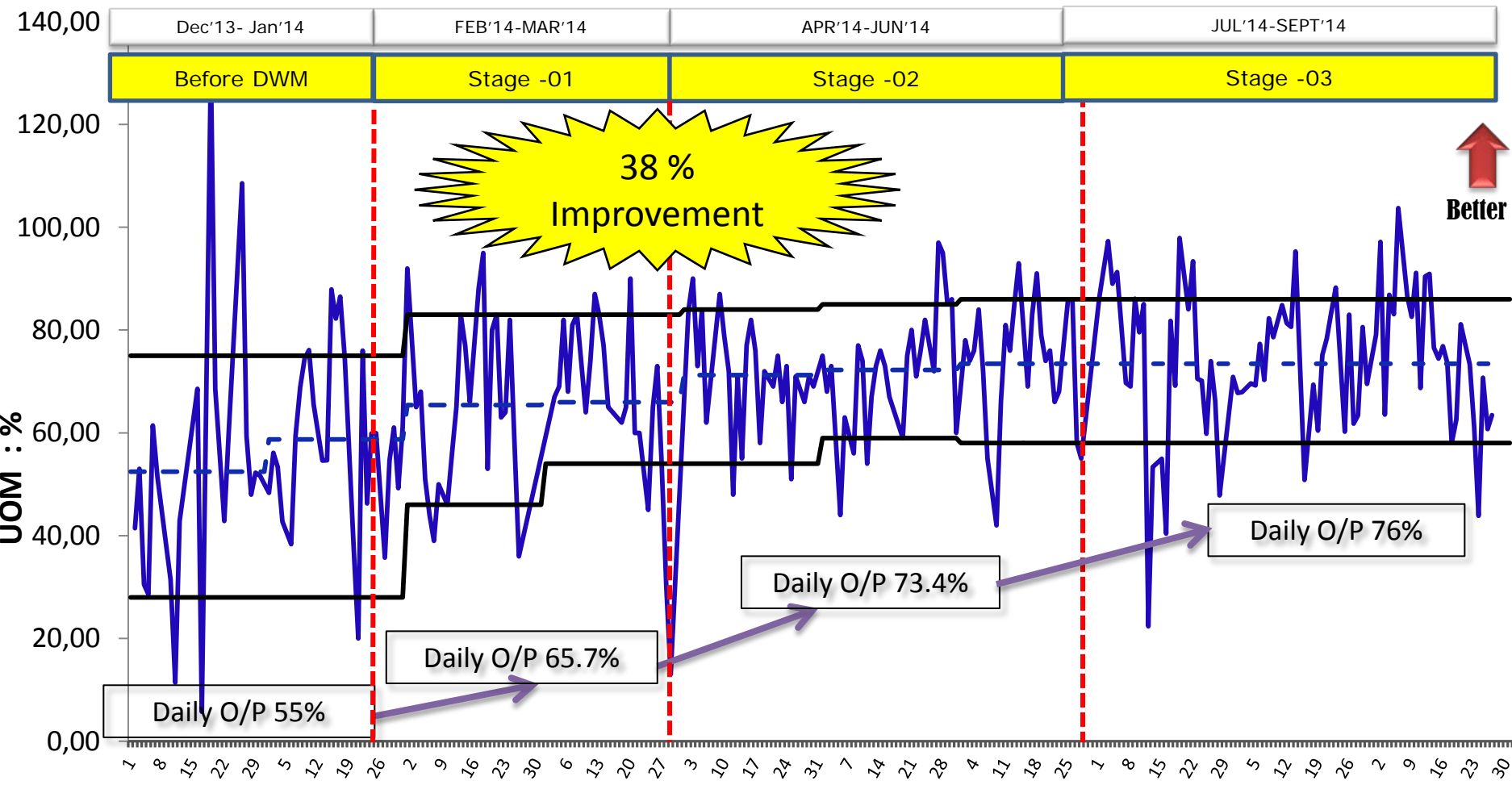| MAY , JUN & JUL '2012 | AUG , SEP & OCT' 2012 | NOV, DEC & JAN' 2013 | FEB, MAR ,APR & MAY' 2013 | JUN, JUL & AUG' 13 |

96 % Improvement
(Approx. Saved – Rs 2.2 Cr.)

Before DWM

Stage -01

Stage -02

Stage -03

Stage -04

03 % Improvement

64 % Improvement

Better
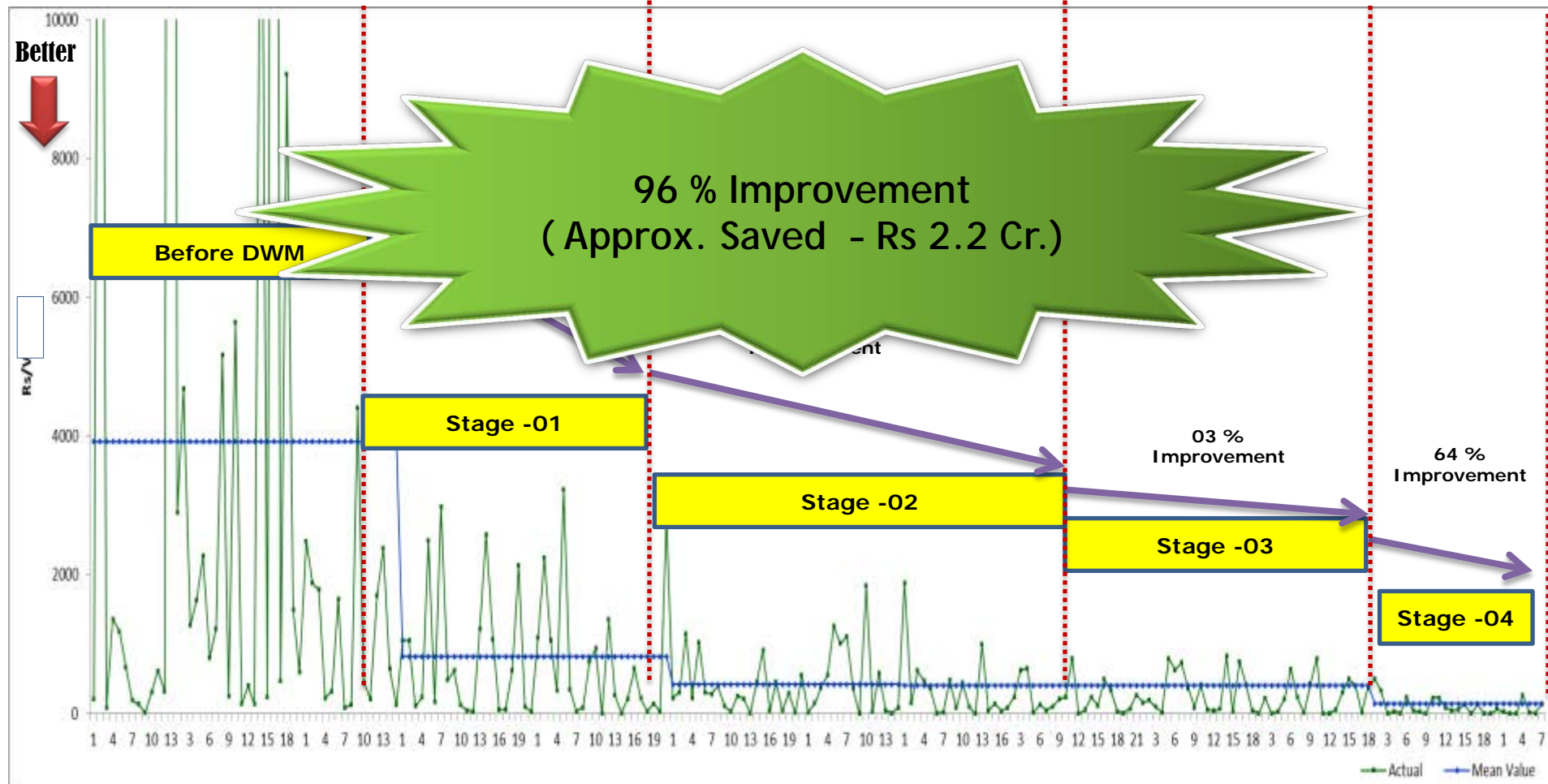
| Mean Value :- 3922 | Mean Value :- 826 | Mean Value :- 422 | Mean Value:- 410 | Mean Value:- 148 |

Effects to the total organization level
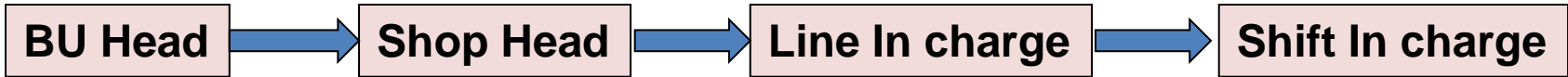
Strong message to the top managements

AAA Department – 2 X 2 Matrix   From xx to YY

2 X 2 Matrix		Stability	
		Not OK	**OK**
Capability	**Not OK**	No. of KPIs =38 (Month: Aug'14) No. of KPIs =49 (Month: June'14)	No. of KPIs = 1 (Month: Aug'14) No. of KPIs = 1 (Month: June'14)
	OK	No. of KPIs = 9 (Month: Aug'14) No. of KPIs = 4 (Month: June'14)	No. of KPIs = 22 (Month: Aug'14) No. of KPIs = 14 (Month: June'14)

DM Journey – KPI identification and Iterations

- **Identification of BU specific roles based on Plant Director's Key Roles and further drilling down to executives at all level.**

| BU Head | → | Shop Head | → | Line In charge | → | Shift In charge |

- **Iterations of KPIs for selecting more meaningful KPIs based on criteria –**
  i. Usefulness   ii. Measurable   iii. Controllable

	What is the role of the department/ Section /Group	What is the Objective of the Job of the Department / Section ?	What are your indicators (KPIs) to evaluate the objective of the Job ?	System to check the status of KPIs (Visual Control System-VCS)	Frequency KPI Monitoring
Production / Productivity		Improve Productivity	Man Engagement Index for Line - CWP Soft	Trend chart	Daily
			Man Engagement Index for Line - CWP Hard	Trend chart	Daily
		good quality products	Machining scrap ppm for CWP	Trend chart	Weekly
			No of NCs during Process Audit by Quality	Trend chart	Monthly
Cost		Production conversion cost	cost -CWP Line (in Rs)	Trend chart	Daily
			Indirect Consumables cost -CWP Line (in Rs)	Trend chart	Daily
Delivery		Improve Performance Level	CWP Weekly Performance Level (%)	Trend chart	Weekly
Safety		Ensure safe working environment for employees, including contract employees	Resolution of all identified unsafe conditions (%)	Trend chart	Monthly
Morale		Total employee involvement	Suggestion Implemenation (%)	Trend chart	Monthly

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Operator Voice

"Earlier we were not hitting shift capacity more than 5-6 times in a month. Also we were facing material loss frequently. Maintenance & engine assembly issue were also there. Since We were not recording the same, therefore we were not having the control on daily production. We were also not monitoring the hourly production. In short, we had not full control on daily production".

"We have now started recording of Line startup time at shift beginning. With this, we can judge and control the line startup loss. **We feel proud that we are contributing in the productivity improvement** for our engine assembly line." **This will eliminate boarding in running bus.**

Richa-NTTF student
Stage -Long block 19

"The daily management system has enhanced our self confidence and job satisfaction"

Rashmi Khanduri

NTTF Student

05/54

G/B Production

Work standard improved with respect to quality work.
Rework Fatigue reduced
Self-confidence related to work enhanced.
Morale level uplifted.

Ajay Nautiyal

NTTF student

09/02

G/B Quality

FPT percentage improved due to less rejection
Reduced non-conformances related to product quality.
Chances of defect generation reduced thereby less chances
of defect passing to both internal & external customers.

Supervisor Voice

Vivek Kumar Singh
Short Block
Stage In charge

"Earlier we were not monitoring schedule adherence data in assembly line on hourly basis due to which we found that daily schedule adherence variation has increased as information goes at the end of shift."

"After Daily Work Management System initiation, we have identified PPC Plan Schedule adherence as one of KPI for our department and started monitoring with the help of a trend chart."

"To make PPC Plan Schedule Adherence stable, We have started hourly production monitoring, Line startup time at shift beginning & SMS based alert generation to Supporting function".

"With this, we can easily identify good & bad outliers. Corrective actions are helping us to control variation & attain stability".

"As a result of Daily Work Management Practice, the PPC Plan **Schedule Adherence variation has reduced & became stable**".

Supervisor Voice

ASHOK LEYLAND

Focus on other activities improved due to less Rejection of Gear Box

Better Man-Power utilization

Improved Productivity due to less rejection of Gear Box & Rejection of Components

Bhupesh Chandra Pant

Shift-In-charge

Gear Box Assy & Testing

Amazing Power of Daily Management

1) **Practical continual improvement** cases have been happening in many of the processes in an organization.

2) Those cases have been **summarized visibly** using many KPIs and **senior managements can recognize** their contribution to the business.
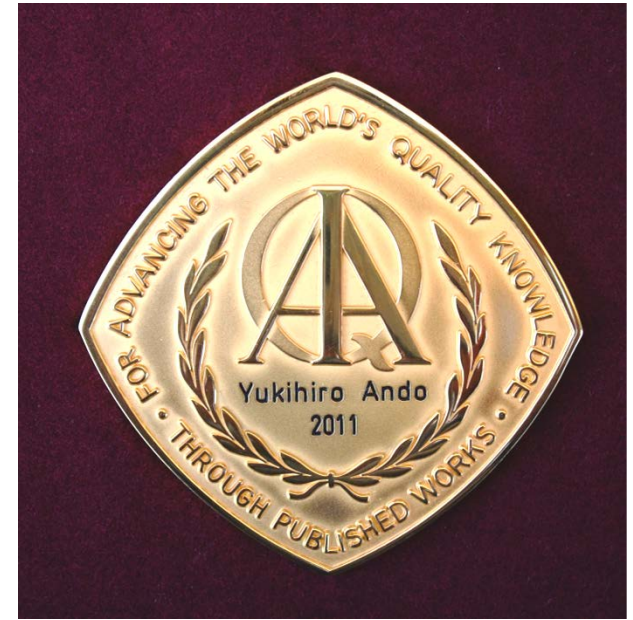
3) **People in the all echelon** become happier.
   Win-Win-Win

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Daily Management The TQM Way

The Key to Success in Tata Steel

Yukihiro Ando | Pankaj Kumar

Masing Book Medal 2011

International Academy
        For Quality

Rs.295
Kindle JPY777 ≒ USD 7.00

2. What is Daily Management.

3. Difficulties in Daily Management.

Definition : **Daily Management**

JSQC-Std. 32-001:2013
"Guidelines for Daily Management"

All activities to effectively achieve

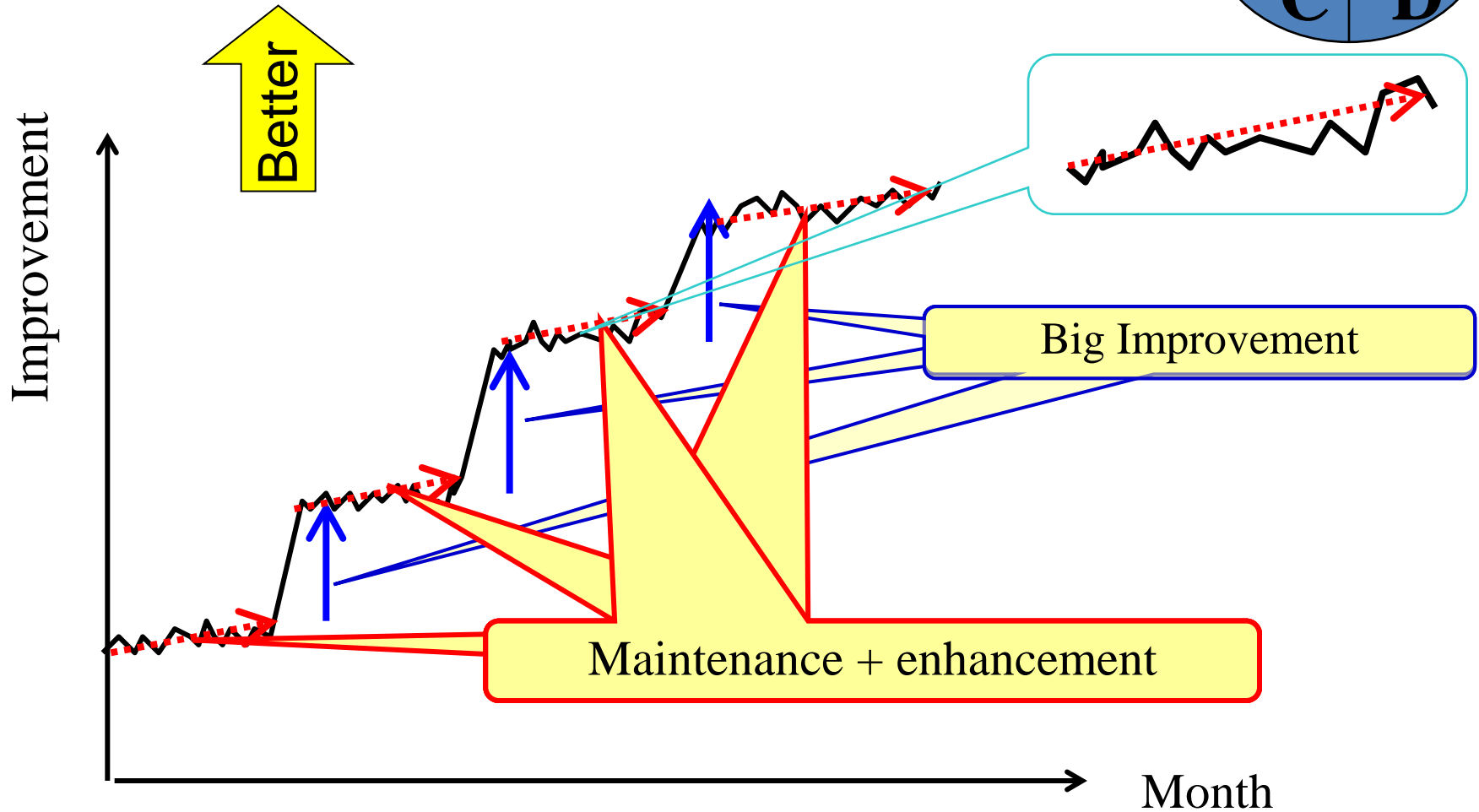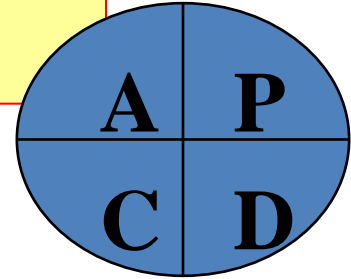the objectives with regard to the job that every job unit of the organization is charged with.

(Same as JSQC-Std. 00-001)

Contact address : office@jsqc.org.
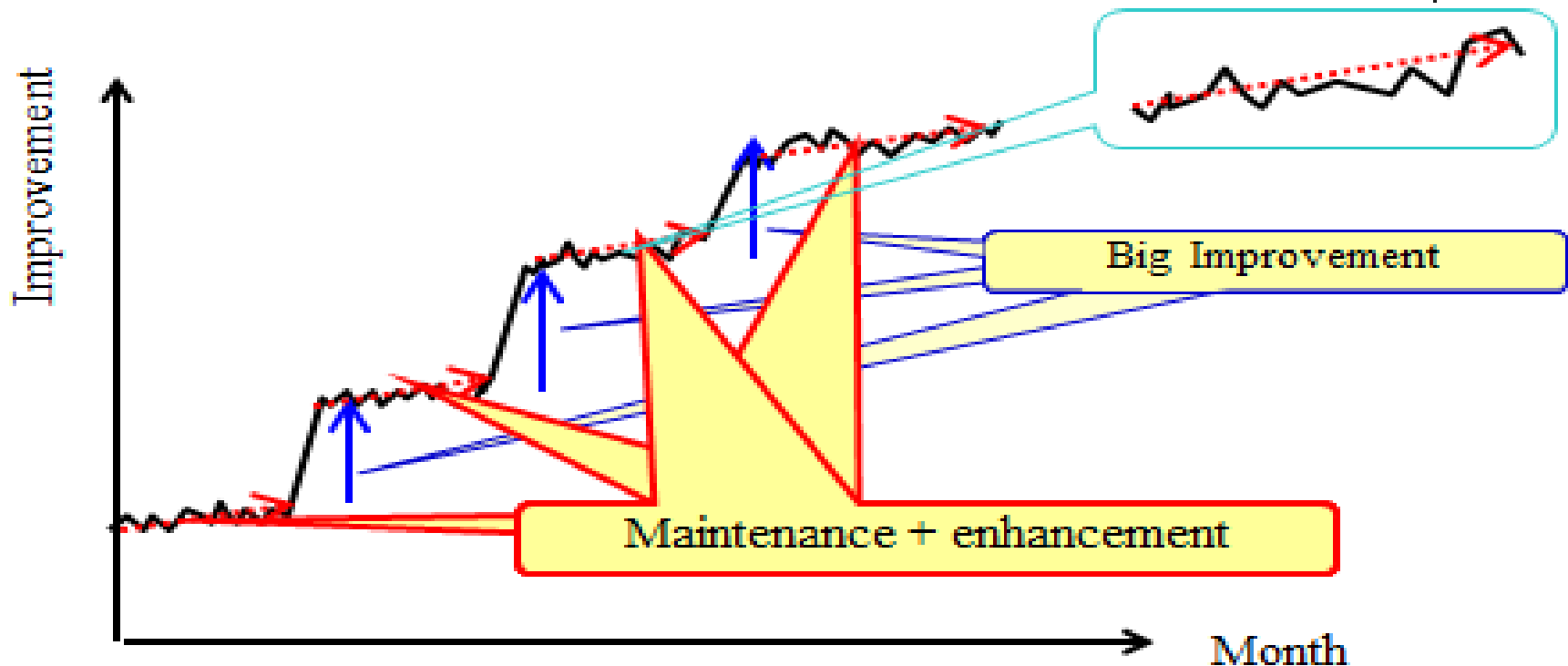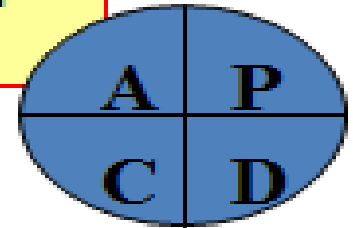USD 25.00 per a copy by pdf form

Importance of "Daily management"
Actual history of "Continual Improvement"

Importance of "Daily management"
Actual history of "Continual Improvement"

- All the members must commit continuously, long term.
- No shining stories.

No Hero Job!

1. **Amazing power of Daily Management**

2. **What is Daily Management.**

3. **Difficulties in Daily Management.**

Some patterns/reasons of Difficulties

1. Mental Reasons
1. Just bored
2. Lose attention from their boss.
3. People pay attention to "Hero Jobs" only.
4. Changed the people.
   No successes. New comers can not understand the importance.
5. Standards are only prepared as documents.
   Nobody read Data, SOPs carefully, no education & training, nobody follow standards.

2. Technical Reason
1. Scopes/objectives of the job are not suitable.
2. Standards are not prepared because of technical reasons.
3. Control Points are not appropriate.
4. Control Methods are not suitable for the control point.
   1. **Apply too simple graph to "Inherently non-flat", "non-normal distributed process", "Adjusted Process" and etc..**
   2. Small numbers and large variety process.
   3. Non manufacturing process: Maintenance, Planning, services.
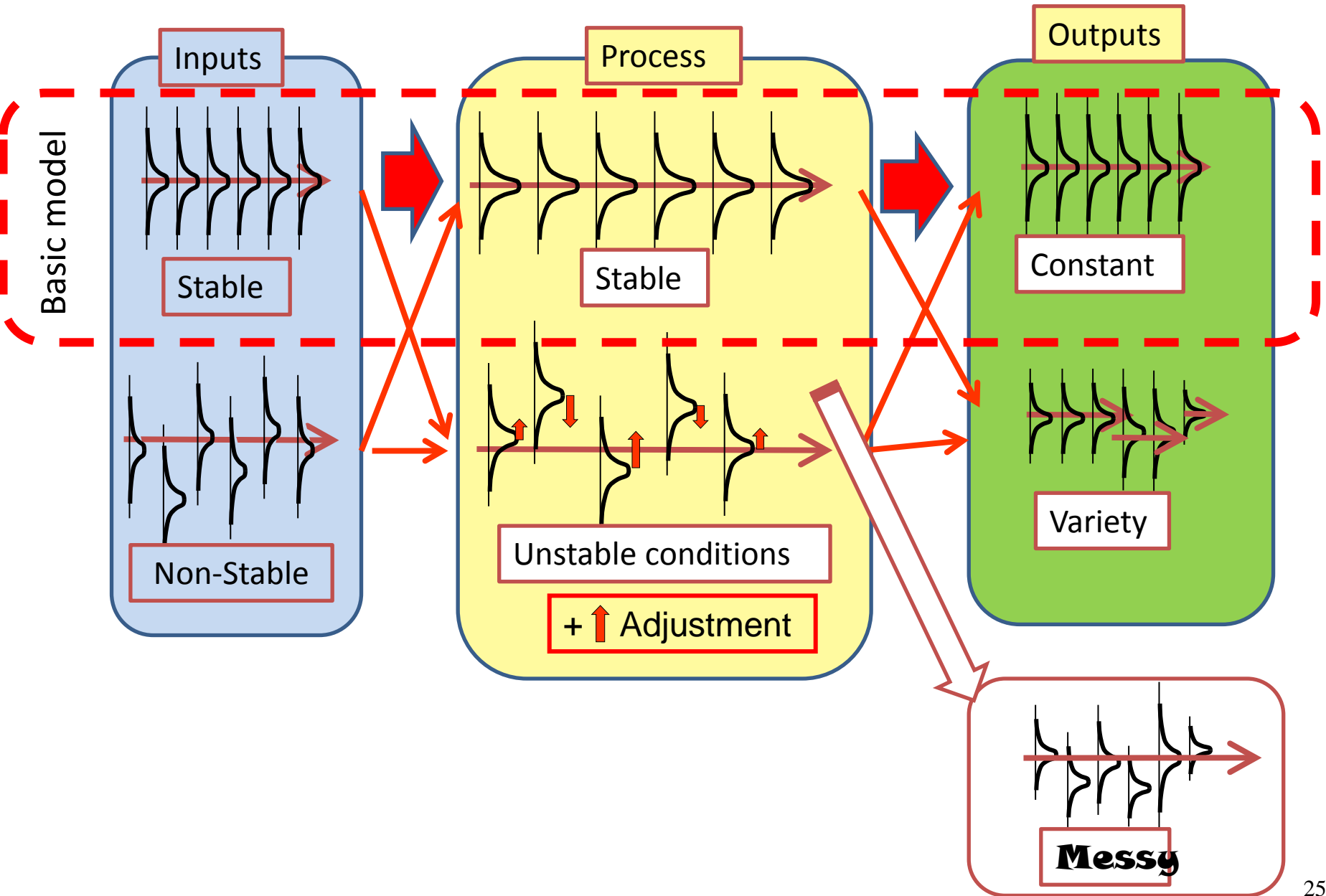5. **Too many abnormalities to analyze the root causes.**

Discussion points:

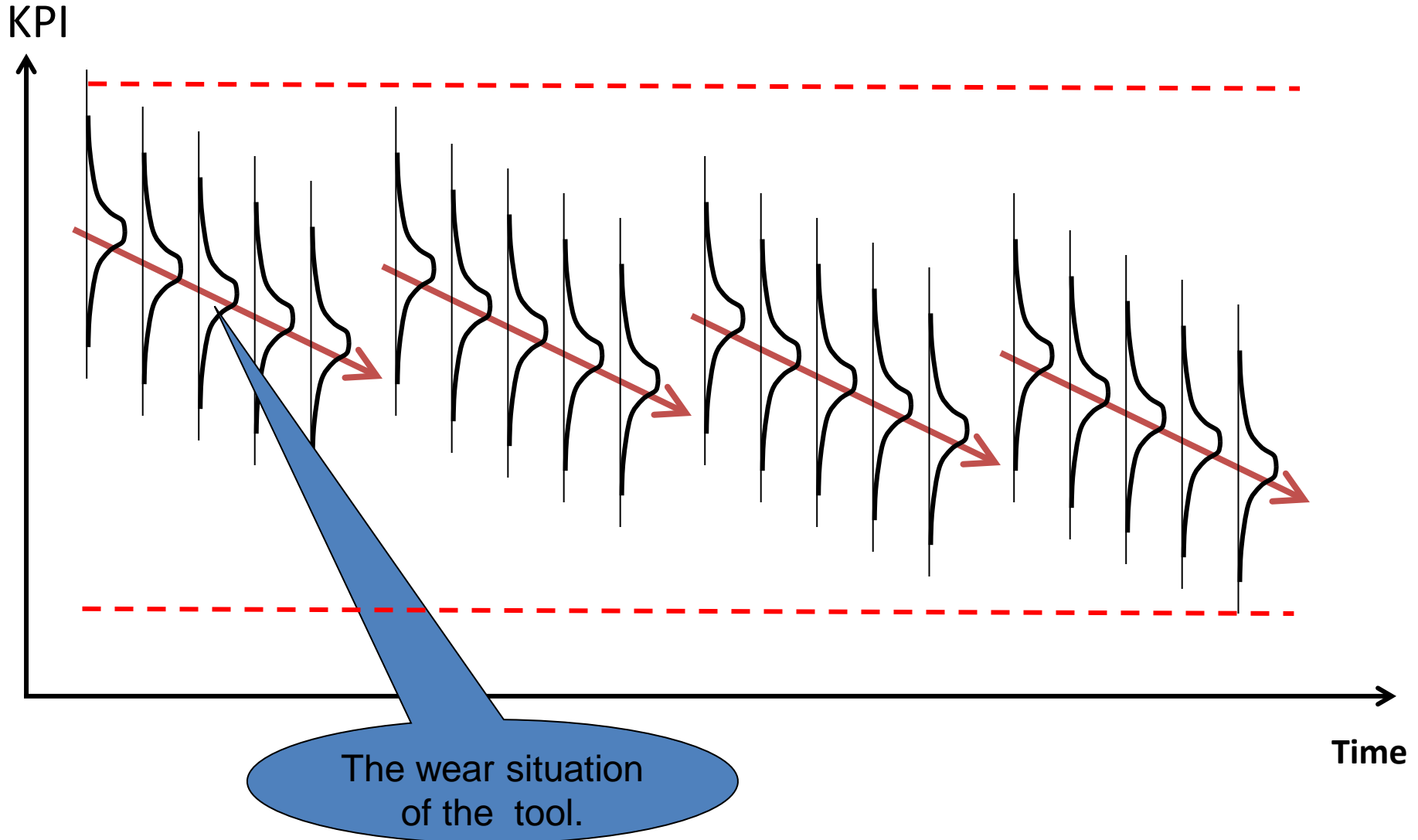2. Technical Reason
   4. Control Methods are not suitable:
      1. Apply too simple graph to "Inherently non-flat", "non-normal distributed process", "Adjusted Process" and etc..

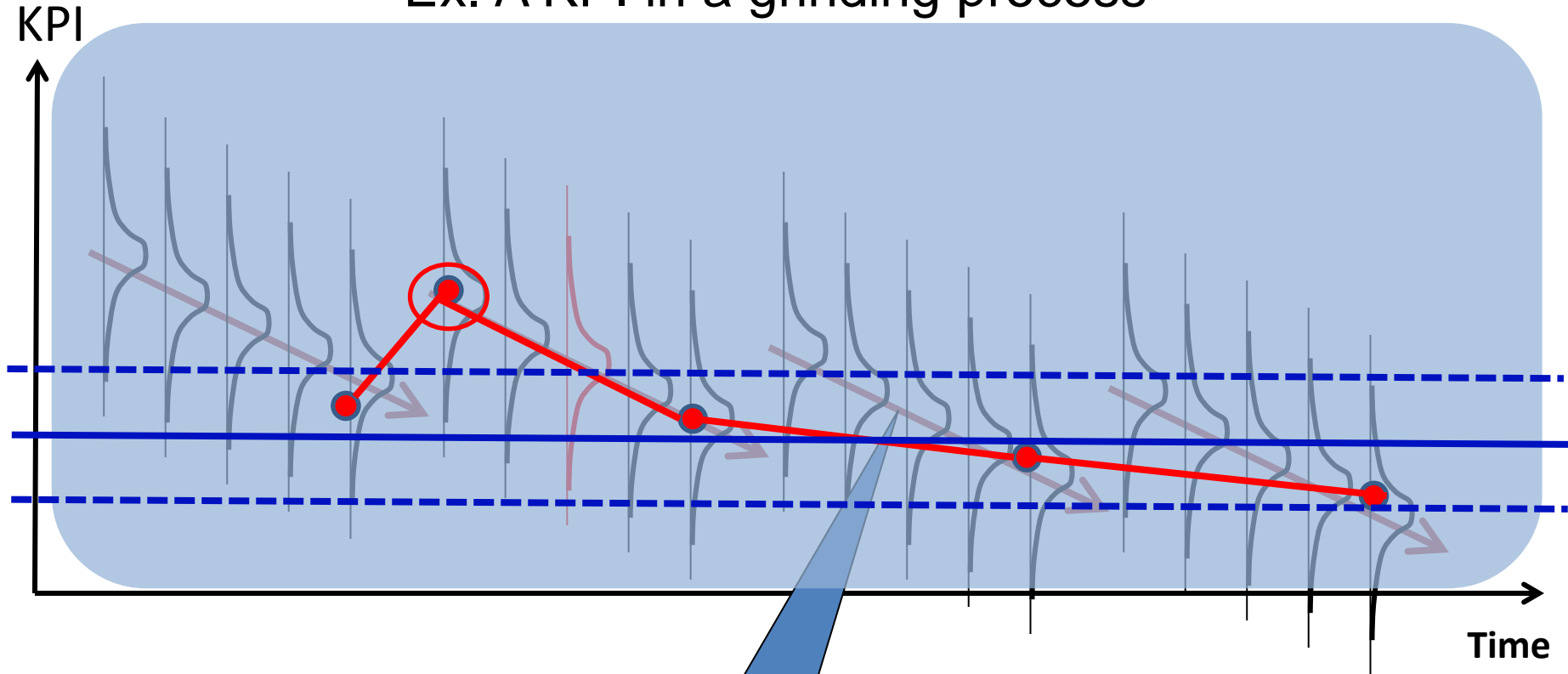# Images of Basic model vs. Adjusted Processes in Daily Management

Inputs

Process

Outputs

Basic model

Stable

Stable

Constant

Non-Stable

Unstable conditions

Variety

+ ⬆ Adjustment

Messy

How can we understand the structure of the populations?
Ex. A KPI in a grinding process

The wear situation of the tool.

Explain with several populations, or apply regression model?
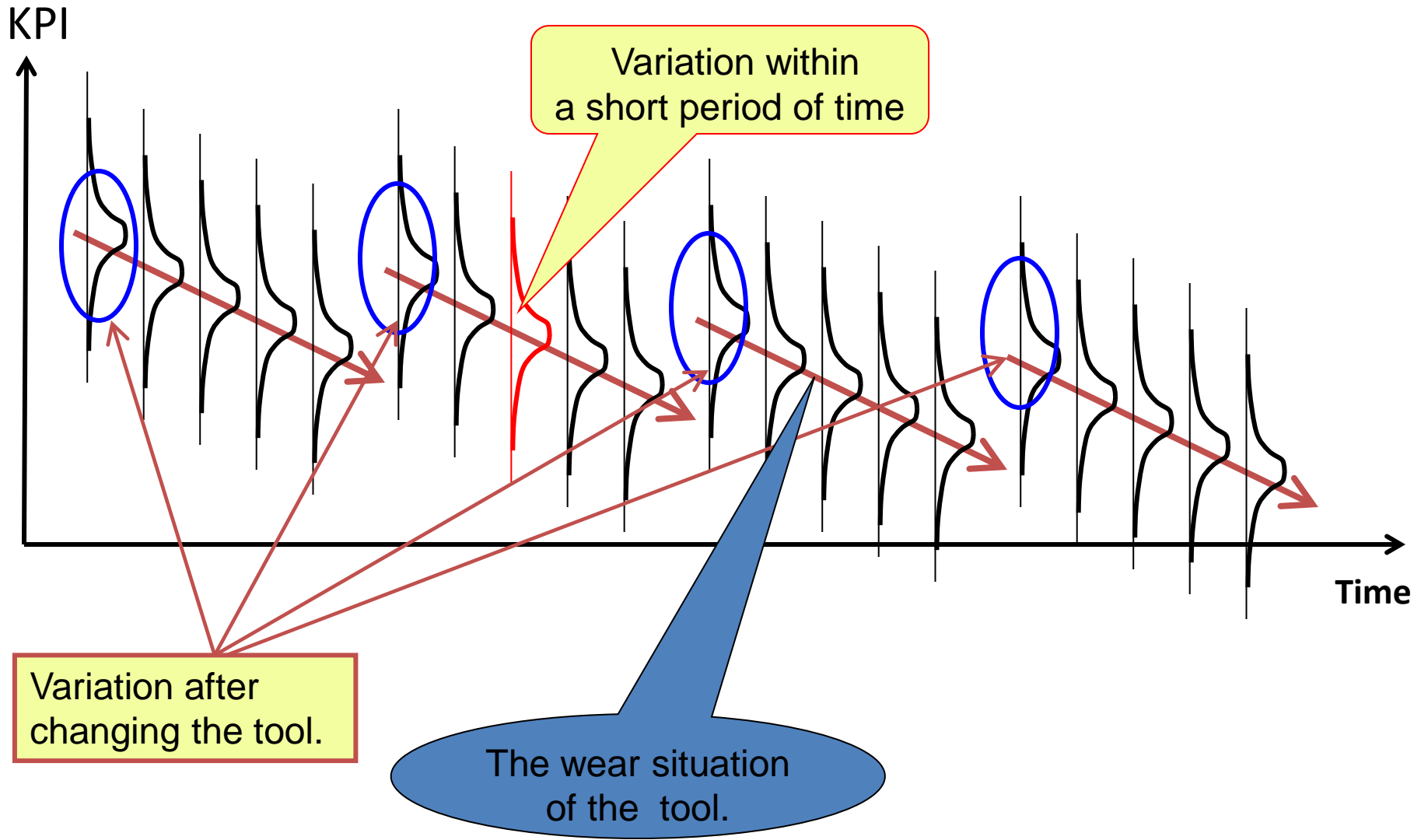
How can we understand the structure of the populations?
Ex. A KPI in a grinding process
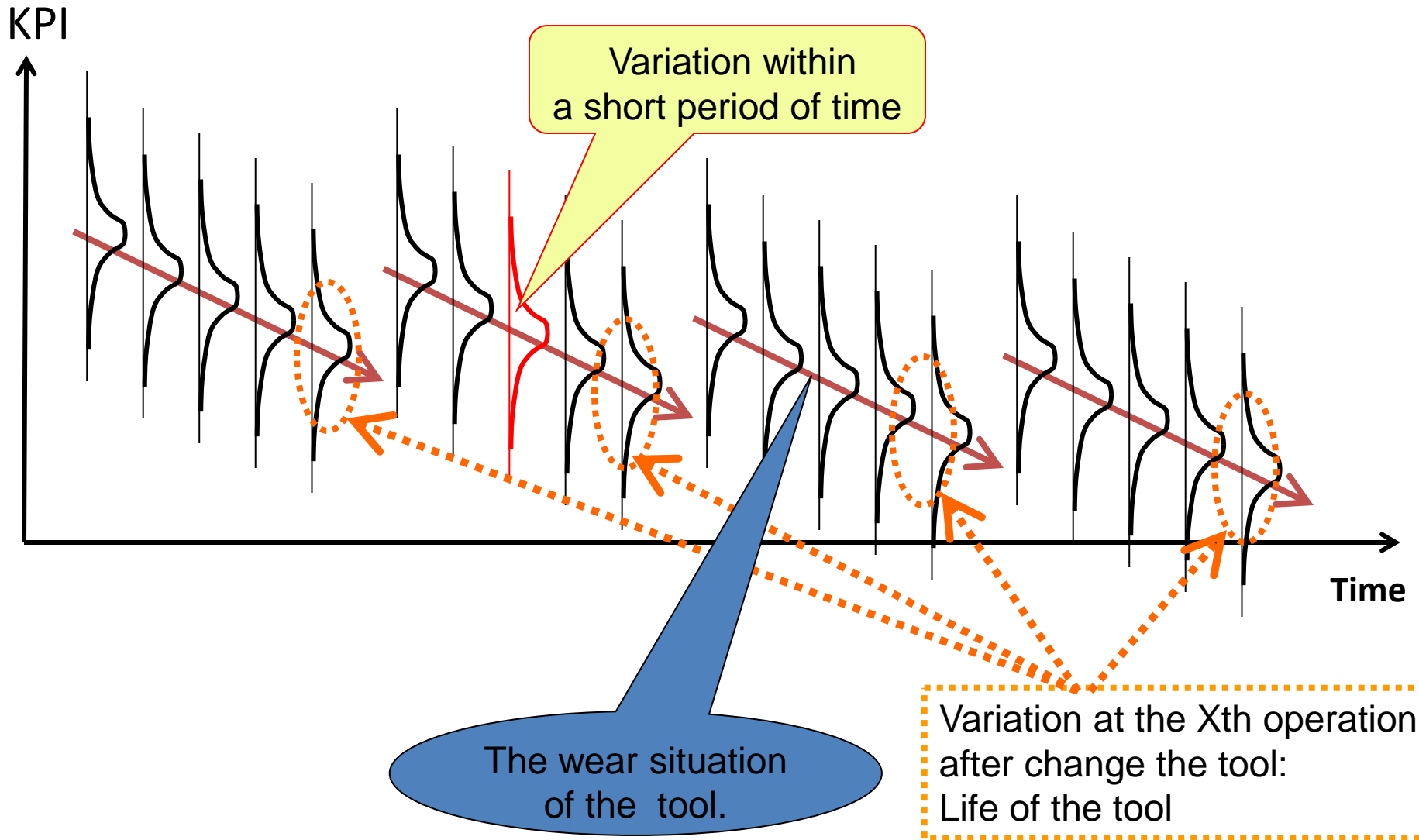

The wear situation of the tool.

Explain with several populations, or apply regression model?

How can we understand the structure of the populations?
Ex. A KPI in a grinding process

KPI

Variation within a short period of time

Variation after changing the tool.

The wear situation of the tool.

Time

Explain with several populations, or apply regression model?

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How can we understand the structure of the populations?
Ex. A KPI in a grinding process

KPI

Variation within a short period of time

Time

The wear situation of the tool.

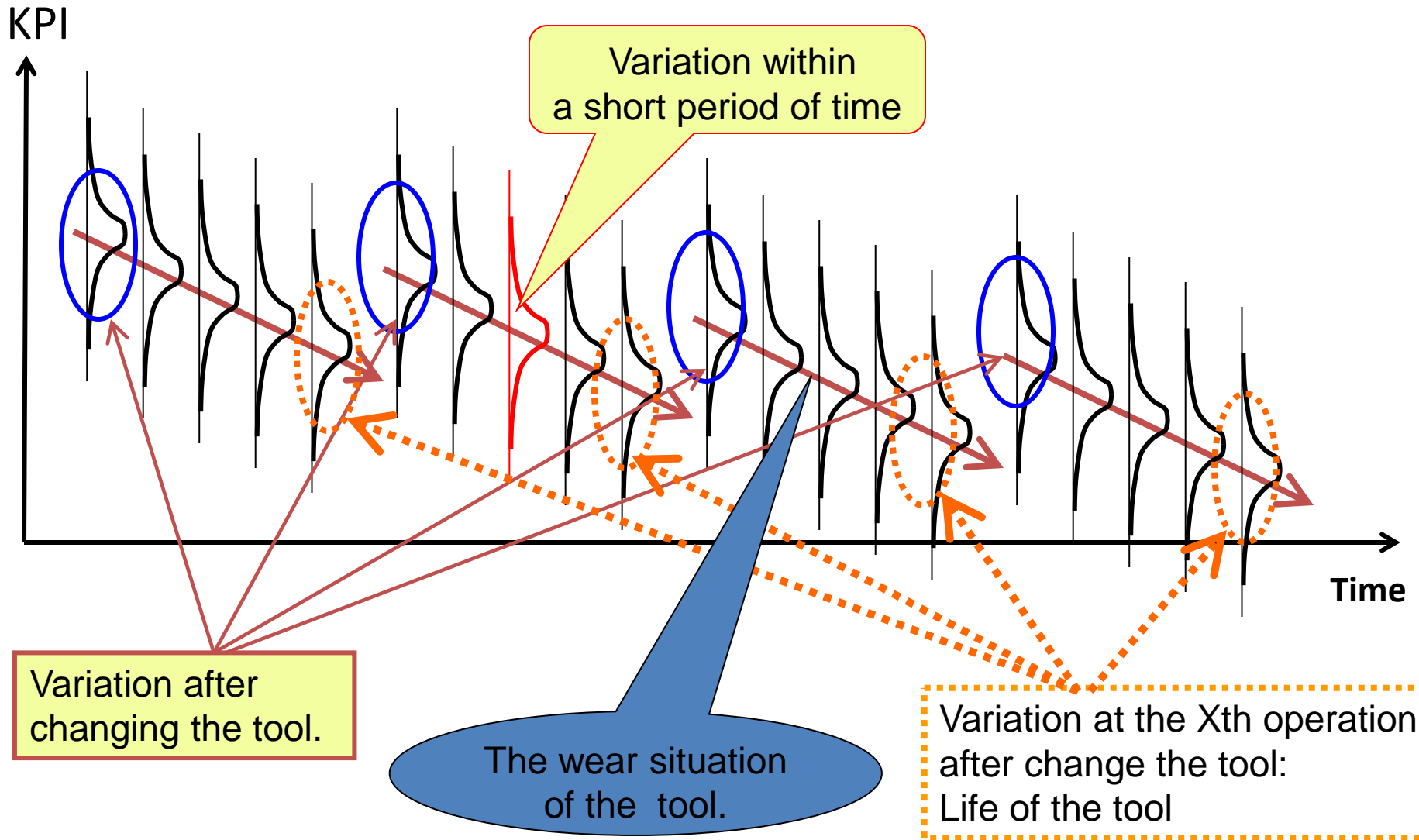Variation at the Xth operation after change the tool: Life of the tool

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Time

Explain with several populations, or apply **regression model**?

A STUDY ON AN APPLICATION OF Control Chart WHERE THE CHARACTERISTIC HAVE INHERENT TRENDS
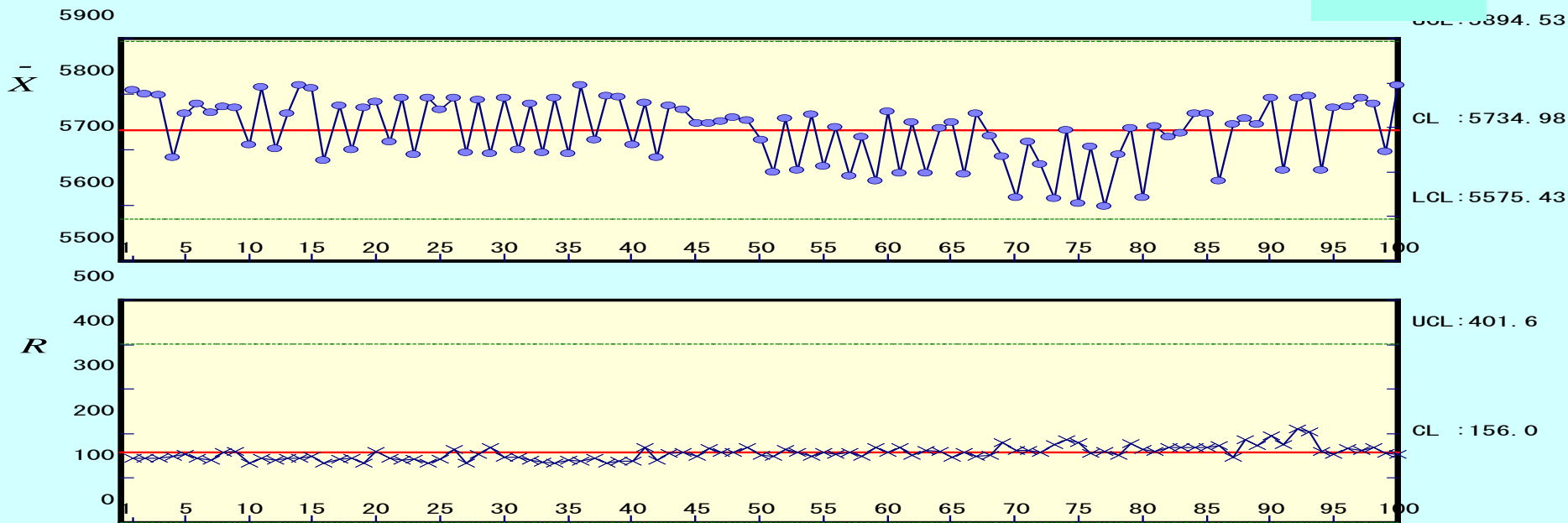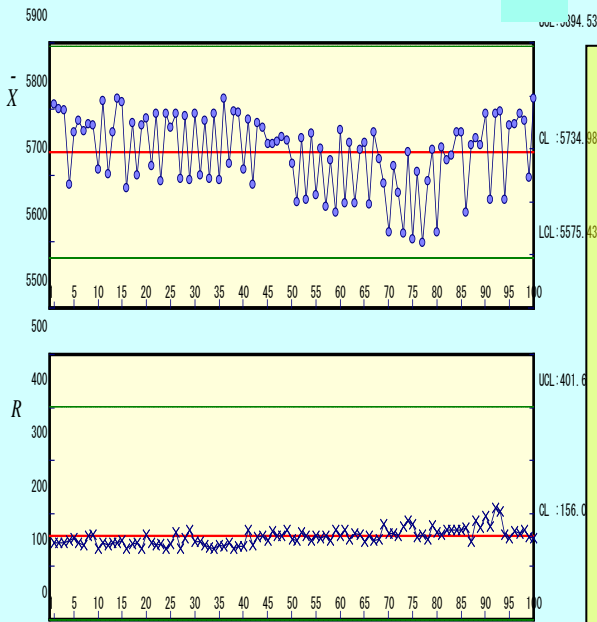

X bar-R C.C. constructed according to procedures described in basic textbooks

Regression Analysis

X-Rs C.C. constructed with residuals

A STUDY ON AN APPLICATION OF Control Chart WHERE THE CHARACTERISTIC HAVE INHERENT TRENDS
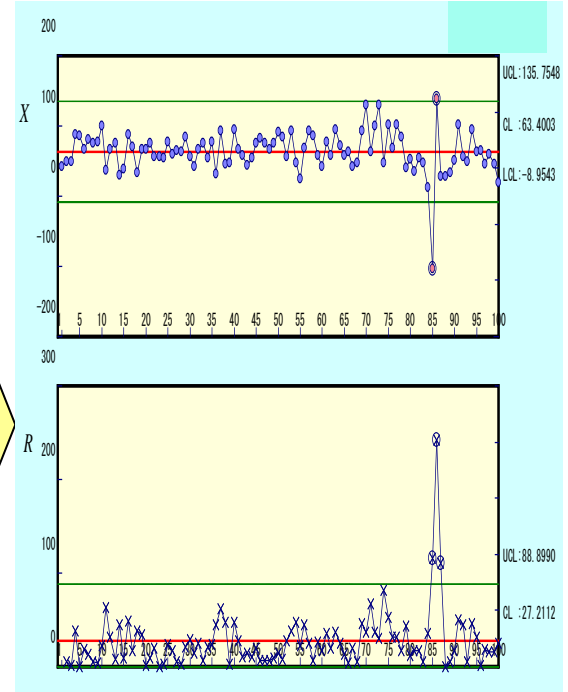

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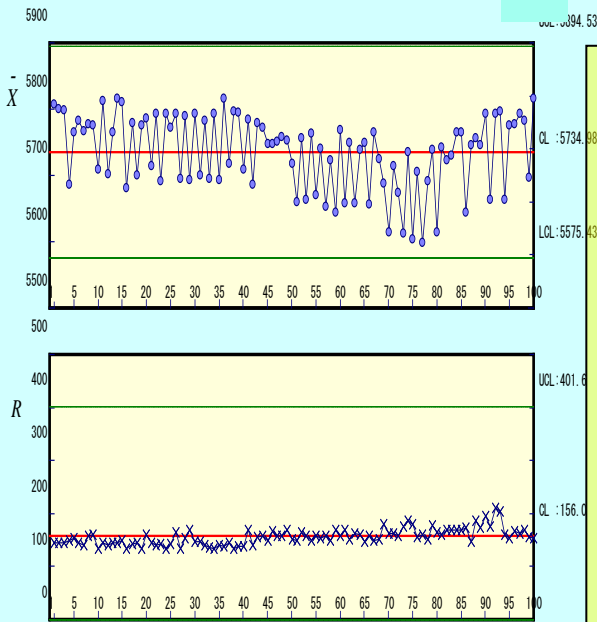
The conceptual model of the process

$$y = b - ax_{ij} + C_j$$

Regression Analysis

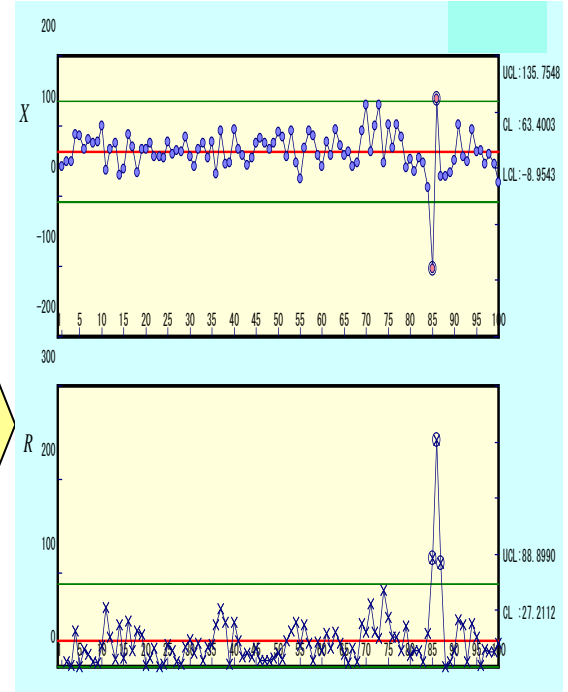**X-Rs C.C. constructed with residuals**

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The conceptual model of the process

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Regression Analysis

X bar-R C.C. constructed according to procedures described in basic textbooks

X-Rs C.C. constructed with residuals

33

Discussion points:

2. Technical Reason
    4. Control Methods are not suitable:
       1. Apply too simple graph to "Inherently non-flat", "non-normal distributed process", "Adjusted Process" and etc..

- Analyze the inherent tendencies and the nature of "error".
- Stratification / Regression Analysis / DOE
- Control Based on "Residual".

Discussion points:

2. Technical Reason
    4. Control Methods are not suitable:
        1. Apply too simple graph to "Inherently non-flat",
        "Adjusted Process", "non-normal distributed process"
        and etc..

Non-Academic Discussion

DPYY in XX Line Trend FY15 –Daily Performance

Q1 FY15

Q4 FY15

Poisson distribution?

| Initial Upper Barbaric Limit – 10.1 | Current Upper Barbaric Limit – 3.8 |
| Initial Lower Barbaric Limit – 5.0 | Current Lower Barbaric Limit – 2.0 |

Discussion points:

2. Technical Reason
   4. Control Methods are not suitable:
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⬇

Proposal to introduce **U.X.L/L.X.L** instead of U.C.L/L.C.L.

Idea of Control limits is important and useful.
X : You can use an abbreviation according to your culture.

B as an abbreviation of **"Barbaric"** : **U.B.L./L.B.L.**
Based on the sense of control limits in statistical control chart, the manager in charge of the process decide the limits with his/her **"Barbaric Spirit"**

Some patterns/reasons of Difficulties

1. Mental Reasons
   1. Just bored
   2. Lose attention from their boss.
   3. People pay attention to "Hero Jobs" only.
   4. Changed the people.
      No successes. New comers can not understand the importance.
   5. Standards are only prepared as documents.   Nobody read
      Data, SOPs carefully, no education & training, nobody follow standards.

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      3. Non manufacturing process: Maintenance, Planning, services.
   5. Too many abnormalities to analyze the root causes.

DPYY in XX Line Trend FY15 –Daily Performance
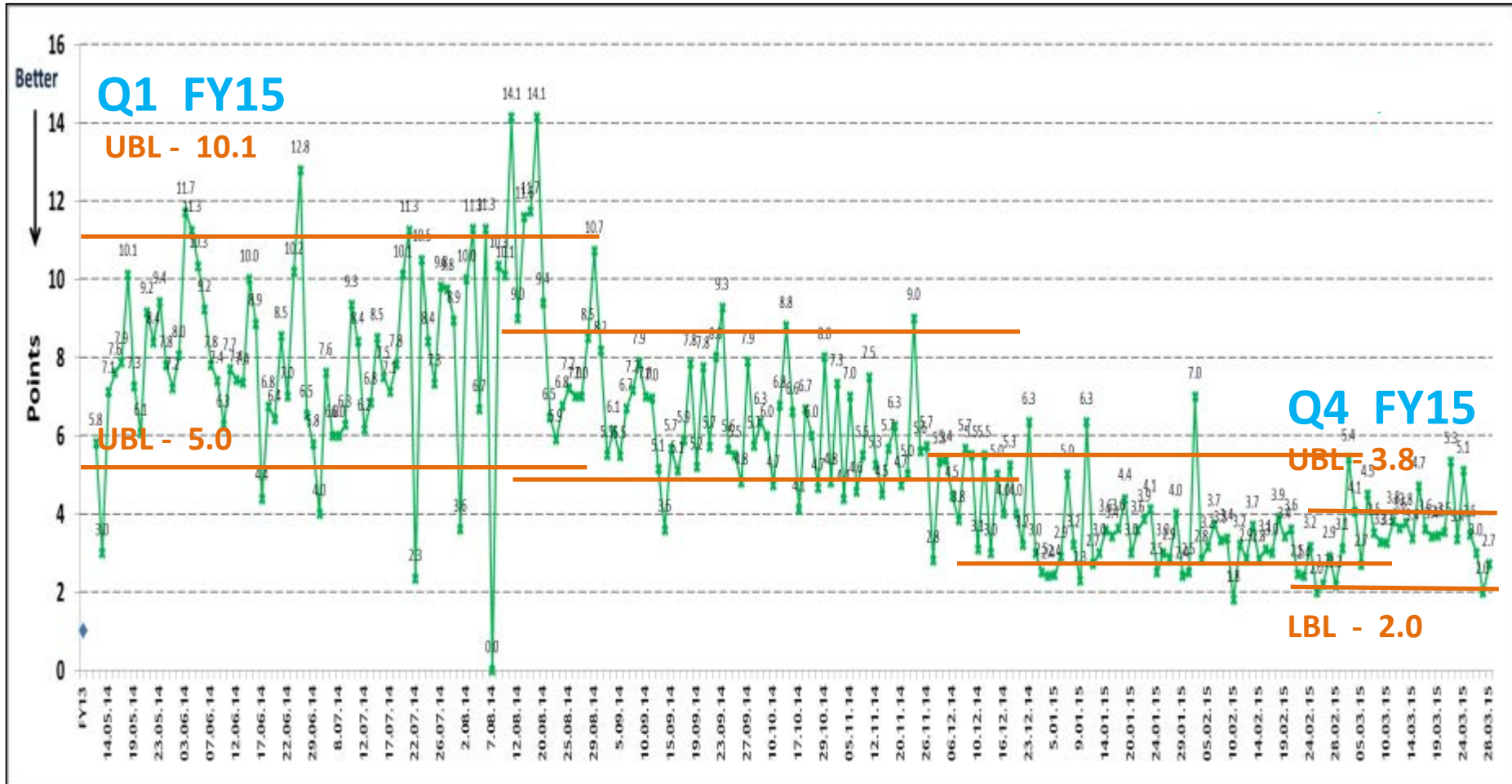
Initial Upper Barbaric Limit – 10.1
Initial Lower Barbaric Limit – 5.0

Current Upper Barbaric Limit – 3.8
Current Lower Barbaric Limit – 2.0

Discussion points:
5. Too many abnormalities to analyze the root causes.

All of abnormalities
        the root cause analyses
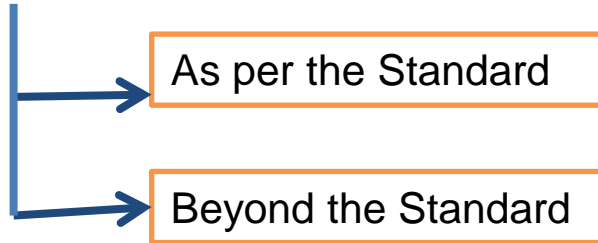   "Recurrence Prevention" + "immediate remedy"

"root cause" : a kind of magic word.
If you repeated "why" **5 times**, your boss will ask you **one more why**.

If you face too many abnormalities,
      superficial analysis
      just **documentation jobs**.
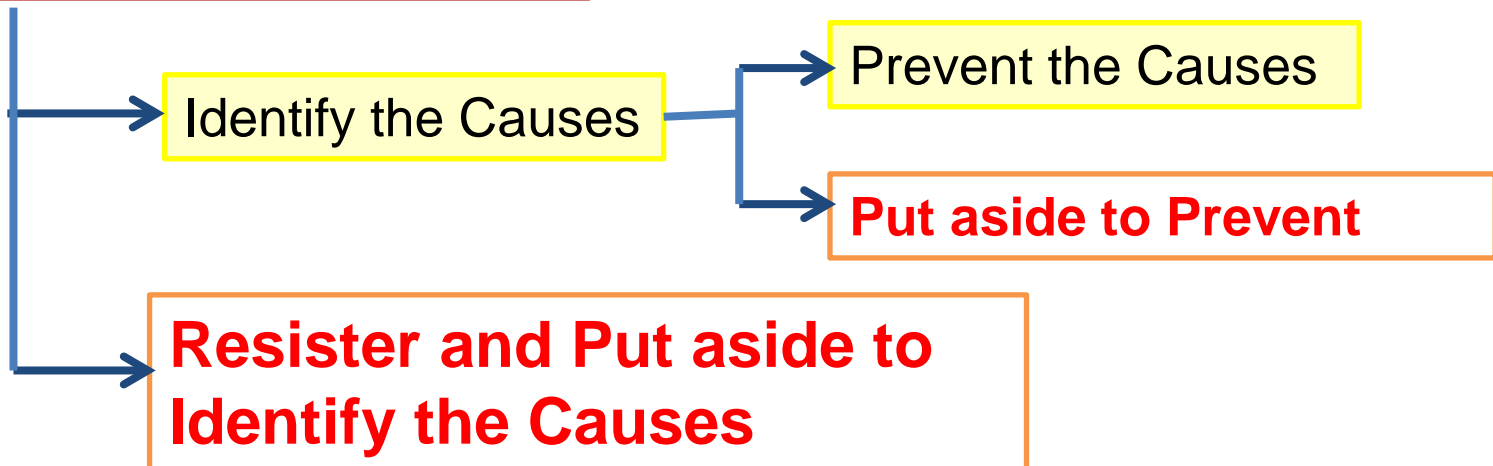
Conceptual flow after identified an abnormality

Immediate   Remedy

As per the Standard → J.D.I. and keep the records

Beyond the Standard → Following to the systems that shows who and how to discuss, and decide the actions.

Recurrence Prevention

Identify the Causes →

Prevent the Causes

Put aside to Prevent

Resister and Put aside to Identify the Causes

Note: Levels of the causes "why 5 times" should be considered.

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Discussion points:
5. Too many abnormalities to analyze the root causes.

Develop systems
- **<u>Put aside</u>** to prevent/ analysis
- Visualize those cases
- Revisit those cases periodically

4. Summary

A) Daily Management guideline had standardized by JSQC.

B) If you start to follow the standardized procedure, it can demonstrate amazing power in relatively short period of time without major investment.

C) However, in order to sustain those stable situations there can be many difficulties.

  I.   Those difficulties can be typically categorized.

  II. If you can identify the types of the difficulties, there can be some solutions.

Supplementation
Advertisement

The English version of this standard

"JSQC-Std. 32-001(E):2014"

is **purchasable** by contacting to the **office of JSQC**.

The contact address :

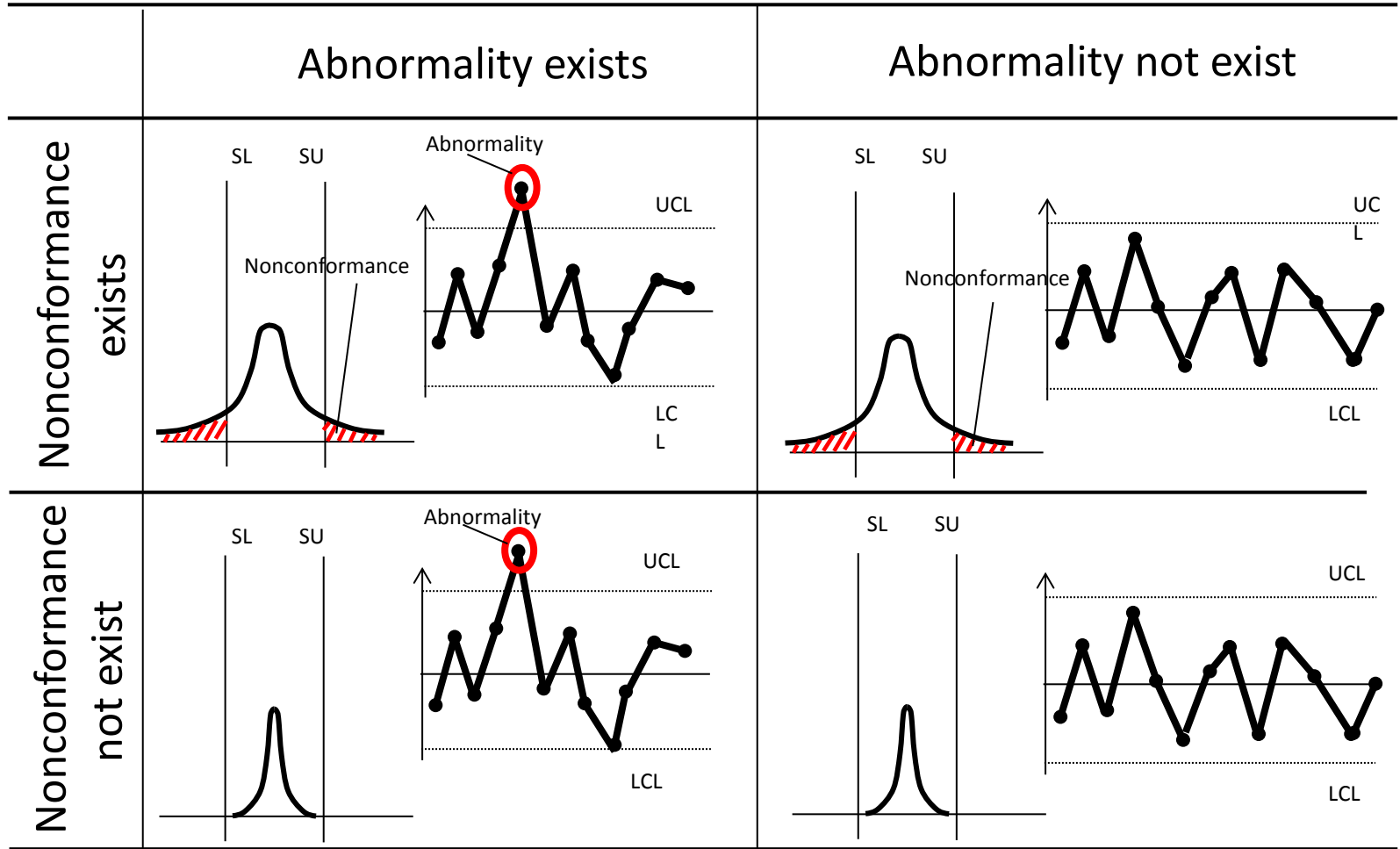office@jsqc.org.   or   FAX +81-3-5378-1507

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Non-members USD 25.00 per a copy.

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e.g. 10,000 copies   90% discount

Stability

	Abnormality exists	Abnormality not exist
Nonconformance exists		
Nonconformance not exist		

(Capability — row axis label on left)

UCL: Upper Control Limit, LCL: Lower Control Limit, SL: Lower Specification, SU: Upper Specification

Fig. 6   Abnormality and nonconformance

4.1 Roles of Daily Management in TQM (Clause 4)

Performance (Outcomes/ability of process/system)

Improve-ment

Maintenance -plus- enhancement

Innova-tion

Maintenance -plus- enhancement

Improve-ment

Maintenance -plus- enhancement

Time
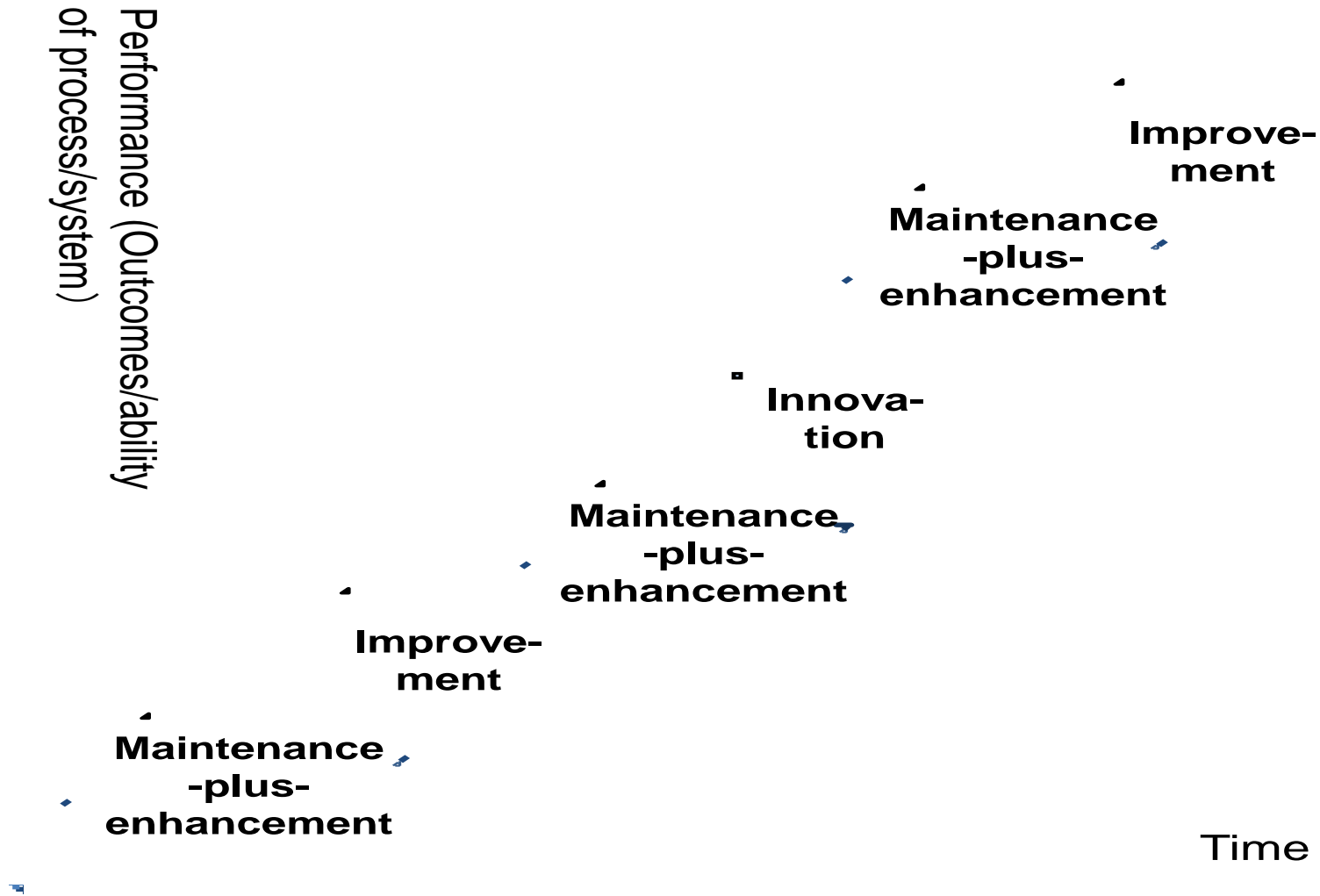
Figure 1 Maintenance-plus-enhancement, improvement and innovation

Quality Ensurance

Maintenance-plus-enhancement

Improvement
Innovation

Small Group Activities

Policy Management

Daily
Management

Education and Training on Quality Management

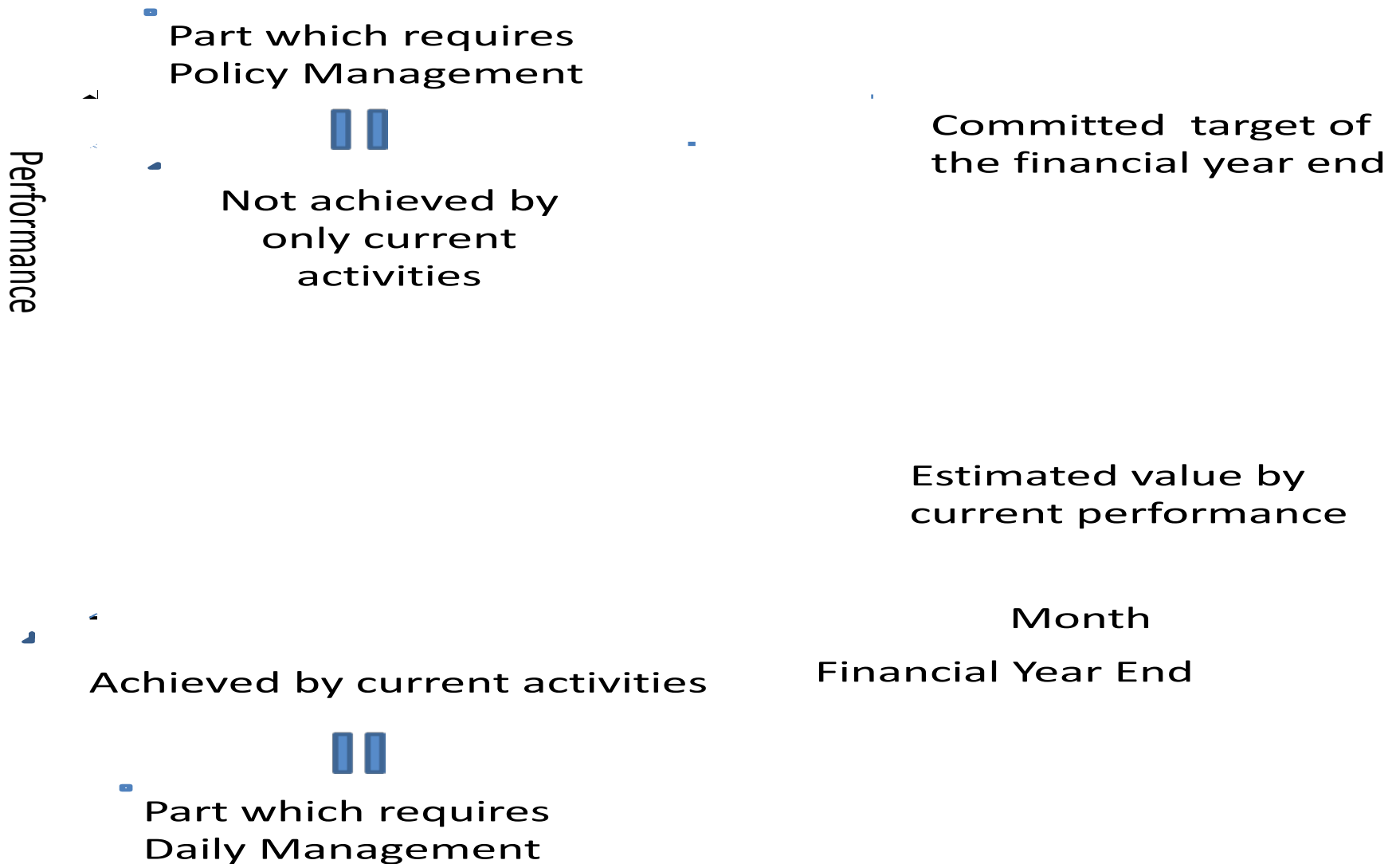Figure 2 Roles of Daily Management in the implementation of maintenance-plus-enhancement, improvement and innovation

Performance

Part which requires
Policy Management

Committed target of
the financial year end

Not achieved by
only current
activities

Estimated value by
current performance

Month

Achieved by current activities

Financial Year End

Part which requires
Daily Management

Figure 3 Daily Management and Policy Management
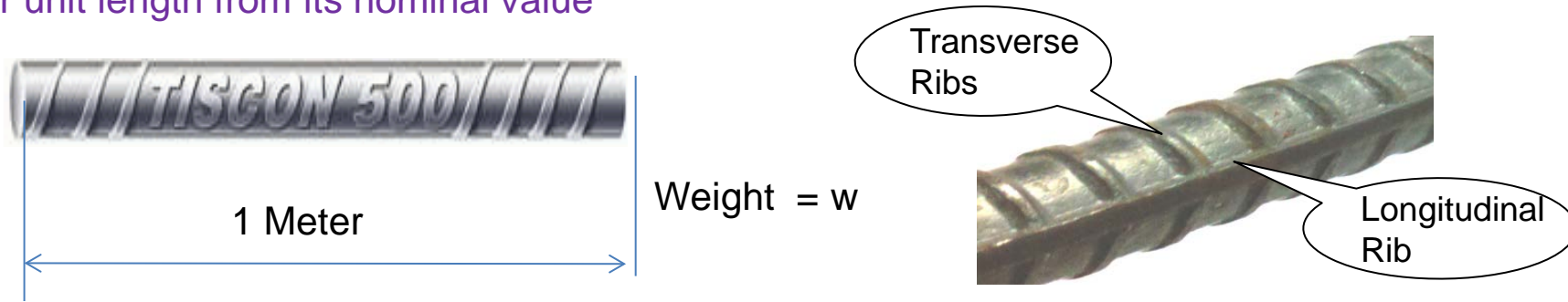
4.2 Concept of Daily Management (Clause 4)
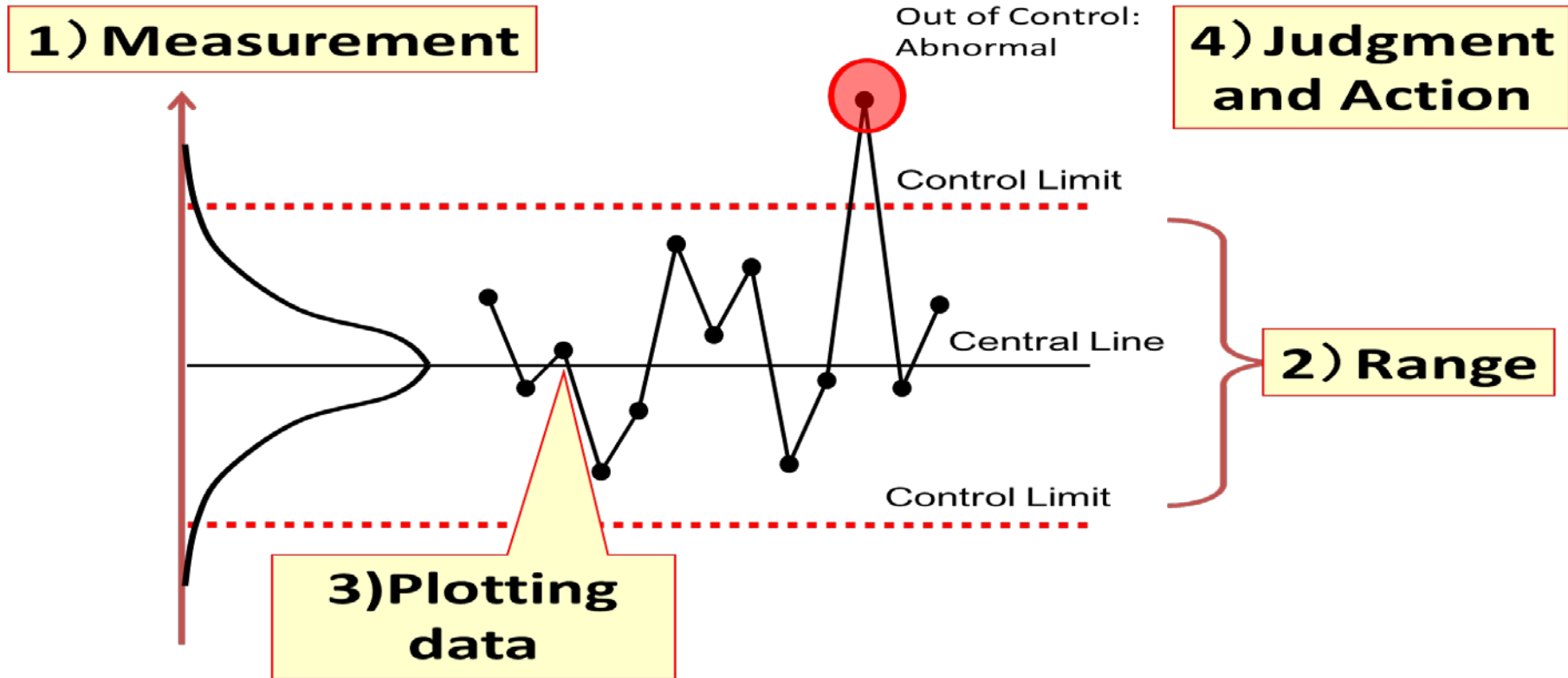
Fig. 4   Concept of control chart

Standardization of Adjustment Process for
Weight Tolerance at Wiring process

Weight tolerance is the term used in rebar industry to quantify the deviation in weight per unit length from its nominal value

Transverse Ribs

Longitudinal Rib

Weight = w

1 Meter

Nominal Weight for per unit length for 8mm rebar (IS1786) = 0.395 Kg

Deviation in Weight per unit length= ((w-0.395)/0.395) x 100 %

Acceptable limits for deviation (Tolerance)

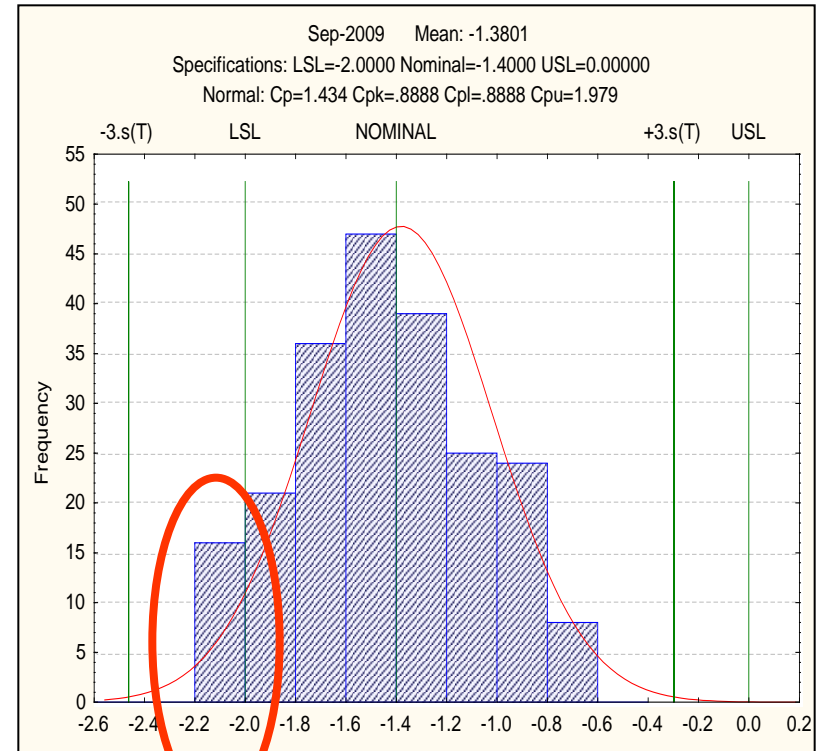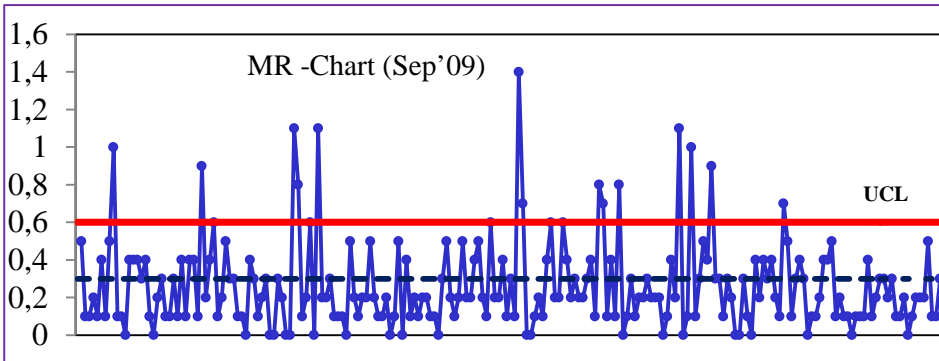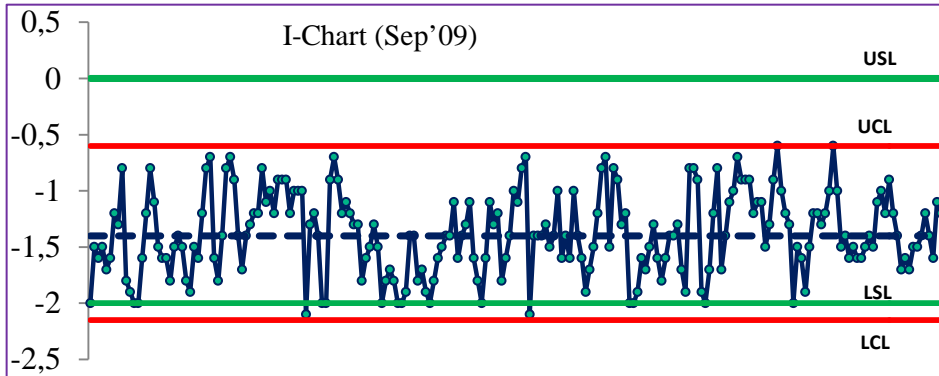As per IS 1786   -7% to 7%

TISCON USP (Brand Promise)   0% to -2%

While maintaining Wt. tolerance LRH(Longitudinal Rib Height) also needs to be maintained as it is another parameter associated with the product.
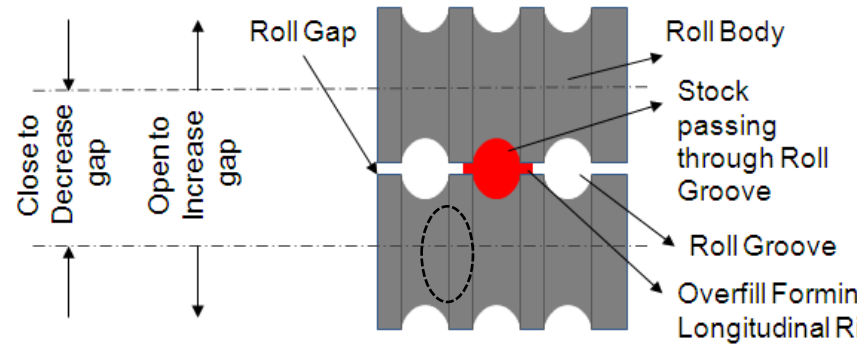
Weight tolerance of past data (Sep'09) shows that the process is neither stable nor conforming.
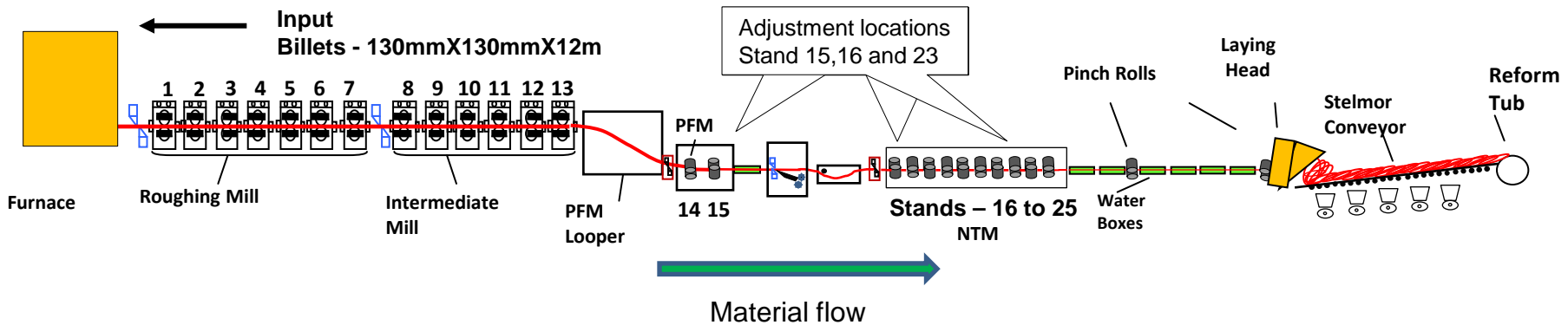

Out of Specification

* During Mill set up the gaps between the pair of rolls (stands 1 to 23) were set as per SOP.

During rolling, the groove wears, requiring adjustment to maintain bar dimension.

Roll Gap

Roll Body

Stock passing through Roll Groove

Close to Decrease gap

Open to Increase gap

Roll Groove

Overfill Formin Longitudinal R

* Based on feedback of weight tolerance, adjustments in roll gaps were done at stand#15 (Entry to finishing Mill) , #16 and #23 (First and last stand of finishing mill).

Input
Billets - 130mmX130mmX12m

Adjustment locations
Stand 15,16 and 23

Laying Head

Pinch Rolls

Reform Tub

Stelmor Conveyor

1 2 3 4 5 6 7   8 9 10 11 12 13

PFM

Furnace

Roughing Mill

Intermediate Mill

PFM Looper

14 15

Stands – 16 to 25
NTM

Water Boxes

Material flow

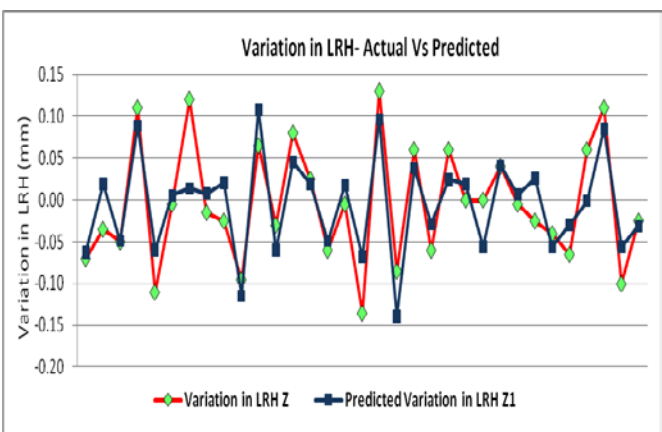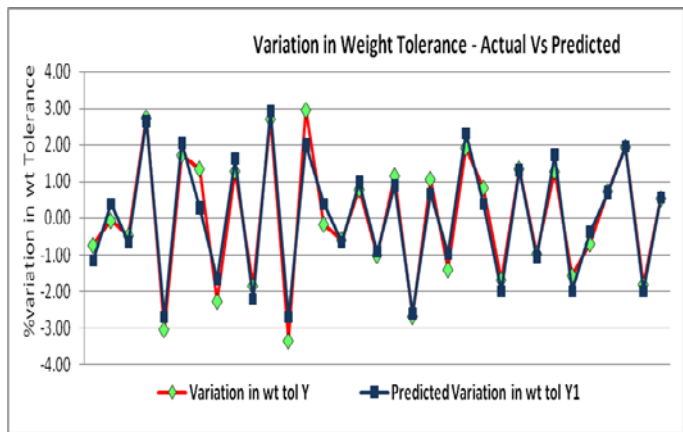* These adjustments formed part of a decision chart incorporated in an SOP.

1) Determining the level of adjustments (Where & How Much to adjust):
a) A DOE was planned with Adjustment levels at stands 15, 16 and 23 as input variables and Weight tolerance & Longitudinal rib height (LRH) as output variables.
b) Controlled experiments with involvement of managers, supervisors and front-line operators were conducted to establish the relation between input and output variables.
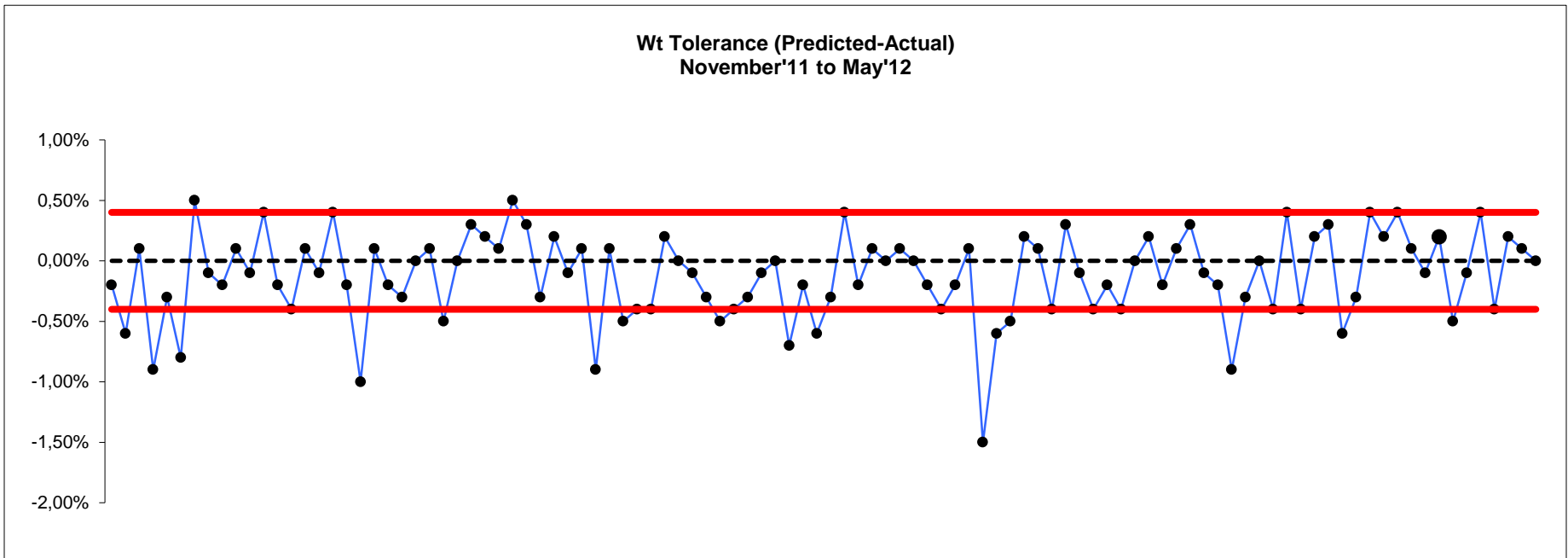
c) The following Regression equations were derived from the experiments:

$$Y_1 = 0.007 + 0\quad 2 X_1 + 0.\quad X_2 + 0.\quad X_3; \qquad \text{Adj. } R^2 = 0.68$$

X_1, X_2 & X_3 are adjustments at stands [ ] and [ ]

Variation in Weight Tolerance - Actual Vs Predicted

Variation in LRH- Actual Vs Predicted

Hence, it was decided to use the regression equations for defining the adjustment actions.

Wt Tolerance (Predicted-Actual)
November'11 to May'12

This control chart is used for:
1) Monitoring SOP compliance - Identify training issues (Immediate actions)
2) Monitoring adequacy of SOPs of preceding process steps – Initiate CAPA (Medium term actions)
3) Determine inadequacies in Excel based SOP for adjustment process – Initiate CAPA involving deeper analysis, DOE, etc (Medium to long term actions)

Wt. Tolerance (Predicted- Actual)
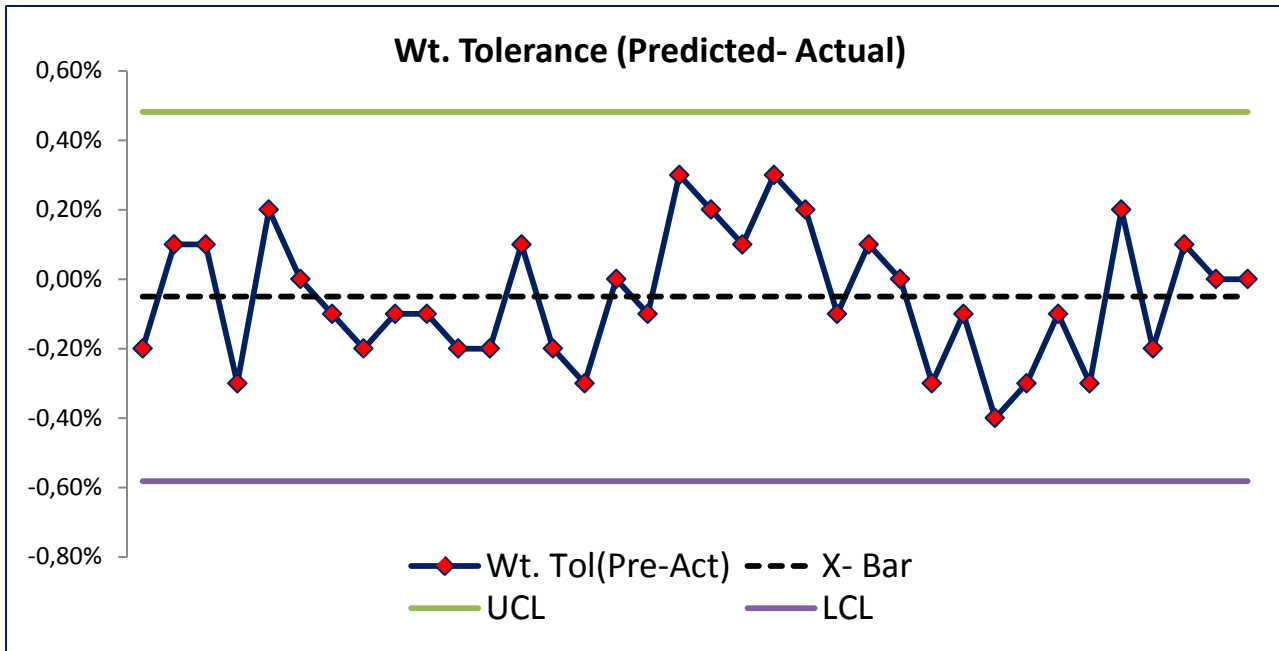
- **The plot indicates that the data is random**

- **The chart can be used to identify the cases of over adjustments and any other special cause.**