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Classification of processes where technology progress and the primary factor which bears the succeeding type -Case study in steelmaking process-

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The equipments of the steel industry are constructed under the technical uncertainty because of its very large size. However the knowledge which is obtained on a laboratory scale is used.

On the one hand, among the former research regarding the decision making of enterprise, those which refer the uncertainty of technology itself as the risk which accompanies plant investment are little.

Even in the technical evolution of steel production process, the fact that it is the development which it should call "adaptive radiation" and "convergence" were discovered, adding the ordinary "natural selection" similar to biological evolution.

Two examples have been picked up as the case study.

One has been Basic Oxygen Furnace slag outflow prevention technology (evolution example of natural selection type). And the second has been the combined blowing Basic Oxygen Furnace (evolution example of adaptive radiation type) The result of the investigation regarding the evolution of two technologies which are observed with the Japanese steelmaking process, it was proved as follows;

The types of those technological evolutions were characterized in two dimensions plane. First axe was presence of ecological niche and physical isolation of niche of each one, and second was, "The Great Dying (simultaneity of development commencement)". Choosing each in vertical axe and the horizontal axe, pattern of technical evolution was able to be modeled.

And the answer to the question "What is the primary factor which makes the type that leads the development to successful goal?" is able to be explained by this model. The solution is to force the project to be located in the 1st quadrant of the model, in other words, it is important to let the matter be adaptive radiation type.