

**Case Study Oriented EP (Education
Program) For Engineers With
Imprinting "TRIZ Flavors" Focusing on
"Lows of Technological Evolution"**

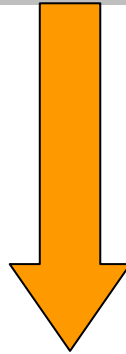
KOREA TRIZCON 2010

2010 . March 12(Friday)

**SANNO University
Dr. Sawaguchi Manabu**

[Introduction]

The previous survey in 2006 showed that a majority of engineers in Japan **lack** in both “**Innovation Power**” and “**New Product Planning Power**”



I decided to convene “**Case Study Oriented EP (Education Program)**” with imprinting “**TRIZ Flavors**”. Proposed EP is expected to stimulate engineer’s “**Innovation Power**” through “**Several Case Examples focusing on “Low of Technological Evolution” in TRIZ field as “One of Effective MOT-EPs**”.

[The Purposes Of Case Study Oriented EP]

(The purposes of case study oriented EP are)

To get engineers to notice “**the Importance of Innovation**” (and)

To give them “**the Good Field**” to grasp the “**Opportunities**” to enforce “**their Innovation Power**”.

In the first half of the presentation



I want to introduce “**the Overview of the Activities about the EP with TRIZ Flavors**” and

“**One of Case Examples**” focusing on “**Lows of Technological Evolution ,S-curve and so on**”.

In the latter half



I want to show the result of questionnaire surveys regarding “**the Effectiveness of Proposed EP**”

[The Features Of Case Study Oriented EP]

We had held “**the Workshop**” based on “**this Type of EP**” “**Eight Times**” since 2006.

This workshop is premised on “**Pan-Industry Social Event**”.

*Basically, “**Three Participants Per Company**”.

*Organized three “**Cross-Industrial Teams**” every exercise.

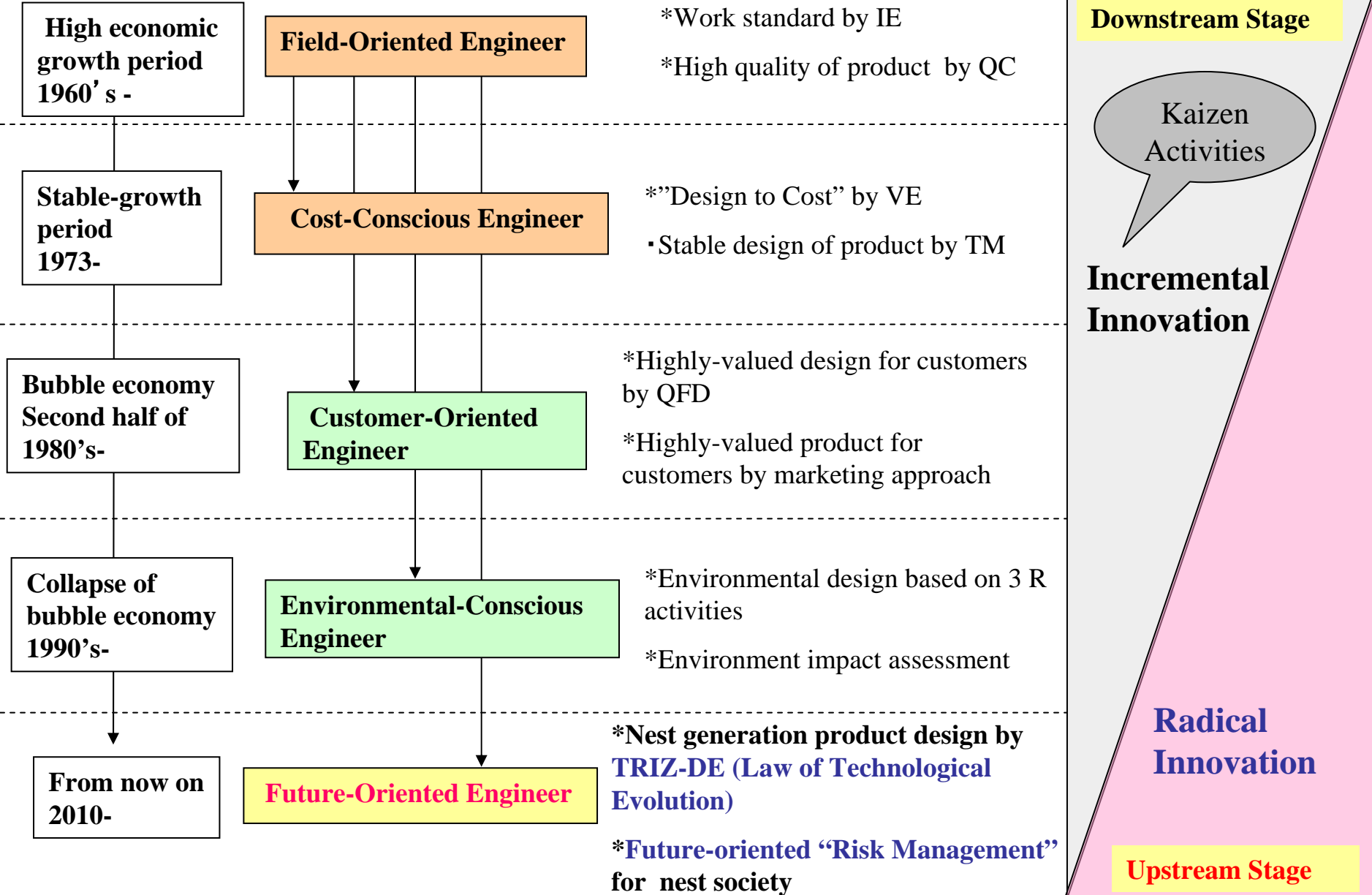
*Practiced “**Discussion-Oriented Exercise**”

*Exercises are based on” the **Case Examples**” developed with “**TRIZ Flavors**”.

Turning point of society

Image of required engineer

Subjects concerning "MOT-Field"



The Training Activities Of Proposed Workshop for Engineers

<p>1st Day</p>	<p>10 : 00 12 : 00 13 : 00 19 : 00</p>	<p>1. Introduction Of The Businesses At Each Company 2. Self-introduction *Prepare each company's brochures *Explain each company's description of businesses -Representative at each company explains the features of businesses -----<Lunch time >-----</p> <p>3. General Consideration About Innovation (Lecture) *Necessity of Innovation *The history of technologies in Japan *The abilities to be required to future-oriented engineers *Why they need the future-oriented thinking?</p> <p>4. Case Study <1> The history of development about rice cooker <Group discussion> <Presentation> <Lecture></p> <p><fellowship banquet></p>
<p>2nd Day</p>	<p>8 : 30 12:00 13:00 16:30</p>	<p>5. Case Study <2> What's the turning point of Innovation activities about portable music players ? <Group discussion> <Presentation> <Lecture> The history of walkman and iPOD -----<Lunch time >-----</p> <p>6.Free Discussion Organize the matters of concerns about Innovation and make a choice of most interesting thing(It means selected theme). Then You should initiate an exchange of views in regard to selected theme. <Group discussion> <Presentation></p> <p>7. Workshop Trainer's Comments</p>

**This time,
I want to show you
the history of rice
cooker's
development from
the viewpoint of
TRIZ**

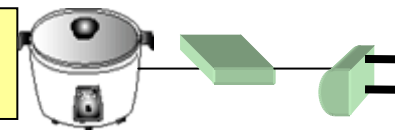
Product design features

- +Boil rice automatically
- +Use smoothly even narrow kitchen
- +Prevented scorching rice
- +Make boil rice on estimated time
- +Keeps boiled rice warm automatically
- +Realize effectiveness of steaming
- +Increase Aesthetic value of rice cooker
- +Create flavor like boiled rice in Japanese furnace
- +Make ideal boiled rice anytime
- +Reduce the time to souse rice in water
- +Memorize appropriate temperature for good taste
- +realize a wide variety of boiled rice
- +Continue with electric power saving
- +Create boiled rice flavor from just Japanese furnace

1st generation (1955) Sale
"Birth of electric rice cooker"



First half of 2nd generation (-1960's)
Chasing up "convenience"



Latter half of 2nd generation (1972-)
Development of rice cooker with "jar"



3rd generation (1978) Rice cooker with the function to realize "Japanese furnace" to boil rice



4th generation (1980's-) Rice cooker with microcomputer control to boiled rice precisely



5th generation (1994-) IH Rice cooker

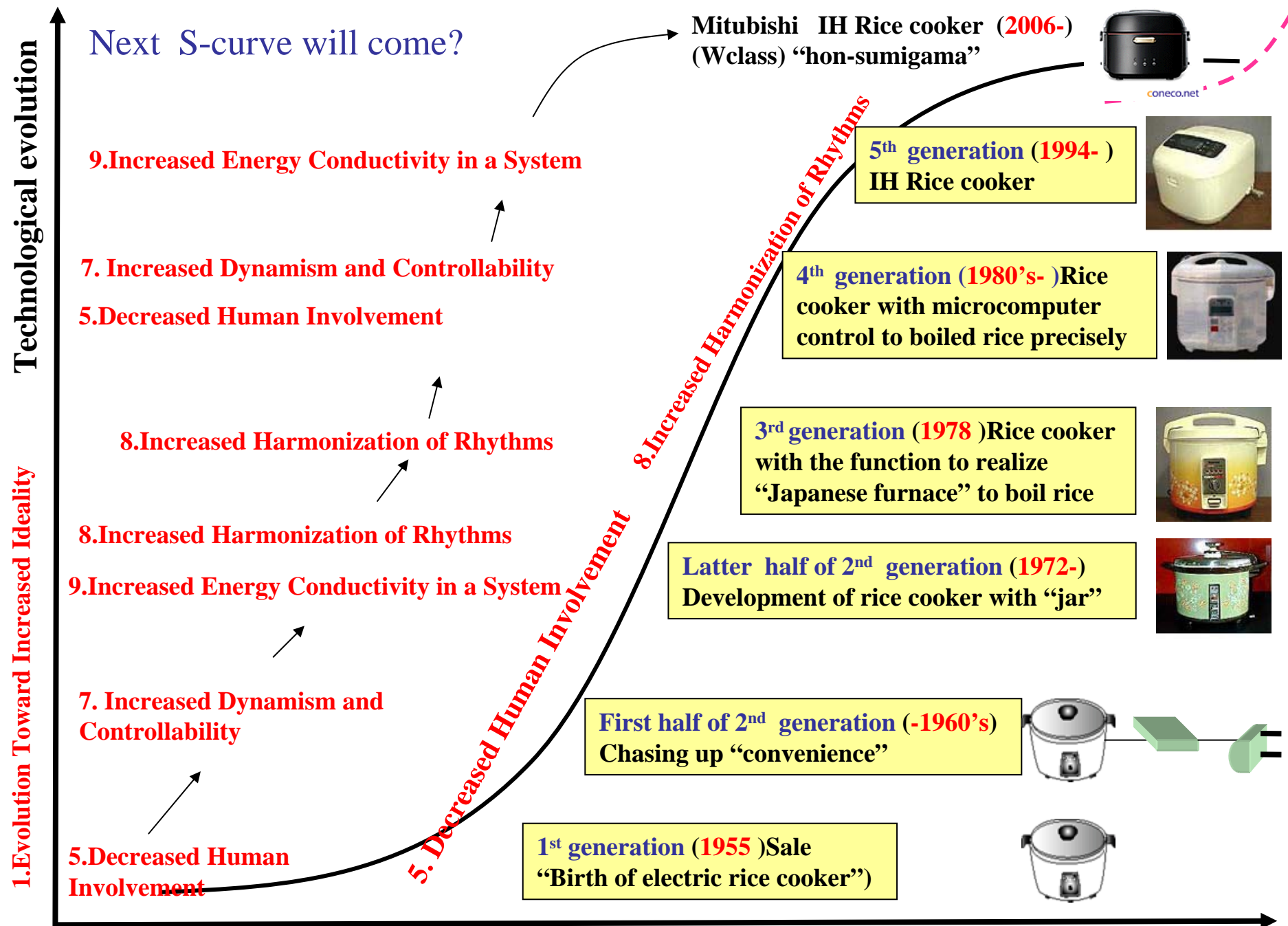


Mitubishi IH Rice cooker (2006-)
(Wclass) "hon-sumigama"



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Time



Technological evolution

1. Evolution Toward Increased Ideality

Next S-curve will come?

9. Increased Energy Conductivity in a System

7. Increased Dynamism and Controllability

5. Decreased Human Involvement

8. Increased Harmonization of Rhythms

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Mitubishi IH Rice cooker (2006-) (Wclass) "hon-sumigama"

5th generation (1994-) IH Rice cooker

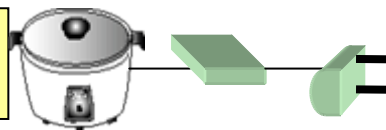
4th generation (1980's-) Rice cooker with microcomputer control to boiled rice precisely

3rd generation (1978) Rice cooker with the function to realize "Japanese furnace" to boil rice

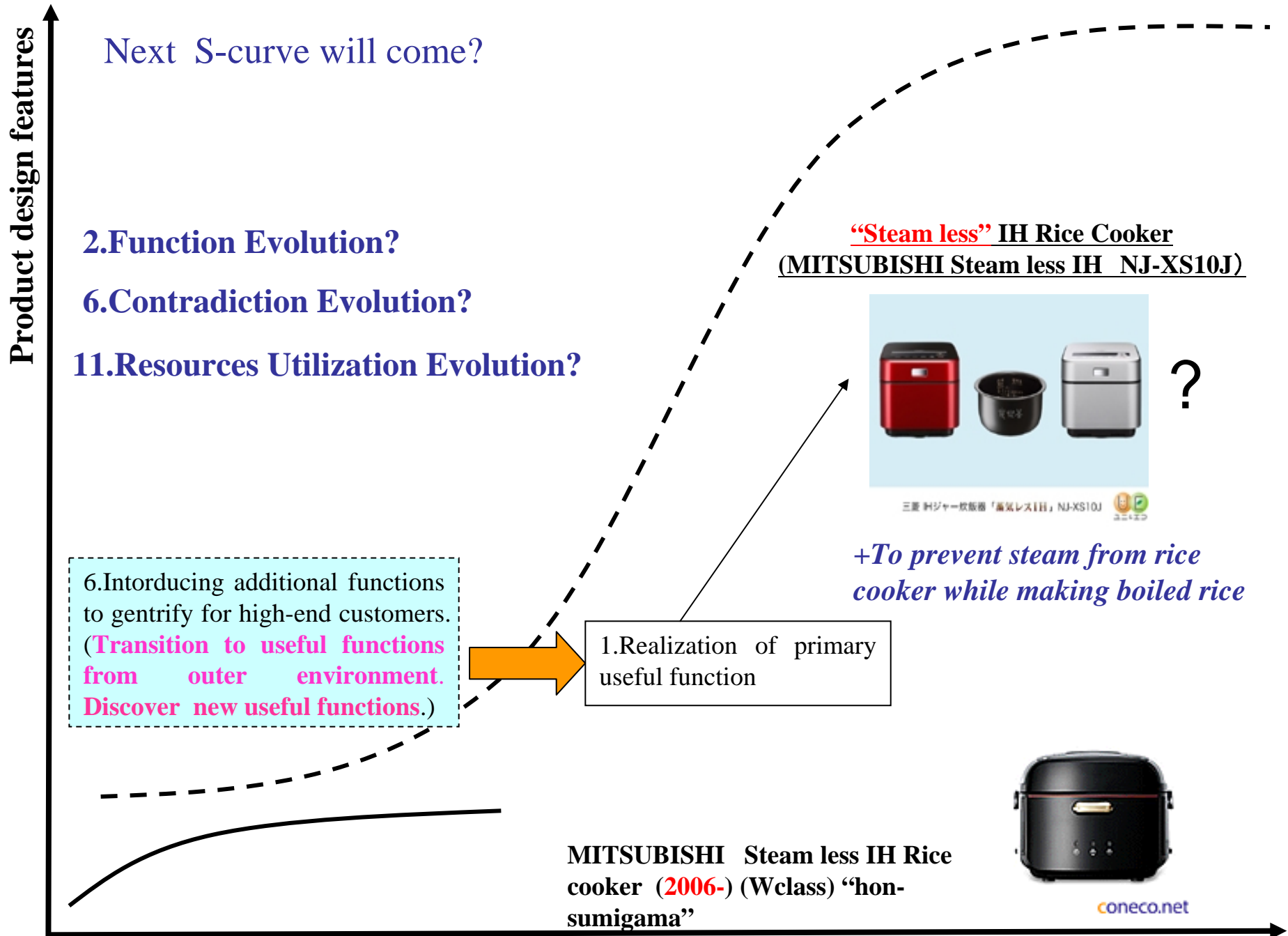
Latter half of 2nd generation (1972-) Development of rice cooker with "jar"

First half of 2nd generation (-1960's) Chasing up "convenience"

1st generation (1955) Sale "Birth of electric rice cooker"



Time



Next S-curve will come?

2. Function Evolution?

6. Contradiction Evolution?

11. Resources Utilization Evolution?

6. Introducing additional functions to gentrify for high-end customers. (Transition to useful functions from outer environment. Discover new useful functions.)

1. Realization of primary useful function

“Steam less” IH Rice Cooker
 (MITSUBISHI Steam less IH NJ-XS10J)



三菱 IJジャー炊飯器「蒸気レスIH」NJ-XS10J

+To prevent steam from rice cooker while making boiled rice

MITSUBISHI Steam less IH Rice cooker (2006-) (Wclass) “hon-sumigama”



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Contradiction Matrix (Altshuller Version)

“Steam less” IH Rice Cooker

Grasping exposed technological contradiction, we have to consider Innovative solutions without compromise. One of them might be radical innovation to create “Next S-curve”.

When we try to *(make boiled rice)*

Concrete content to be improved

We want to realize good taste boiled rice without steaming



Concrete method to improve

Reduce steaming by damping down a little



Improving concrete feature

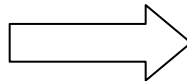
Keeping fire power



Improving feature

17. Temperature

IN the result



Worsening content

Reduce “UMAMI” (boiled rice flavor)



Worsening concrete feature

Disappear vapor runway look like crab hole



Worsening feature

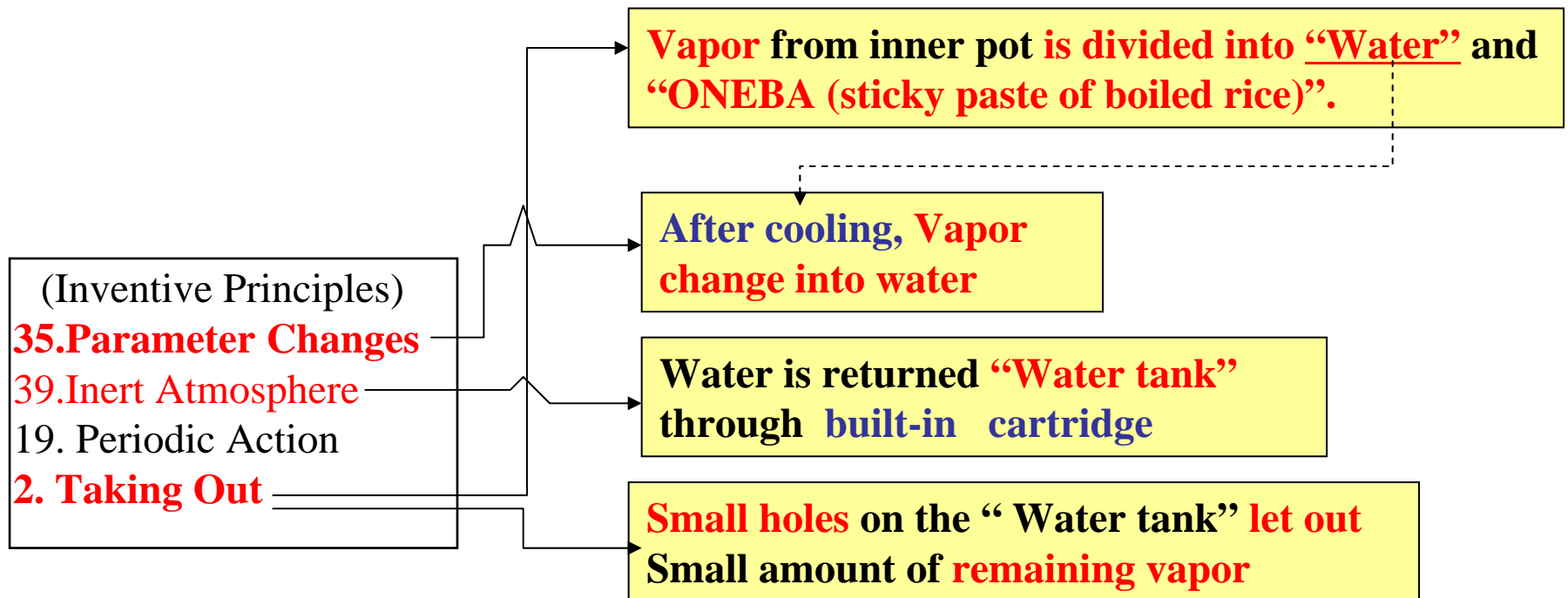
11. Tension/Pressure

(Inventive Principles)

- 35. Parameter Changes
- 39. Inert Atmosphere
- 19. Periodic Action
- 2. Taking Out

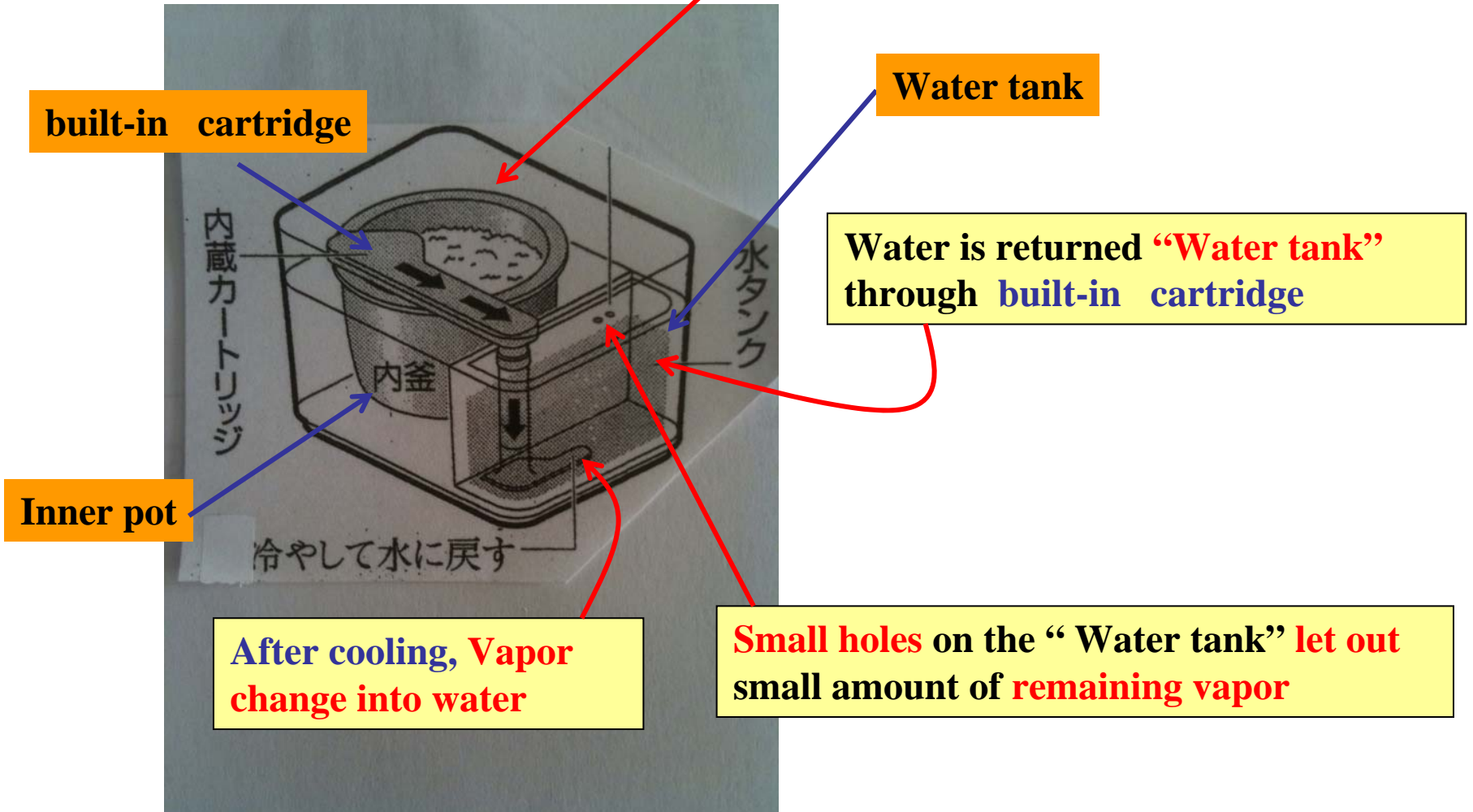


Contradiction Matrix are very useful. Because In this case, it's possible to realize “steam less rice cooker” based on **unique or innovative ideas** created by **some of inventive principles** extracted from contradiction matrix as descried below .



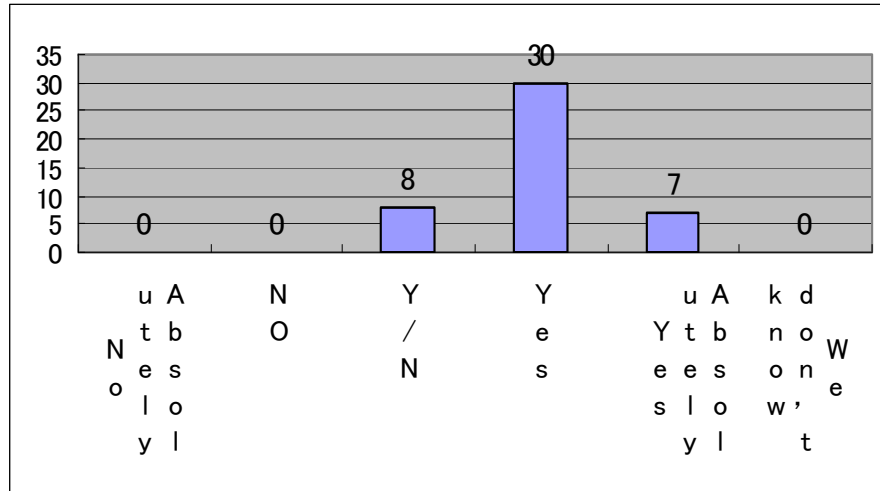
Basic concept of steam less rice cooker

Vapor from inner pot is divided into **“Water”** and **“ONEBA (sticky paste of boiled rice)”**.

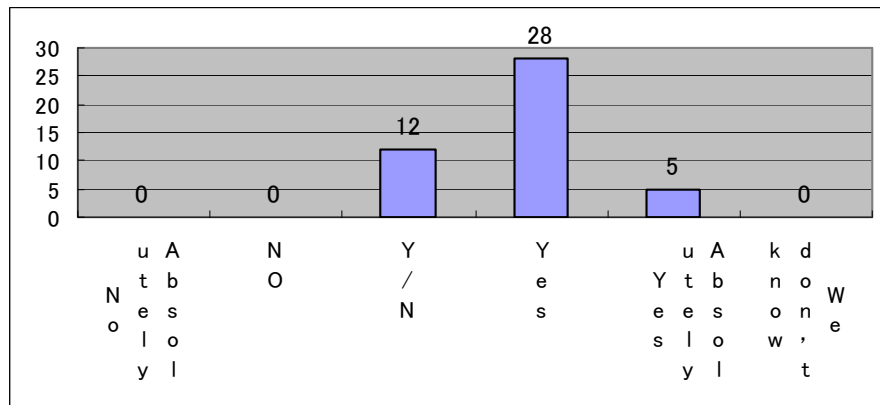


ASAHI News paper :30 Jan.2010

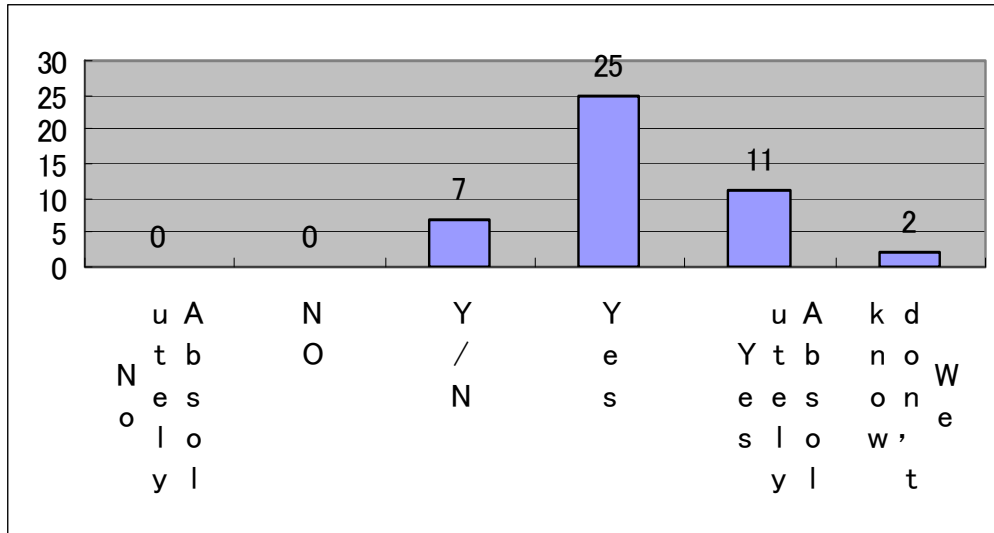
1. The ways of both looking and thinking at things were changed, because we got new knowledge through this workshop.



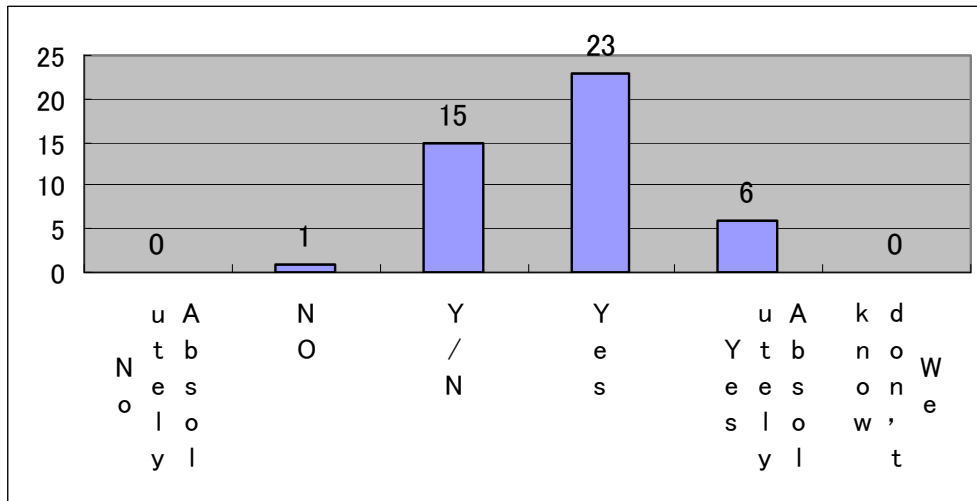
2. We were able to organize our experience and way of thinking. Therefore this workshop enhanced our knowledge.



3. What we learned at this workshop will be useful for our future.



4. We have more incentive through teacher's advices at this workshop.



[Conclusion]

1) This type of workshops are very useful for engineers to enhance “their Innovation Power”

(According to the conducted survey after the workshop.)

2) “Enhancing the Innovation Power” is one of the effective measures to build “Corporate brand”.

(According to the previous survey in 2005)

3) Participants at the workshop need timely case examples focusing on TRIZ thinking (TRIZ Flavors).

4) I installed some case examples including TRIZ flavors at my class, which is called “Technology & Product Development Case study”, at graduate school for working people of SANNO from 2009.

5) I will utilize some case examples based on “Lows of Technological Evolution” in TRIZ field as “one of my new classes “at Faculty of Science and Engineering , at Waseda University in April, 2010 because of effectiveness of TRIZ.”