Design of Everyday Things: SOAP and SOAP Cases

Some of my recent articles present a way to generate ideas using TRIZ Contradiction Matrix & inventive strategies to overcome technical & non-technical contradictions. The aim of this article is to show how the contradiction & inventive principles tool works. This is one of the many innovation tools we use to help our client teams generate ingenious solutions to their problems. We can do that for you as well.

Many of you may wonder, can't we generate ideas without using innovation tools, yes you can... 'but something' stops us… lets understand this 'but something',

Problems are mired for right solutions because of contradictions that teams are unable to solve. Our recent survey shows that people find contradictions as a major obstacle to innovation

If you formulate the contradictions TRIZ offers us inventive strategy to overcome contradictions, this in my experience is a focused approach to generate implementable solutions in shortest possible time.

Let's look at this everyday problem of soap wastage. Soap must dissolve and make lather for cleaning our body, but soap remains wet after its usage and takes time to completely dry. Some part of the soap in the process dislodges and sticks to the surface on which it is stored to be eventually washed off when we use soap the next time, so there is a wastage every time we use it.

Now the technical parameter we want to improve is "Loss of Substance" (Parameter #25) and parameter that stops us from improving it is 'Stability of Object Composition" (Parameter #21)

The "contradiction matrix[1]" suggests following inventive principles for the above pair of contradiction, we will use these principles and rules under it to generate ideas or relate to ideas that are already there

1- Segmentation, 30 – Flexible Shells & Thin Films, 19-Periodic Action, 24-Intermediary, 29-Pneumatic & Hydraulics, 36-Phase Transitions, 18-Vibration

Now there is another route to contradiction definition, which is called 'Physical Contradiction", it simply means you want two opposite things in an object at the same time. In this case our problem emanates because soap after use is left to rest on a surface either in a soap case, soap holder, or window of our bathroom, we will have less of a problem if soap floats ☺ Therefore we want soap to be in contact with the surface and soap not to be in contact with the surface or better still soap dissolves and doesn't dissolve. Now inventive principles which can solve this contradiction are 1- Segmentation, 2 – Taking Out, 3 – Local Quality, 4-Asymmetry, 7- Nested Doll, 13- The Other Way Round, 17- Another Dimension, 24-Intermediary, 26-Copying, 30-Flexible Shells & thin films, 40- Composite Material

TRIZ's 9 windows of system operator makes us think about other elements that exists in the surrounding environment of an object from where we would like to find innovative ideas, here we would pick up quickly some such objects for e.g., soap case, water, tissues, etc. Now

the interesting thing here to note is that TRIZ doesn't understand what object you are trying to innovate on, it only understands the contradictions and suggests ways used by other inventors when faced with similar contradiction. Many innovative ideas can be generated using these principles and can be applied not only to the object under consideration but also to the surrounding elements. Let's see what ideas are generated using some of the principles that we got by defining both physical & technical contradictions

Let's start with SOAP first

A) IP (Inventive Principle) #1 Segmentation & IP #2 Taking Out – make smaller soaps instead of one large one so that wastage can be reduced (for soap manufacturer), cut the soap into small parts and use one small piece at a time to reduce wastage (user's JUGAAD)

B) IP #4-Asymmetrical, IP #17-Another Dimension IP #3-Local Quality and IP #24 Intermediary these principles are used in ARAMUSK soap, it is made asymmetrical and non-uniform (#3&#4), instead of square bar the side edges have travelled in another dimension making it trapezoidal this ensures that not all the soap surface but a portion is in touch with the resting surface, by way of IP #24 intermediary they have put up a sticker at the bottom creating a barrier to prevent water touching the soap surface. See the picture below. Another way of using IP#17 is to make surface curved than flat thus reducing the contact area with the surface (Refer Figure 1 below)

Trapezoidal Aramusk Soap

Curved Soap

Figure 1

C) #30 flexible shells & thin films give us an idea of a paper soap where we don't have to use solid soap bar but can use paper soap every time we need it

D) IP #29-Pneumatic & Hydraulics suggests replacing solid parts with either gas or liquids. Using liquid soap is another option to get over this problem completely. Sauna bath is another way of cleaning our body

E) #36 phase transition suggests that make solid soap into a liquid & store it in a bottle to avoid wastage (Refer Figure 2).

Paper Soap

Liquid Soap

Figure 2

Soap Case (outside element)

Now if Soap Case manufacturer wants to solve this problem and differentiates otherwise commodity item like soap case from her competitor then what she would do

F) Soap cases are already segmented with holder and lid being its two parts, now interestingly IP#13 'The Other Way Round" & IP#7 "Nested Doll" suggests an idea to invert the soap holder & lid and nest the holder into lid. Using IP#36 phase transition, the liquid part of solid soap when it meets water gets collected in the lid now. So that we can use the liquid soap first before the next bath (Refer Figure 3)

Figure 3

Water (outside element)

IP#3 local quality making uniform things non-uniform suggests that we use cool water to make lather and apply lather all over body & then can take bath with hot water or take a cold shower. There is a study that has validated that rate of soap dissolution is far lesser in cold water than in hot water

Thanks for your time reading this article.

We can help your organization build employees innovation capability & work on technical & business problems to create ingenious solutions

References:

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