

APRIL 2007: TOPIC OF THE MONTH: DO IT IN REVERSE

Have any of you ever had a stress test in a doctor's office to measure blood flow through the circulatory system? You basically swallow a tracer dye which can show your blood flow and indicate partially plugged arteries in time to prevent a serious heart attack. Well, I've had one of these a while back and when calling in to schedule, the nurse asked me what kind of stress test I was coming in for. I managed to hold off my normal smart mouth response of "what do you mean, what kind of stress test..." long enough for her to explain to me that there was a special test for seniors who were handicapped that could not run on a tread mill (duh!) and she wanted to know if I needed that kind of a test. What is done is to inject the patient not only with a tracer dye, but also with a chemical known as adenosine (look up at www.wikipedia.com), which artificially races the blood flow, simulating someone running on a tread mill. The tracer dye analysis is done the same way as normal. It was very embarrassing to realize that I had never thought about this situation. We do the test in reverse--the person is still and the blood movement simulates the treadmill.

You will find this principle in the TRIZ contradiction table as #9, called preliminary anti-action or something similar depending upon versions or authors of the table. We do something "in advance" and the "opposite" to counter the potential impact of what is going to be done. This is not a frequently used TRIZ principle, but when it applies, it is a very effective idea generator. If you look at what kind of problems this principle is generally used to solve, you find examples relating to a safety situation where we might want to "add" something to a system to counteract a later negative effect.

Preparing something for the next operation on an assembly line that will counteract a known negative event to occur (stress, movement, part addition). Taking antacids before you eat acid producing food. Stopping some medications early that might affect bleeding during a surgery. Adding chemical reactants in such a way as to reduce safety hazards known to exist—add sulfuric acid to water, not the other way around, adding water to starch and instant coffee and not the other way around, the customers find you (on the web)--you don't look for them, corrosion inhibitors, polymerization inhibitors, built in stress relief in construction materials, low fares that find you, and we could go on and on. If we look at the TRIZ contradiction table itself we see several places where this principle is applied.

One example is improving parameter #8 (wanting to improve the volume of a stationary object) vs. strength of a stationary object. How about pre-stressed concrete, fillers in composites to counteract shrinkage? You see the same application in the contradiction of strength (#14 in the table) vs. volume of stationary object (#8). Please recall that this table was done over 50 years ago, long before pre-stressed concrete and composites became household words.

What about business applications? Ever heard of poison pills that attempt to prevent takeovers? If you're going to call on a customer and give them some bad news, what might you do ahead of time to lessen the blow? You're about to present the news that there will be no merit raises this year. What can you do IN ADVANCE?

It's all the same problem and principle!

Think about some negative or hazardous operation or process you perform (especially if it is a hazardous one) and reverse the process. Then think about what you could do in advance that might assist in counteracting the anticipated negative effect and give you the ideal result you want.