

lines have limited potential. However, modern flexible manufacturing systems enable traditional jobbing shops to achieve the economies of scope that were once achievable only by large-scale operations.

3.6 Trends in Offshore Oil and Gas Precompetitive Research

The technology development discussed above is reinforced by generic research sponsored by individual governments and as part of the E.C. New Energy Technologies (THERMIC) program.

THERMIC has a 1991 budget of about \$140 million to be spent on a variety of fields and sectors of energy research and demonstration projects in:

- rational use of energy
- renewable energy sources
- solid fuels
- hydrocarbons

The latter is relevant to ocean industry activities, as it includes projects for:

Exploration

(e.g., drilling methods and equipment, including automation and systems for data acquisition and handling)

Production

(e.g., offshore production plants):

- fixed structures (safety and reliability, and methods of removal)
- floating supports
- innovative techniques that can, by reducing investment costs, enable hitherto marginal fields to be brought into production

- submarine production systems, including the production of multiphase fluids
- production equipment, systems for automating offshore production plants, and processes concerned with the transport and treatment of flow
- submarine operating equipment and processes for carrying out work related to offshore hydrocarbon production

Transport

(e.g., techniques and processes for transport processed flow by pipeline and by ship including, in this case, loading installations)

Storage

(e.g., installations and processes for the storage of fluid products connected with production operations)

Projects are to be designed to prove the technical or economic viability of new technologies. They should have among their objectives the development of techniques, tools and processes designed to improve the efficiency of operations; and they should promote safety (e.g., through the use of robotics and telecommunications) and recognize the need to respect the environment.

Projects must appear technically and economically viable, but be difficult to finance because of perceived technical and/or economic risk.

Projects must be proposed and carried out by organizations in E.C. countries capable of promoting the supply and use of the technological developments for which support is requested. The Commission welcomes but, unless the project value is greater than \$7 million, does not insist on proposals being made jointly by organizations in two or more Member States of the Community. Preference will be given to small- or medium-sized enterprises (SMEs).

Support will be in the form of a grant (with no requirement for repayment) of up to 40 percent (35 percent for dissemination projects) of the eligible costs of the project.