

# JFE R&D<sup>†</sup>

**Abstract:**

JFE R&D was established on April 1, 2003 under JFE Holdings. The mission of this company is to integrate and incubate the core technologies of the entire JFE Group and to create new technologies leading to new business. The core technologies are composed of sensing, process-controlling, scheduling, mechanical systems, civil engineering, numerical simulation, biotechnology, catalysis and so on.

## 1. Introduction

JFE R&D was established as part of the reorganization of businesses in the integrated JFE Group to perform two roles: to carry out efficient research and development of basic technologies common to the JFE Group’s steel and engineering businesses, and to serve as a center for development in growth fields. The new company is an independent R&D organization under JFE Holdings, and as such, is unprecedented in traditional manufacturing industries. This paper presents an outline of JFE R&D and introduces the company’s various distinctive features.

## 2. Outline of JFE R&D

The functions, roles, organization and core technologies of JFE R&D are shown in Fig. 1. The company has about 80 researchers in three research departments: Instrument and Control Engineering Dept., Mechanical Engineering Dept., and Civil Engineering Dept., and two research groups: Numerical Simulation Lab., Biotechnology and Catalysis Lab.

These respective units are organized by function based on core technologies. JFE R&D has two missions. The first is efficient development of advanced technologies based on fundamental technologies which are common to steel and engineering businesses of the JFE Group. With the basic technologies common to the JFE Group’s steel and engineering businesses as a base as shown in the figure, JFE R&D contributes to implementation of high quality and low cost manufacturing, construction of integrated quality assurance systems, optimization of production planning and distribution planning, and other key functions in the JFE Group’s steel related businesses by taking full advantage of advanced sensing and control systems, mechanical systems and numerical simulation technologies which are essential to realize “Only 1” production processes and products. JFE R&D also develops new civil engineering and build-

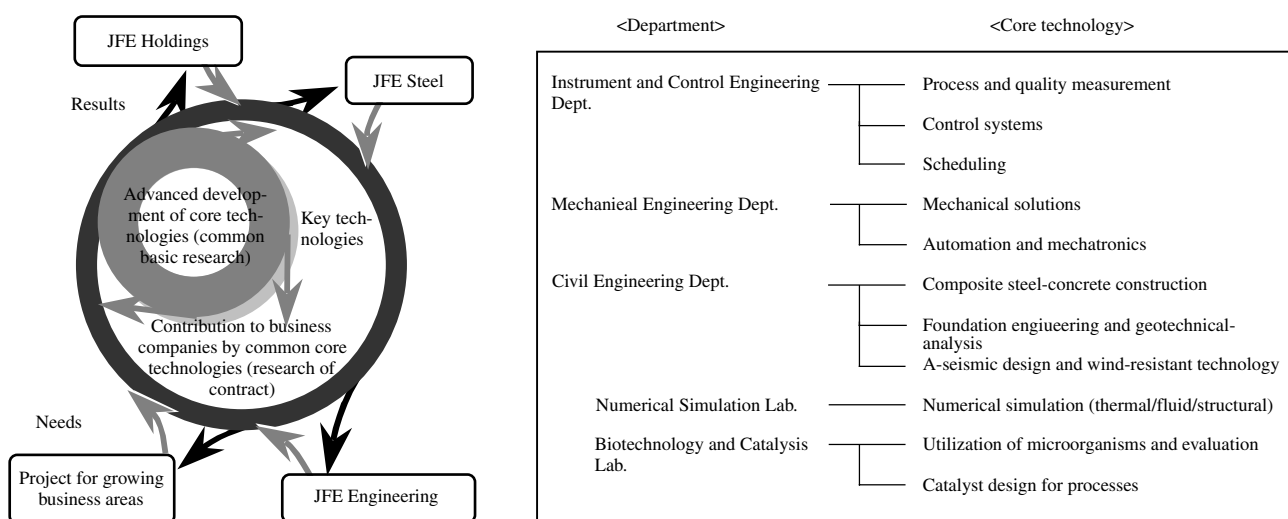


Fig.1 Functions, organization, and core technologies of JFE R&D

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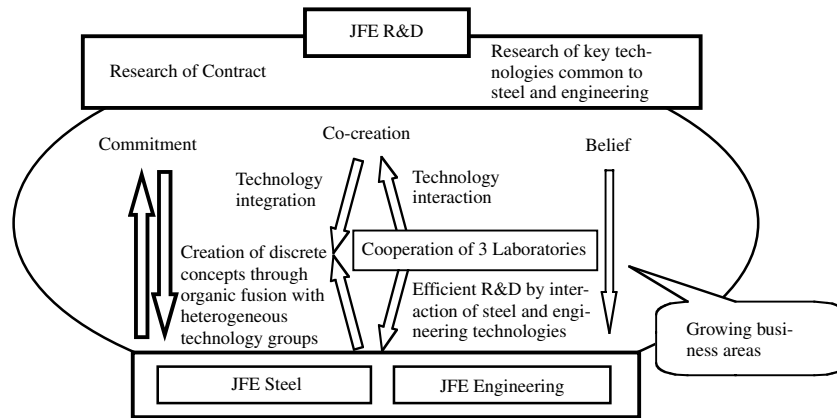


Fig.2 Mission of JFE R&D and relationship between JFE Steel and JFE Engineering

ing material products which are used to create social infrastructures including development of technologies for use and evaluation. For the JFE Group's engineering business, JFE R&D applies the core technologies in Fig. 1 to the respective products in the optimum form when developing new products with high competitiveness or proposing solutions from view-points different from the conventional ones. Typical examples in environmental engineering are advanced combustion control systems, proposals of total solutions for recycling and biotech water treatment systems, while those in energy-related fields include seismic design, and maintenance systems. Examples in the field of steel structures include new forms of bridges, shore-line structures based on unique concepts and composite structures of steel and concrete.

The company's second mission is to function as a development center for new growth industries as represented by DME (dimethylether). What is expected in this area is a type of discontinuous or discrete technical development which is not simply an extension of the conventional technology along the existing lines. As a long-term goal, the fruits of this type of R&D are expected to grow and eventually become new core businesses of the JFE Group.

The company's R&D business is categorized into two modalities corresponding to the two missions described above. The first is "commissioned research," which is entrusted to JFE R&D by companies in the JFE Group, particularly JFE Steel and JFE Engineering. In this type of R&D, individual research topics are discussed with the clients, and the actual R&D work is subcontracted to JFE R&D on a contractual basis. The second type of R&D is "common basic research," in

which JFE R&D develops basic technologies common to the companies in the JFE Group on an independent basis.

**Figure 2** shows the roles and functions performed by JFE R&D in the JFE Group. The aims are to promote R&D efficiently by interaction between the technologies in the fields of steel and engineering (technology interaction) and create discrete new technical concepts by organic integration with heterogeneous technology groups (technology integration). Particularly in the latter respect, the company is responsible for what may be called precursor or "seed" type development, in which it actively seeks out and develops elemental technologies that may become necessary in the future, in anticipation of actual needs. By carefully controlling the balance between the two, JFE R&D expects to contribute to realizing the technology strategy of the JFE Group.

### 3. Summary

This paper has presented an outline of JFE R&D, which was established to perform two roles: (1) efficient research and development of technologies common to steel business and engineering business companies in the JFE Group and (2) development of new technologies in growth fields. While the company is naturally responsible for contributing to the performance of the business companies in the JFE Group with R&D results based on common core technologies, it also cultivates seed technologies in new growth fields which may become core businesses of the JFE Group in the future.