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### Study on the Assessment Method of Agroecosystem Health Based on the Pressure-State-Response Model

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Agriculture is a conflict region for economical development and environmental protection, and agroecosystem health assessment is its foundation of sustainable development. Based on the character of agroecosystem and PSR (Pressure-State-Response) model, this paper selected some indicators of agroecosystem health and constructed the model of matter-element evaluation, which is applied to seven towns in DXQ (Daxing District) and got the following results: WSZZ (Weishanzhuang Town), LXZ (Lixian Town) are 'healthy'; CZYZ (Changziying Town), ADZ (Anding Town) and YHZ (Yinghai Town) are 'critical state'; XHMZ (Xihongmen Town), JGZ (Jiugong Town) are 'unhealthy'. The results are basically consistent with facts of seven towns, so the index system and method of evaluation are feasible.

### Modeling and Analyzing Safety-critical Parallel-series System Safety

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There are working, and two failures states including fail-safe and fail-dangerous in safety-critical systems. This paper studies two different safety-critical parallel-series models by considering their components lifetime distribution possessing general forms. The indices of reliability and safety including the probabilities that the system in these states and mean time for the system under two different failure ways, are derived respectively. Various corresponding indices comparisons between the two different parallel-series system models, and among the series, parallel and parallel-series systems, are conducted. Finally some illustrative numerical examples are employed to show the procedures. The derived indices formulas are without component lifetime distribution assumptions, which have significant meanings for reliability analysis and safety design of the system.

### Integrating Socio-technological Factors Analysis Into Nuclear Power Plant Event Report and Safety Evaluation: A Systematic Framework

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Nuclear power plants (NPP) are complex socio-technological systems where safety is the supreme concern for all activities. While studies of past accidents reveal that technical, human and organizational factors are major contributors to violation of safety, a generically accepted paradigm for safety assessment is still unknown. Meanwhile, reporting safety-relevant event occurred in NPP operations has already become a common practice in many countries, which offers a good opportunity to enhance understanding on the mechanism that affects safety, as well as to improve data quality for further studies. Combining with recent progress in Probabilistic Safety Assessment (PSA), this paper provides a systematic framework to integrate socio-technological factors analysis into event report, in order to extract useful data from real cases, to conduct first-hand safety analysis and to in turn benefit further PSA studies, for the ultimate goal of improving safety in NPP daily operations.

### Comparsion the Maintenance Between Two-Unit Parallel Standby Systems and 2-out-of-3 Standby Systems

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Both two-unit parallel systems and 2-out-of-3 systems are common used standby systems. Several research has studied the maintenance policy for two-unit parallel systems. In this study, a cost-effective maintenance schedule, including testing strategy and surveillance test interval, for a 2-out-of-3 standby system is presented. For systems with identical units, uniformly staggered testing is shown to be the best testing strategy. The maintenance performance of the systems is compared with that of two-unit parallel systems (also considered as 1-out-of-2 system). Moreover, the results are also can be extended to general (n-1)-out-of-n systems.

### Risk Analysis of the City Gas Pipeline Network Based on the Fault Tree

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In order to control and reduce city gas accidents, it's very important to identify and analyze the relative risk factors existed in the city gas pipeline network comprehensively. Through the fault tree analysis, "gas leakage" was taken as the top event and four main reasons that led to gas leakage were found. According to above four reasons, the comprehensive fault trees were drew, which reflected the whole reasons to the top event "gas leakage". Finally, taking the third-party interference fault tree as the target to have a further analysis, and then a risk check list about third-party interference of city gas pipeline network was obtained, according to which, the prevention to gas pipeline network could be more effective.

### The Empirically Comparative Analysis of Advanced Manufacturing Paradigm of Chinese, Japanese and South Korean Enterprises

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Just-in-time Production (JIT) and Agile Manufacturing (AM) are both production paradigms that are widely used all over the world. JIT and AM are utilized to compare and analyze the manufacturing industry in China, Japan and South Korea. The application conditions and the development of JIT and AM in manufacturing industry in China, Japan and South Korea are analyzed separately, and then comparison is made by providing some useful and important comparison items of JIT and AM. It proposes the primary stage of JIT / AM mixed production paradigm of manufacturing enterprises in China by comparing Chinese JIT/AM production paradigm with that of Japan and South Korea. According to empirically comparative analysis, suggestions are given in popularizing and deepening JIT/AM in manufacturing industry, especially for the development of Chinese manufacturing.

### Maintenance Behavior-Based Prediction System Using Data Mining

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In the last years we have assisted to several and deep changes in industrial manufacturing. Induced by the need of increasing efficiency, bigger flexibility, better quality and lower costs, it became more complex. The complexity of this new scenario has caused big pressure under enterprises production systems and consequently in its maintenance systems. Equipment and facilities availability means time for production and this means more money. Moreover, manufacturing systems recognize high level costs due equipment breakdown, motivated by the time spent to repair, which corresponds to no production time and scrapyard, and also for money spent in repair actions. Usually, enterprises do not share data produced from their maintenance interventions. This investigation intends to create an organizational architecture that makes the integration of data produced in factories on their activities of reactive, predictive and preventive maintenance. The main idea is to develop a decentralized predictive maintenance system based on data mining concepts similar to those that support virtual enterprises functionality. Predicting the possibility of breakdowns with bigger accuracy will increase systems reliability.

### Concept Analysis for Service Oriented Manufacturing Based on Interpretive Structural Modeling

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This paper analyses concept of Service Oriented Manufacturing based on the influencing factors summarized from a literature survey. The mutual relationships between the influencing factors and the concept have also been established and analyzed. The analysis is carried out by using the Interpretive Structural Modeling method in a qualitative and hierarchical manner.