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# Countermeasure and Interaction of Common Techno-innovation and New Energy Industry Development

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## Abstract

There is an endogenous response process between common technology innovation and new energy industrial development. This article proposed the concept of common techno-innovation response to the new energy industrial development and comprehensive response degree model of common techno-innovation response to the new energy industrial development.

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## 1. Introduction

The common technology is a technology in pre-competitive stage, and it can be widely used in one or more industry. In common technical research achievements, according to their own production or the product demand enterprises can conduct the follow-up commercialization of R&D, and formed competing technology or product among enterprises. The supporting and guiding role of common technology in the process of independent innovation is irreplaceable. Any industry's growth and development are based on common technical foundation. The development of new energy industry is the development of energy industry technology in large level. Especially in today's international energy environment, new energy and energy efficiency improving becomes the key guarantee of energy security<sup>[1]</sup>.

The New energy industrial common technology is the deciding factor, which leads the development direction of new energy industry. It is not only a key element of country's (region) industry, but also the

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necessary condition of industry sustainable development. Therefore, compared with the characterization techniques, the common technology determines the country's (region) new energy industry development. In China's economic development model transformation request and strategic emerging industry's guidance, the formation of new energy common technology innovation networks is the guarantee of sustainable development of new energy industry. Since 1970s, N.Abernathy (1978)<sup>[2]</sup> in Harvard University and J. M.Utterback (1999)<sup>[3]</sup> in Massachusetts Institute of Technology have done a series of investigation to the product innovation, technology innovation and organizational structure correlation. They used product life cycle theory (PLC) as a foundation by analyzing many industries and innovation cases, and found they not only follow different development law, but also have organic connection. Their dynamic development affects industrial evolution. By introducing a concept of dominant design, product innovation as the center, they put forward the dynamic process model of industrial innovation, which is Abernathy-Utterback innovation process model, or traditional A-U model. The traditional A-U model reveals the intrinsic relationship between technical innovation and industrial development in a particular technology track; it's a short-term dynamic process model of industry innovation. The improved A-U model researches the intrinsic relationship between technical innovation and industrial development from industry structure evolution process, which is a long-term industry innovation dynamic process model. But the A-U model is lack understanding of mutual influence process between technical innovation and industrial system evolution<sup>[4]</sup>.

The Nelson & Winter model is the cornerstone model of economic growth evolution. Test results and analysis of Nelson & Winter model shows that, the model basing evolution economics theory can explore macroscopic phenomena, although the price is its complexity swathes than the neoclassical model. Because of the increasing complexity, the explaining capacity to the phenomenon characteristics of common technical change is strengthened. This explanation is closer to the empirical study results of common technical change phenomenon. Cheng Zhao-Han and Jiang De-Peng then their development model of industry evolution<sup>[5]</sup>, they assume that technological difference is the major source of enterprise diversity, and industry is composed by several competitive enterprises which production function is basically the same. The model analyzed the enterprise decision-making behavior and industrial evolution influence every moment, and expounded the major source enterprise diversity, which is namely technology innovation mechanism, and described the enterprise survival influence and decision-making process for enterprises in investment, production and sales. The both enterprise thought of competition and cooperation was also reflected in the decision rules. Due to the complexity of industry evolution model, we use the computer experimental simulation method to solve the model. Through assignment the basic parameters and design the operating mechanism and operated the model, we discovered the common characteristic which industry evolution appear, and analyzed some total index which reflects industry level and their relational characteristics.

The innovative capacity has become an important index that measuring core competitiveness of an industry, and motility that promoting economic growth. The realization of innovation depends on many factors, including institutional environment, R&D input and human capital, etc. In developing countries, where innovation system environment was still imperfect, the industry development process along with economic development was an important factor promoting common technical innovation. Because of industry development was able to provide continuous demand to common technology innovation. So, if the common technical innovation ability has any apparent ascension? In the growth and development of Chinese new strategic industry, what relationship between the two extents, if the role of new energy industry in promoting industrial generic technology innovation is obvious, etc. To answer these questions, this article using Chinese new energy industry overall development level and industrial common technology innovation data analyzed the correlation and dynamic development, in order to understand their interaction mechanism and effect, and get some policy implications.

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