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## OCCASION

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UNITED NATIONS INDUSTRIAL ORGANIZATION

PROJECT PROPOSAL

PART A - BASIC DATA

COUNTRY : Korea/Poland  
PROJECT NUMBER :  
PROJECT TITLE : "Squeeze casting, a new powerful  
manufacturing process"  
Twinning Agreement between the  
Korea Institute of Science and  
Technology (KIST), Seoul, Korea  
and the Foundry Research Insti-  
tute (FRI), Krakow, Poland  
  
SCHEDULED START : July 1990  
SCHEDULED COMPLETION : June 1991  
ORIGIN AND DATE OF  
OFFICIAL REQUEST :  
GOVERNMENT COUNTERPART  
AGENCIES : KAIST, Korea/FRI, Poland  
UNIDO CONTRIBUTION : US \$ 40,000  
GOVERNMENT CONTRIBUTION : Korea (US \$ 8,000) Poland (US \$ 2,000)  
  
CURRENCY REQUIRED FOR  
UNIDO INPUT : US \$ 40,000  
CONVERTIBLE :  
OTHER :  
UNIDO SUBSTANTIVE BACK-  
STOPPING SECTION :  
PROGRAMME COMPONENT CODE :  
PROPOSAL SUBMITTED BY : KIST and FRI  
DATE OF SUBMISSION :

## PART B - NARRATIVE

### 1. Background and Justification

From the experience of the highly industrialized countries, squeeze casting process is known as one of the most effective means of improving the physical, mechanical and service properties of castings. During the past few years a tendency towards the growing application of this process, as compared with other conventional foundry methods of production, has been observed.

K IST(Korea) has been involved in research works on the diverse metal forming process (Hydrostatic extrusion, rolling, high-energy-rate-forming, forging etc.) and currently engaged at basis investigations of the material behaviors during solidification and forging. Eventually, K IST group hopes to achieve replacement of the conventionally produced machine components with the squeeze casting products.

FRI(Poland) has, on the other hand, acquired sufficient experiences in industrial application of squeeze casting, and major efforts has been devoted to die material and its design improvements.

The joint research work on effect of squeeze casting parameters and industrial application of squeeze casting will, undoubtedly, contribute a lot to a wide-scale development of this technology in the future in both countries.

### 2. Special Consideration

The project will lay a basis for establishment of bilateral co-operation on the basis of sharing experience in industrialization and technology know-how between K IST and FRI.

### 3. Objectives

The main objective of this project is to critically evaluate squeeze casting process applied to non-ferrous metals. To this end, effects of process parameters such as temperature, velocity, and die construction will be studied other field of application of this production technique will also be investigated.

The above mentioned activities are expected to result in an extension of the possibilities of replacing the traditionally manufactured engineering elements with products made in the squeeze casting process.

### 4. Project Outputs

The joint efforts by KIST and FRI are expected to produce:

- critical evaluation of the effect of operating parameters on squeeze casting products.
- advantages & disadvantages of the process in comparison with the conventional casting of forging product
- guidelines for implementation of the squeeze casting technology to various non-ferrous metal components

### 5. Project Activities

Following aspects of the squeeze casting process will be dealt with in this project:

- elaboration of guidelines for the choice of alloys for squeeze casting
- evaluation of the possibilities of mechanization and automation of this process

- evaluation of the advantages and drawbacks of this process compared with the traditional manufacturing process/casting, forging/.

In order to facilitate the attainment of the objectives of the project, both institute, on the basis of the time schedule of the project and within the budget allocated, will exchange researchers, train personnel, and provide advisory services.

#### 6. Project Input

UNIDO will provide US\$40,000 for the period July 1990. - June 1991 in convertible currency and equivalent of US\$ 10,000 in local, non-convertible currency will be provided by the countries concerned (Korea: US \$ 8,000 and Poland: US \$ 2,000 ).

#### 7. Evaluation Plan

The project will be evaluated during the implementation and upon completion by the NGOs, Business and Industrial Institutions Co-operation Section, and PDES with participation of the representatives of K IST and FRI.

#### 8. Envisaged Follow-up

The first phase of this three-year project will end in July 1991. After careful evaluation of research outcome produced during this phase, a long-term follow-up project will be considered by the NGOs, Business and Industrial Institutions Co-operation Section, and PDES.

PART C - CLEARANCE AND APPROVAL

Cleared by:

Date:

Date:

Approved by:

Date:

Amount approved

Source of Funds:

Convertible Currency:

Other

Date PAD requested:

## Annex 1

WORKING PLAN 1990/1991

<u>Item</u>	<u>Duration</u>	<u>Starting Date</u>
Start-up meeting of both side experts at FRI, Krakow, Poland	3 x 7 days	March, 1990
Annual meeting of both side experts at KAIST, Seoul, Korea	3 x 7 days	July, 1990
Experts from each party will be exchanged according to the needs for the solution of specific problems.		
Exchange of staff will be made alternatively		
The first meeting will be held in Seoul, Korea	1 x 8 days	Dec., 1990
The second meeting will be held in Krakow Poland	1 x 8 days	Dec., 1991
Training of researchers		
- in Korea	2 x 3 months	Jan., 1991
- In Krakow	2x3 months	Jan., 1991
Seminar will be held each year during the staff meeting in each institute	2 x 8 days	Dec., 1990
Exchange of technical informations and publications		: continuously

Annex 2

FINANCIAL CONTRIBUTION OF UNIDO TO

THE WORKING PLAN 1990/1991

( in US Dollars )

Expert Component

Cost

Round trip tickets for 3 Korean experts  
to participate on the start up meeting  
in Krakow (Seoul-Krakow-Seoul)

Round trip tickets for 3 Polish experts  
to participate on the annual meeting  
(Krakow - Seoul - Krakow)

Training Component

Round trip tickets for 2 Korean  
experts (Seoul-Krakow-Seoul)

Round trip tickets for 2  
Polish experts  
(Krakow - Seoul - Krakow)

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GRAND TOTAL

US \$ 40,000



Annex 3

FINANCIAL CONTRIBUTION OF KIST (KOREA)  
TO THE WORKING PLAN 1990/1991  
( in Won )

<u>Expert Component</u>	<u>Duration</u>	<u>Cost</u>
Daily subsistence for 3 Polish experts in charge on the project to visit Korea for annual meeting	3 x 7 days	2,940,000 Won/year (3 x 140,000 x 7 days)
<u>Communication and Publication Component</u>		
Allocation to cover the cost of corre- spondence, telex or fax for exchange of information, experimental results, papers and publications		2,100,000 Won/year
<u>Miscellaneous</u>		700,000 Won/year
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Total		5,740,000 Won/year