IMC Study

Pictured clockwise: Gregg Duthaler, Jay Lulla, Cherry Ogata, Akan Oton, Jaime Salas, Dennis Klein, Shaun Abrahamson.

MIT study shows that Invention Machine Software increases creativity by 70%.

A group of MIT students from the School of Engineering attended a course taught by Invention Machine Corporation from October to December of 1996. The course consisted of three hour seminars held for eight weeks. The students were instructed in the Innovative Technology of Design and had hands-on practice with Invention Machine Software - IM-TechOptimizer and Invention Machine Lab.

The course was taught by Invention Machine's Training Department at the Corporate Headquarters in Massachusetts. The students who completed the course were awarded with Invention Machine Software packages - IM-TechOptimizer and IM-Lab. One month later, Invention Machine Corporation conducted an experiment to test the effectiveness of IM software and the efficiency of training. Two groups of MIT students participated in the experiment: one group that had attended training and another group of students who were not trained on the Innovative Technology of Design. Both groups were given a real engineering problem and had one hour to work on it individually. The group that had attended training was using IM Software - IM-TechOptimizer and IM-Lab.

The following problem was given to the students:

"Exhaust gases that contain dust or fine solid particles (cement, metallurgical industries, power plants, etc.) can be effectively cleaned in fabric filters. Gases, laden with dust, enter the fabric filter, pass through porous membrane of filter bags and leave the filter. The dust separated from the flow precipitates on the outer surface of the bags, forming a dust cake. The shape of the bags is preserved by wire cages inserted inside. It is necessary to remove the dust cake from time to time because the pressure drop of the filter increases. One of the most effective ways to do it is to direct impulses of compressed air into the openings of the bags generating a shock wave that travels along the bags and breaks the dust cake. The dust of the cake precipitates to the hopper after that.

However there is a problem. Dust cake removal is not effective enough at the lower part of the bags because the length of the bags is 5-9 meters(Air Pollution Control. A Design Approach, C. David Cooper and F.C. Alley, 1990). It is possible to increase the pressure of compressed air, but it will cause additional power consumption and may damage the upper parts of the bags too. Leading fabric filter companies (Flakt, Italimpianti and others) paid considerable attention to this problem (Leutbecher, A.C., Filtration of Flash, Third Symposium on Fabric Filters,EPA-600/7-78. Washington, DC: U.S. Environmental Protection Agency).

It is possible to add non-adhesive granules to the gas so that dustcake will not be uniform and solid, but this concept cannot be applied because they plan on recycling the dust.

What can be done to improve the dust cake removal?"

The experiment was conducted by a committee that consisted of representatives of both groups of students and two Invention Machine Corporation trainers. The committee announced the following results of the experiment:

The group of students that had not attended training generated 14 concepts per participant; the group of students that had attended training and used IM software generated 24 concepts per participant.

The winner, Shaun Abrahamson, MIT graduate student of Department of Mechanical Engineering, generated 46 concepts using IM software. Some of the concepts coincided with several recent patents related to the problem.

The experiment showed that the effectiveness of concept generation increased 70% after only 3 days of training and with IM software support. It is also worth mentioning that the quality of concepts generated with IM software support was much higher because students could use a number of effective engineering effects and design examples from the IM-Lab database.

For details about the experiment, names of the participants, as well as information about the problem and generated concepts, contact Dr. Sergei Ikovenko, Director of Software Application and Training, Invention Machine Corporation.