

Principal Research Results

Development of an Education Support System for Maintenance by a Navigation Method

– A Paper Prototype System of Education Support for Maintenance of RHR Pumps –

Background

CRIEPI is aiming at the establishment of an education support technique for maintenance with the following specific objectives: to improve qualifications such as circumstantial judgment and decision-making capabilities of staff responsible for maintenance work as a trinity of power company, prime contractor and engineering work company; and to prevent “organizational and structural errors, for example, failure in a system of command and order” and “individual errors, such as lack of ability to perform work” and consequently critical “accidents and troubles.”

Objective

It is intended to develop an education support system in which trainees of “overhaul and inspection work for residual heat removal(RHR)pumps” can understand the organization and structure and the processes of maintenance work, and measure and evaluate its education effect.

Principal Results

- (1) This system has a scheme where trainees navigate from a start through judgment and evaluation to completion of the education, while interacting with the knowledge base (know-how of experienced workers) and the rule-base (manuals) along maintenance work processes for RHR pumps, to enhance understanding of the organization and structure and the maintenance work processes. It enables the trainees to acquire respective details while understanding them.(Fig. 1)
- (2) To be specific, the trainees receive education support (that is, response to questions asked) on the organization and structure, depending on their attributes, and their types of knowledge and qualification are decided based on their responses. Then the trainees receive another education support (response to questions asked) and their levels of knowledge are determined based on their responses. The last support may be repeated, depending on the results of the determination. Finally, education effects on the organization and structure and on the maintenance work are judged in a comprehensive manner.(Fig. 2)
- (3) Trainees’ types of the knowledge and qualification after the completion of the education support on the organization and structure are divided into the following 4 types: (i) prioritizing both organizations and responsibility, (ii) prioritizing organizations and acting according to circumstances, (iii) prioritizing individuals and acting according to circumstances, and (iv) prioritizing both individuals and responsibility. It allows the trainees to become conscious of “types of knowledge and qualification” as persons belonging to the organization and structure depending on their attributes, which lets them improve the motivation to work in future.

Future Development

Based on basic technology gained in the process of the “establishment of the education support technique for maintenance of RHR pumps (paper prototype system),” the practical application of the technique to maintenance training centers and the like of all power companies will be aimed at.

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Reference

K.Yoshino, Y.Hirorsu, J.Fujimoto and J.Tumura, 2004, A development of maintenance educational support method by using navigation method, (Part4) A development of a paper prototype system for the RHR pump maintenance educational support(in Japanese), CREPI Report, S03006

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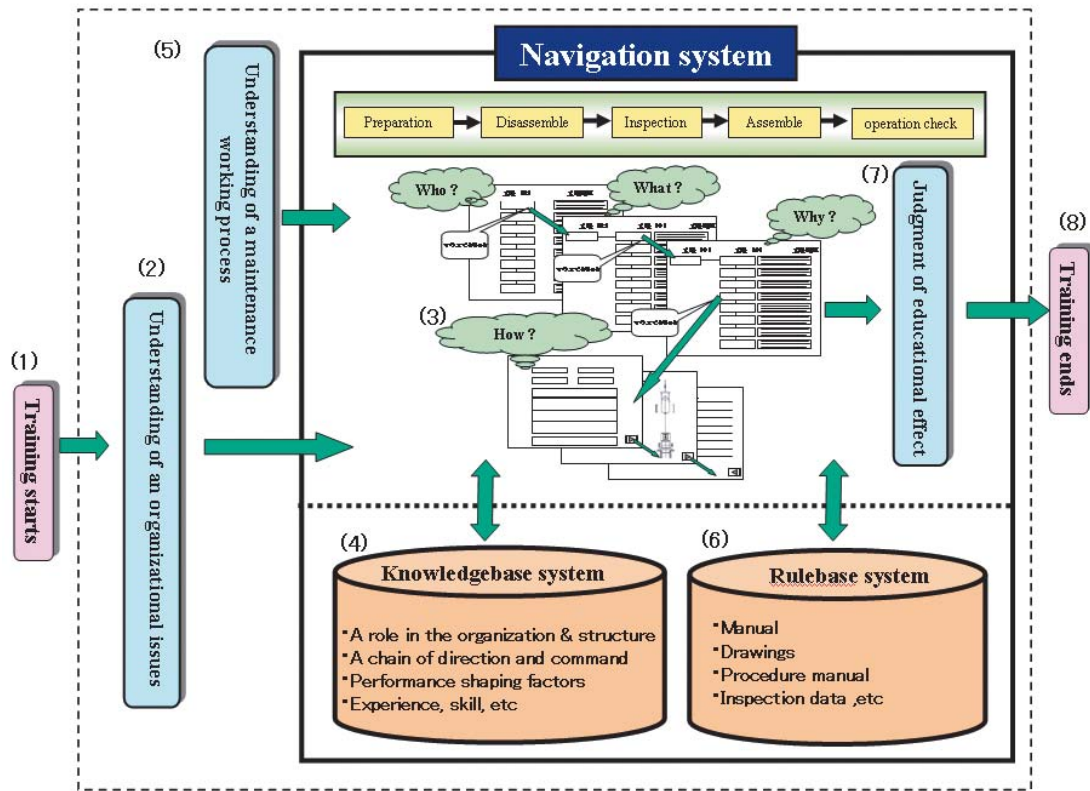


Fig.1 Basic composition of the education support system for maintenance with navigation method

Referring to Figure 1, this education support system provides education support to trainees, following from (1) “Training starts” through (2) “Understanding organization, structure, etc.” and (3) Maintenance work processes to (4) “Base for knowledge,” while the trainees interact with the system. Next, the trainees are provided with education support, following from (5) “Understanding maintenance work processes“ through (3) Maintenance work processes to (6) “Base for rules,” and eventually lead to (8) “Training ends” through (7) “Judging and evaluating education effect.”

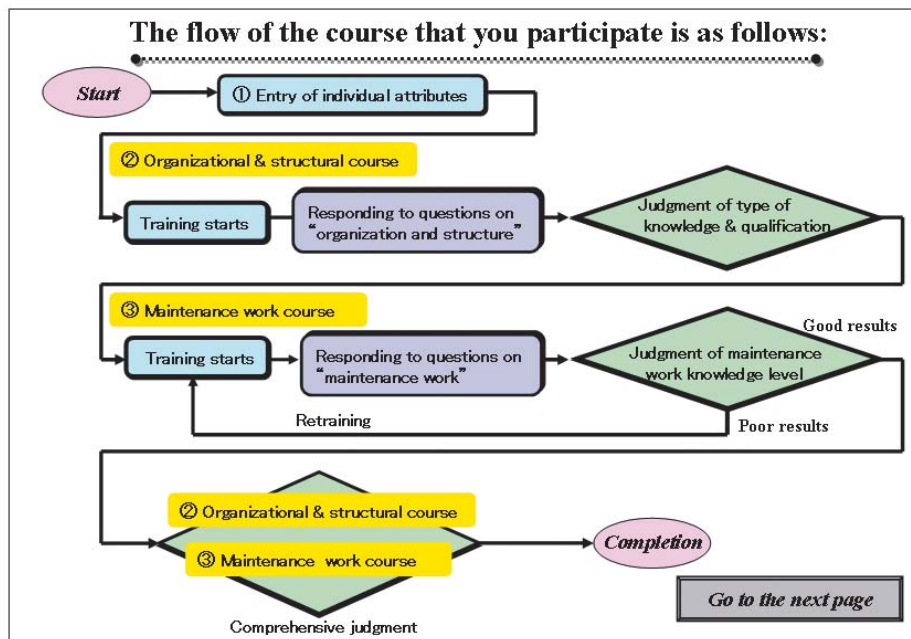


Fig.2 Flow of training in the education support technique (system)