Foreword

Continuous Refinement of Technology and Innovation

Tetsuji Ohashi

Senior Executive Officer
President Production Division
Supervising e-KOMATSU

The meltdown of the world economy since last year is on an unprecedented scale never before experienced by mankind and is spreading pessimism throughout the world. I believe that the motive power to break through this predicament is continuous refinement of science and technology.

In the past, mankind has achieved an enhanced living standard and social stability before and after societal repressions and great depressions by accomplishing great scientific and technological advances that have been called "innovation" by people of later generations. These advances have been used as levers to create new values and to accomplish an overwhelmingly high productivity. The deeper the degree of turbulence is, the possibilities of more innovative scientific and technological achievements being created are high. We too must do our best at this time to contribute to following generations. The general recognition by the public of "innovation" is the realization of an entirely different performance level (such as in size, efficiency and speed) and the putting into practical use of new principles that enable further evolution of this level. Bringing these new principles to a level of practical use cannot be accomplished easily. Furthermore, for "innovation" to be called "innovation," it is important to stimulate a type of movement for new principles to spread widely, be used by many people and to be recognized by them. Given this notion, even an extension of conventional technology may be worth calling "innovation" of one type if an attempt is made to improve its performance level dramatically (such as in size, efficiency and speed) and if it spreads widely.

For example, when we consider motive power sources of vehicles, a change from engines to batteries can clearly be called "innovation" technically. Recently, the battery performance and cost have improved significantly, but further improvement is necessary before batteries are used widely. Much time is needed before movement is stimulated. On the other hand, the basic structure of the engine has not changed for one hundred years and the structure of vehicles using it has not changed either. Some people say that, in one sense, innovation has not taken place in the past ten decades. Nevertheless, output horsepower and cleanliness of exhaust gases have enhanced phenomenally in the past ten years. The technology to control vehicles has improved. The fuel combustion efficiency has improved significantly, by 20 to 30%, compared with ten years before by controlling engine combustion tuned to vehicle condition. This technology is on a high-volume production and diffusion level and its social contribution is very high even though it is not called an innovation.

Recently, research of nanomaterials is being conducted very actively at universities in the field of material engineering and research themes of steel have diminished somewhat. However, diligently researching and improving the material called steel, which is low cost and has excellent characteristics, will perhaps one day lead to more innovation.

I believe that we will be able to accomplish results approximating the innovation level at this great turning point if we closely examine the technologies around us one by one and painstakingly and exhaustively continue technology improvement. What is especially important is to accomplish a high volume production and commercialization. A contribution to the advances of society and to mankind can be made by upgrading the degree of perfection of technology, by spreading technology, by being accepted by people and by linking to movement that can be called innovation.