

Committee Report: JCI-TC171A Technical Committee on Innovation of Systems for Production/Supply/construction of Concrete

委員会報告：JCI-TC171A

コンクリートの生産・供給・施工システムの革新に関する研究委員会

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Abstract

To aid concrete-related industries in contributing to building a sustainable society in the near future, we focused on concrete production, supply, and construction systems. We thereby identified roadblocks to industrial conversion, studied the concrete technology and systems that will be used to build a sustainable society in an era of rapidly declining resources, the state of the next-generation supply chains that will be dealing with the changes in the social environment (population decline) surrounding the concrete industry, and innovations in fresh concrete production and supply systems suited to next-generation construction systems and changes in social conditions. We then made proposals based on our findings.

1. Introduction

Progress has been made in technologies related to concrete owing to long-term advancements and energy saving in cement manufacturing technology, more efficient concrete manufacturing and construction technology, diversification of admixtures, higher-performance chemical admixtures, higher-performance concrete, and support through the establishment of legal systems, specifications, standards, and guidelines. Furthermore, there have been significant advancements in the design, operation, management systems, construction methods, and structural calculation methods for structures using concrete. Despite this, the construction field, especially the concrete production, supply, and construction fields, remain labor-intensive industries. Fresh concrete, which is a semi-finished product made in manufacturing plants, has a unique

material flow, as it is transported to construction sites for final use and ultimately becomes part of a final structural product. It is governed by a peculiar trading system in Japan. With regard to future demand for technological development in production, supply and construction in concrete-related industries and their contribution to building a sustainable society, and conversion to highly productive capital-intensive industries, clearly fixed conventional technologies, systems, and business practices are proving to be roadblocks, and innovations are needed in order to satisfy a rapidly changing society.

Therefore, to introduce proposals for converting concrete-related industries from labor-intensive to capital-intensive industries that contribute to building a sustainable society, we focused particular attention.....