ABSTRACT

Welding manufacturing procedures for offshore and coastal construction are nowadays numerous. For example, in China the offshore construction of oil drilling rigs and the coastal construction of dock facilities require a number of welding procedures. In the process of welding manufacturing, executive ability should be guaranteed and risk management systems should be implemented in order to achieve stable quality levels and productivity. This study focuses on how to increase executive ability and organize risk management systems in welding manufacturing in ocean engineering environments in order to generate a macroscopic view of the situation of the research. Presenting a review of different technologies and research material, which include welding technology, management theory, ocean engineering, and human factors, this paper contributes to establish the state of the development of executive ability and risk management with welding in the offshore and coastal welding industry, which will also contribute to the future work of building a total welding management system in ocean engineering areas. As a result, the paper proposes an idea, method, and steps for offshore construction related industries to build their welding risk management systems, and lays the groundwork for deeper research on this topic in the future.

KEY WORDS: Welding Management System, Executive Ability, Risk Management, Offshore Engineering, Coastal Engineering.

INTRODUCTION

The offshore and coastal engineering industry is one of the mainstream industries and a branch of the welding industry. Research on increasing the executive ability and risk management level is important to further improve the development in building a quality management system within the offshore and coastal welding industry. Researchers like Liang Sun, Xuejun Cao, Qunchao Shi, and Zhiyuan Peng have carried out research on pipeline and offshore platform welding quality management, welder certification in the offshore oil industry, and welding joint quality control in offshore engineering, respectively (Sun, 2009; Cao, 2000; Shi, 2011; Peng, 2014; Chen, 2013). The outcomes of those studies pave the way for one aspect of managing welding quality in offshore engineering. One gap in state-of-the-art research is to find the relationships among welding quality, welding risk management, and welding executive ability. By synthesizing and integrating the findings of previous studies, this paper tries to bridge the research gap on issues pertaining to welding executive ability and risk management related questions in the offshore and coastal welding industry. The aim of this study is to contribute to establishing fundamental procedures for offshore and coastal welding enterprises on issues regarding welding quality management, building of the executive ability, and the establishment of a risk management system. The research procedure will be the following: understanding the background and gap, information collection, review work, field visit, and conducting the analysis.

WELDING ENGINEERING IN OFFSHORE AND COASTAL INDUSTRY

In the offshore and coastal industry, welding manufacturing processes are used to make, join, or repair some of its constructions and products, such as:
- The construction of the petroleum pipeline;
- The construction of drilling rigs;
- The building of ships, icebreakers, marine projects, and containers;
- The construction of oil and gas facilities, platforms, and port structures;