(資料－３)　評価項目及び評価内容（英文）

VTC (JICA HK)

EVALUATION OF TECHNOLOGY TRANSFER

PRECISION DIE DESIGN COURSE 2 (TRANSFER DIE)

Mr FUNG Chi-Fai

Precision Die Design Course 2 (Transfer Die)

1 Course Work

1.1 Pressworking Method

1.1.1 Detailed knowledge on blanking.

(A.) Able to calculate blanking force or select proper clearance for the material (sheet metal) to be processed by the assigned transfer die (called "assigned die" hereafter).

B. Able to do most of the above as for the material used.

C. Able to understand outline of the above as for the material used.

D. Able to understand most of the above with some exceptions.

E. Unable to understand the above.

1.1.2 Overall knowledge on bending.

Possess overall knowledge on development calculation and bending process of the product (connector) made by the assigned progressive die.

(B.) Able to recognize which type of machining is applied at which stage by looking at the strip layout.

C. Possess overall knowledge on the strip layout of above product.

D. Possess knowledge on part of the above.

E. Possess no knowledge.

1.1.3 General knowledge on drawing.

(A.) Possess knowledge on development calculation and drawing process of the product similar to the product (motor case) processed by the assigned transfer die.

B. Possess above knowledge as for the assigned product only.

C. Possess overall knowledge as for the assigned product only.

D. Possess knowledge on part of the above.

Possess no knowledge.

1.2 Countermeasures against troubles

Detailed knowledge on troubles which may occur during machining using the assigned die.

A. Possess knowledge on troubles and countermeasures including quality flaws such as wrinkles, cracks, and improper dimension, and scrap return during operation, inaccurate positioning, or damages on die parts, etc. (Able to identify the causes and countermeasures by observing the defected samples or from the description of the phenomenon.)

(B.) Possess above knowledge as for the troubles experienced during training.

C. Possess overall knowledge as for the troubles experienced during training.

D. Possess above knowledge as for some of the troubles which may occur to the assigned die.
E. Do not possess knowledge on causes of troubles and countermeasures of the assigned product.

1.3 Materials

1.3.1 General knowledge on materials used for the assigned product.
(A.) Possess knowledge on types and pressworking characteristics (especially blanking and drawing) used for the assigned product.
B. Possess above knowledge as for the material (SPCE-SD) used for the assigned product only.
C. Possess overall knowledge only as for material used for the assigned product.
D. Possess knowledge on types of the material for the assigned product.
E Possess no knowledge on material.

1.3.2 General knowledge on materials used for dies.
(A.) Possess knowledge on types, characteristics, and application (die parts) of the material used for the assigned die.
B. Possess above knowledge as for the material used for the assigned die only.
C. Possess overall knowledge as for the material used for the assigned die parts only.
D. Do not possess knowledge on some of the die parts.
E. Possess no knowledge on the materials used for dies.

1.4 Press Machines and Devices

1.4.1 General knowledge on the characteristics, capacity, and specification of the transfer press for try run of the assigned die (called trial press machine hereafter).
(A.) Possess knowledge on the characteristics, capacity, and specification of transfer press machine.
B. Possess above knowledge as for trial press machine.
C. Possess overall knowledge as for trial press machine.
D. Possess knowledge on types but no knowledge on characteristics and application of trial press machine.
E. Possess no knowledge on press machines.

1.4.2 General knowledge on accessaries (die cushion, slide knock out etc.) for press machines.

A. Possess knowledge on accessaries for the trial press machine.
(B.) Possess overall knowledge on accessaries for trial press machine.
C. Possess knowledge on some of the accessaries for the trial press machine.
D. Able to distinguish the accessaries from the main body of the machine.
E. Possess no knowledge at all.

1.4.3 General knowledge on function and specification of automatic device for press machines.

A. Possess knowledge on function, specification, or material feeding device (air feeder) etc. in the transfer device for the trial press machine.
(B.) Possess overall knowledge as for above devices.
C. Possess overall knowledge as for the transfer device.
D Possess knowledge on names of devices.
E. Possess no knowledge as for automatic device.

1.5 Tooling Die Design

1.5.1 Detailed knowledge on types, structures, and characteristics of tooling dies (hereafter referred to as "die").

A. Mostly able to understand the structure of typical progressive and transfer dies by looking at the drawings.
(B.) Able to understand the structure of the assigned progressive and transfer dies.
C. Able to understand the structure of the assigned transfer die only.
D. Mostly able to understand the structure of the assigned transfer die only.
I Unable to understand the structure of the assigned dies even when drawings are presented.

1.5.2 Detailed knowledge on types, names, function, and application of die parts.

(A.) Able to recognize the above by looking at assembly drawing of a transfer die.
B. Able to recognize the above by looking at assembly drawing of the assigned die.
C. Able to recognize the names and application of critical parts of the assigned die, such as punch and die.
D. Able to recognize the names of the assigned die parts.
E. Unable to recognize the above as for the assigned die parts.

1.6 Drawing

1.6.1 Detailed knowledge on drawing of dies.

(A.) Possess knowledge on projection method and how to enter lines, symbols, or dimension, etc. (using JIS Standard) which are required for die drawings.

B. Possess knowledge as for items used in the drawing of the assigned die.

C. Possess overall knowledge on the drawing of the assigned die.

D. Do not understand some of the contents in the drawing of the assigned die.

E. Possess no knowledge.

1.6.2 Detailed knowledge on die drawing.

(A.) Possess knowledge on sketching method, symbols, or indicating method employed in die design.

B. Possess above knowledge as for those used in the assigned die.

C Possess overall knowledge as for the assigned die.

D. Do not possess knowledge as for part of the above.

E. Possess no knowledge.

1.7 CAD/CAM

1.7.1 Overall knowledge on CAD/CAM employed in die design.

(A.) Possess knowledge on function and application of CAD/CAM employed to design the assigned die.

B. Possess overall knowledge on CAD/CAM to design the assigned die.

C. Understand the designing process using CAD/CAM to design the assigned die.

D. Understand overall designing process using CAD/CAM to design the assigned die.

E. Do not understand the difference between manual design (drawing) procedure and the design procedure using CAD/CAM.

1.7.2 Detailed knowledge on operation of ADMS DIE MASTER.

(A.) Possess detailed knowledge on the technical terms and operation method of ADMS DIE MASTER.

B. Possess knowledge on operation method necessary to design the assigned die.

C. Possess overall knowledge on operation method necessary to design the assigned die.

D. Possess overall knowledge but do not understand part of the operation method.

E. Possess no knowledge.

1.8 Die Manufacturing and try runs.

1.8.1 Overall knowledge on machining contents of critical die parts.

A. Possess overall knowledge on machining process, machinery, cutting tools etc. as for critical die parts (punches, dies, and blank holders etc.) of the assigned die.
B. Possess overall knowledge on machining contents of above mentioned parts.
(C.) Possess knowledge on the machinery used to machine above mentioned parts.
D. Possess overall knowledge on the machinery used to machine above mentioned parts.
E. Possess no knowledge.

1.8.2 General knowledge on finishing, assembly, and try run of dies.

A. Possess knowledge on inspection, polishing, assembly procedure and try runs of critical die parts of the assigned die.
(B) Possess overall knowledge on the above.
C. Possess knowledge on try runs.
D. Possess overall knowledge on try runs.
E. Possess no knowledge.

2. Practical Skills

2.1 Drawing
Able to draw a precision transfer die.

(A.) Able to draw assembly drawing and part drawing of the assigned die with high accuracy.
B. Able to draw the above properly.
C. Able to draw the above without any mistakes, but the drawing may be partially unclear or difficult to read.
D. Able to draw, but there are mistakes in the drawing.
Γ Able to draw, but drawing may be difficult to read with many mistakes.

2.2 Transfer die design

2.2.1 Able to design the assigned die.

(A.) Able to carry out development and arrangement of the assigned die, to set drawing stages according to the design procedure and able to prepare assembly drawing and parts drawing.
B. Mostly able to carry out the above throughout entire procedure.
C. Able to do the above by following manuals, etc.
D. Unable to do part of the above even by following manuals etc.
E. Do not understand the design process clearly even by following the manuals.

2.2.2 Able to design and draw the product of dimension partially different from that of the assigned product.

(A.) Able to design and draw assembly or part drawings of the products similar to the assigned product, but of partially different dimension or different shape.

B. In most cases, able to design the above mentioned products although some parts may be found difficult to do.

C. Able to design a similar product of different dimension, but not the ones of different shape.

D. Unable to design a similar product if it has dimension different from that of the assigned product.

E. Unable to design a similar product if it is not identical with the assigned product.

2.2.3 Able to handle the basic elements in die design.

(A.) Able to prepare arrangement drawings, development drawings, and blank layouts from the product drawing of a product which is similar to the assigned product with drawing stage.

B. In most cases, able to do the above although some parts may be found difficult to do.

C. Able to do the above, but only as for a similar product made of the same material with same machining contents.

D. In most cases, able to do the above as for the similar products made of the same material with same machining contents.

E. Able to do the above only as for the product identical with the assigned product.

2.3 Able to design a transfer die using CAD/CAM (ADMS DIE MASTER).

(A.) Able to carry out a series of design procedure of a transfer die using CAD/CAM.

B. In most cases, able to do the above, but some parts may be found difficult to do.

C. Able to do the above as for the assigned die.

D. In most cases, able to do the above as for the assigned die.

E. Unable to do the above even as for the assigned die.

2.4 At the time of try runs, able to recognize causes of problems and countermeasures.

A. In most cases, able to recognize the causes of problems and countermeasures at the time of try run of the assigned die.

(B.) Able to do the above as for quality flaws such as wrinkles or cracks, but not production flaws such as inaccurate positioning.

C. In most cases, able to recognize quality flaws.

D. Able to recognize some of the problems and countermeasures.

E. Unable to recognize the problems which may occur during try runs.

VTC (JICA HK)

EVALUATION OF TECHNOLOGY TRANSFER

PRECISION DIE DESIGN COURSE 1 (PROGRESSIVE DIE)

Mr SING Wu- Man

Precision Die Design Course 1 (Progressive Die)

1 Course Work

1.1 Pressworking Method

1.1.1 Detailed knowledge on blanking.

(A.) Able to calculate blanking force or select proper clearance for the material (sheet metal) to be processed by the assigned progressive die (called "assigned die" hereafter).

B. Able to do most of the above as for the material used.

C. Able to understand outline of the above as for the material used.

D. Able to understand most of the above with some exceptions.

E. Unable to understand the above.

1.1.2 Detailed knowledge on bending.

A Able to carry out development calculation of a product similar to the assigned product (connector), but of different thickness, bending radius and angle, etc.

(B.) Able to carry out development calculation as for the assigned product only.

C. Mostly able to carry out development calculation for the assigned product.

D. Unable to do part of the above.

E. Unable to do the above.

1.1.3 Overall knowledge on drawing.

(A.) Possess overall knowledge on development calculation and drawing process for the product (motor case) processed by the assigned transfer die.

B. Possess overall knowledge on the above, and able to lay out stage samples in the right order.

(Possess overall knowledge.

D. Possess knowledge on part of the above.

E. Possess no knowledge.

1.2 Countermeasures against troubles

1.2.1 Detailed knowledge on troubles which may occur during machining using the assigned die.

A. Possess knowledge on troubles and countermeasures including quality flaws such as improper dimension and burr, scrap return and scrap jamming during operation, damage on punch. (Able to identify the causes and countermeasures by observing the defected samples or from the description of the phenomenon.)

(B.) Possess above knowledge as for the troubles experienced during training.

C. Possess overall knowledge as for the troubles experienced during training.
D. Possess above knowledge as for some of the troubles which may occur to the assigned die.
E. Do not possess knowledge on causes of troubles and countermeasures of the assigned product.

1.2.2 Detailed knowledge on troubles in bending.
A. Possess knowledge on troubles and countermeasures including quality flaws such as improper dimension, improper bending angle and cracks, or product raising with punch during operation, which may occur to the assigned die. (Able to identify the causes and countermeasures by observing the defected samples or from the description of the phenomenon.)
B. Possess above knowledge as for the troubles experienced during training.
(C) Possess overall knowledge as for the troubles experienced during training.
D. Possess above knowledge as for some of the troubles which may occur to the assigned die.
E. Do not possess knowledge on causes of troubles and countermeasures of the assigned product.

1.3 Materials

1.3.1 General knowledge on materials used for the assigned product.
(A.) Possess knowledge on types and pressworking characteristics (especially blanking and bending) used for the assigned product.
B. Possess above knowledge as for the material (SPCC-SD) used for the assigned product only.
C. Possess overall knowledge only as for material used for the assigned product.
D. Possess knowledge on types of the material for the assigned product.
E. Possess no knowledge on material.

1.3.2 General knowledge on materials used for dies.
(A.) Possess knowledge on types, characteristics, and application (die parts) of the material used for the assigned die.
B. Possess above knowledge as for the material used for the assigned die only.
C. Possess overall knowledge as for the material used for the assigned die parts only.
D. Do not possess knowledge on some of the die parts.
E. Possess no knowledge on the materials used for dies.

1.4 Press Machines and Devices

1.4.1 General knowledge on the characteristics, capacity, and specification of the high speed automatic press machine for try run of the assigned die (called trial press machine hereafter).

A. Possess knowledge on the characteristics, capacity, and specification of high speed automatic press machine.
(B.) Possess above knowledge as for trial press machine.
C. Possess overall knowledge as for trial press machine.
D. Possess knowledge on types but no knowledge on characteristics and application of trial press machine.
E. Possess no knowledge on press machines.

1.4.2 General knowledge on accessaries for press machines.

A. Possess knowledge on accessaries for the trial press machine.
(B.) Possess overall knowledge on accessaries for trial press machine.
C Possess knowledge on some of the accessaries for the trial press machine.
D. Able to distinguish the accessaries from the main body of the machine.
E. Possess no knowledge at all.

1.4.3 General knowledge on types, characteristics, and application of automatic devices for press machines.

(A.) Possess knowledge on function of material handling device (Auto Turn Table), material feeding device (Roll Feeder), and Product collecting device (Recoiler), etc. for the trial press machine.
B. Possess overall knowledge as for above devices.
C. Possess knowledge on the names of above devices.
D. Possess knowledge on the names of some of the devices above.
E. Possess no knowledge on automatic device.

1.5 Tooling Die Design

1.5.1 Detailed knowledge on types, structures, and characteristics of tooling dies (hereafter referred to as "die").

A. Mostly able to understand the structure of typical progressive and transfer dies by looking at the drawings.
(B.) Able to understand the structure of the assigned progressive and transfer dies.
C. Able to understand the structure of the assigned progressive die only.
D. Mostly able to understand the structure of the assigned progressive die only.
E. Unable to understand the structure of the assigned dies even when drawings are presented.

1.5.2 Detailed knowledge on types, names, function, and application of die parts.

A. Able to recognize the above by looking at assembly drawing of a precision progressive die.
(B.) Able to recognize the above by looking at assembly drawing of the assigned die.
C. Able to recognize the names and application of critical parts of the assigned die, such as punch and die.
D. Able to recognize the names of the assigned die parts.
E. Unable to recognize the above as for the assigned die parts.

1.6 Drawing

1.6.1 Detailed knowledge on drawing of dies.

(A.) Possess knowledge on projection method and how to enter lines, symbols, or dimension, etc. (using JIS Standard) which are required for die drawings.
B. Possess knowledge as for items used in the drawing of the assigned die.
C. Possess overall knowledge on the drawing of the assigned die.
D. Do not understand some of the contents in the drawing of the assigned die.
E. Possess no knowledge.

1.6.2 Detailed knowledge on die drawing.

(A.) Possess knowledge on sketching method, symbols, or indicating method employed in die design.
B. Possess above knowledge as for those used in the assigned die.
C. Possess overall knowledge as for the assigned die.
D. Do not possess knowledge as for part of the above.
E. Possess no knowledge.

1.7 CAD/CAM

1.7.1 Overall knowledge on CAD/CAM employed in die design.

(A.) Possess knowledge on function and application of CAD/CAM employed to design the assigned die.
B. Possess overall knowledge on CAD/CAM to design the assigned die.
C. Understand the designing process using CAD/CAM to design the assigned die.
D. Understand overall designing process using CAD/CAM to design the assigned die.
E. Do not understand the difference between manual design (drawing) procedure and the design procedure using CAD/CAM.

1.7.2 Detailed knowledge on operation of ADMS DIE MASTER.

(A.) Possess detailed knowledge on the technical terms and operation method of ADMS DIE MASTER.

B. Possess knowledge on operation method necessary to design the assigned die.

C. Possess overall knowledge on operation method necessary to design the assigned die.

D. Possess overall knowledge but do not understand part of the operation method.

E. Possess no knowledge.

1.8 Die Manufacturing and try runs.

1.8.1 Overall knowledge on machining contents of critical die parts.

A. Possess overall knowledge on machining process, machinery, cutting tools etc. as for critical die parts (punches, dies, and plates etc.) of the assigned die.

(B.) Possess overall knowledge on machining contents of above mentioned parts.

C. Possess knowledge on the machinery used to machine above mentioned parts.

D. Possess overall knowledge on the machinery used to machine above mentioned parts.

E. Possess no knowledge.

1.8.2 General knowledge on finishing, assembly, and try run of dies.

A. Possess knowledge on inspection, polishing, assembly procedure and try runs of critical die parts of the assigned die.

(B.) Possess overall knowledge on the above.

C. Possess knowledge on try runs.

D. Possess overall knowledge on try runs.

E. Possess no knowledge.

2. Practical Skills

2.1 Drawing

Able to draw a precision progressive die.

(A.) Able to draw assembly drawing and part drawing of the assigned die with high accuracy.

B. Able to draw the above properly.

C. Able to draw the above without any mistakes, but the drawing may be partially unclear or difficult to read.

D. Able to draw, but there are mistakes in the drawing.

E. Able to draw, but drawing may be difficult to read with many mistakes.

2.2 Precision die design

2.2.1 Able to design the assigned die.

(A) Able to carry out development and arrangement of the assigned die, to set drawing stages according to the design procedure and able to prepare assembly drawing and part drawing.

B. Mostly able to carry out the above throughout entire procedure.

C. Able to do the above by following manuals etc.

D. Unable to do part of the above even by following manuals.

E. Do not understand the design process clearly.

2.2.2 Able to design and draw the product of dimension partially different from that of the assigned product.

(A.) Able to design and draw assembly or part drawings of the products similar to the assigned product, but of partially different dimension or different shape.

B. In most cases, able to design the above mentioned products although some parts may be found difficult to do.

C. Able to design a similar product of different dimension, but not the ones of different shape.

D. Unable to design a similar product if it has dimension different from that of the assigned product.

E. Unable to design a similar product if it is not identical with the assigned product.

2.2.3 Able to handle the basic elements in die design.

A. Able to prepare arrangement drawings, development drawings, and blank layouts from the product drawing of a product which is similar to the assigned product with blanking and bending stages.

(B.) In most cases, able to do the above although some parts may be found difficult to do.

C. Able to do the above, but only as for the similar products made of the same material with same machining contents.

In most cases, able to do the above as for a similar product made of the same material with same machining contents.

E. Able to do the above only as for the product identical with the assigned product.

2.3 Able to design a progressive die using CAD/CAM (ADMS DIE MASTER).

(A.) Able to carry out a series of design procedure of a transfer die using CAD/CAM.

B. In most cases, able to do the above, but some parts may be found difficult to do.

C. Able to do the above as for the assigned die.

D. In most cases, able to do the above as for the assigned die.

E. Unable to do the above even as for the assigned die.

2.4 At the time of try runs, able to recognize the causes of problems and countermeasures.

A. In most cases, able to recognize the causes of problems and countermeasures at the time of try run of the assigned die.

(B.) Able to do the above as for quality flaws such as burr or inaccurate dimension, but not production flaws such as scrap return.

C. In most cases, able to recognize quality flaws.

D. Able to recognize some of the problems and countermeasures.

E. Unable to recognize the problems which may occur during try runs.

VTC (JICA HK)

EVALUATION OF TECHNOLOGY TRANSFER

PRECISION DIE MANUFACTURING COURSE

Mr WONG Chak-Tong
Mr CHAN Ka- Ming
Mr CHAU Kwok-Hing

Precision Die Manufacturing Course (Transfer Dies)

1. Course Work

1.1 Pressworking Method.

1.1.1 General knowledge on blanking.

A. Able to recognize where and how blanking (piercing, trimming, etc.) is applied on the assigned product (motorcase).
B. Able to recognize most of the above.
C. Able to recognize part of the above.
D. Not able to recognize most of the above.
E. Not able to recognize the above at all.

1.1.2 Overall knowledge on bending.

A. Able to recognize where and how bending is applied on the product made by the assigned progressive die.
B. Able to recognize most of the above.
C. Able to recognize part of the above.
D. Not able to recognize most of the above.
E. Not able to recognize the above at all.

1.1.3 General knowledge on drawing.

A. Able to understand the drawing process of the assigned product for transfer die.
B. Understand most of the above.
C. Understand part of the above.
D. Not able to understand most of the above.
E. Not able to understand the above at all.

1.2 Countermeasures against troubles in pressworking.

1.2.1 General knowledge on troubles and their countermeasures in blanking.

A. Possess knowledge on troubles and their countermeasures which may occur to the assigned die.
B. Possess most of the above knowledge.
C. Possess knowledge on troubles and countermeasures which actually occurred in practical training.
D. Possess knowledge on some of the troubles and countermeasures which actually occurred in practical training.
E. Possess no knowledge.

1.2.2 Knowledge on troubles in drawing.

A. Possess knowledge on troubles and their countermeasures which may occur to the assigned die (transfer die).
B. Possess most of the above knowledge.
(C.) Possess knowledge on troubles which actually occurred in practical training.
D. Possess knowledge on some of the troubles which actually occurred in the practical training.
E. Possess no knowledge.

1.3 Material.

1.3.1 Overall knowledge on materials used in pressworking.

(A.) Possess knowledge on types of cold rolling steel sheet used for the assigned product.
B. Possess most of the above knowledge.
C Possess knowledge on SPCE-SD only.
D. Possess some knowledge.
E. Possess no knowledge.

1.3.2 Detailed knowledge on materials commonly used for dies.

(A.) Possess knowledge on types, characteristics, and machinability of the material used for the assigned die.
B. Possess overall knowledge on the above.
C. Possess knowledge on types of the material used for the assigned die.
D. Possess knowledge on some types.
E. Possess no knowledge.

1.4 Press machines and devices.

1.4.1 General knowledge on capacity, specification, and operation of press machines and devices.

A. Possess knowledge on the capacity, specification, and operation of high-speed automatic press machine (called "trial press" hereafter) which is used for the try run of the assigned die.
(B.) Possess overall knowledge on the above.
C. Possess knowledge on the operation of the machine.
D. Possess most of the knowledge on its operation.
E. Possess no knowledge.

1.4.2 General knowledge on accessaries (die cushion, slide knock etc.) of press machine.

A. Possess knowledge on accessaries of the trial press.
B. Possess overall knowledge on the above.
C. Possess part of the above knowledge.
D. Possess knowledge only on its name.
E. Possess no knowledge.

1.4.3 General knowledge on automatic devices.

A. Possess knowledge on operation/maintenance of transfer device in the trial press.
B. Possess overall knowledge on above.
C. Able to understand them roughly by looking at manuals.
D. Able to understand them partly by looking at manuals.
E. Not able to understand.

1.5 Tooling Dies.

1.5.1 General knowledge on die structure and die parts.

A. Able to recognize structures or types of die parts by looking at drawings of the assigned die.
B. Mostly able to recognize the above.
C. Able to recognize die parts, but not structures.
D. Partly able to recognize the above.
E. Not able to recognize.

1.5.2 Detailed knowledge on names, types, and function of die parts.

A. Able to recognize the above of the assigned die parts.
B. Mostly able to recognize the above.
C. Able to recognize the above as for the parts actually manufactured.
D. Partly able to recognize the above as for the parts actually manufactured.
E. Not able to recognize.

1.6 Die manufacturing method.

1.6.1 Detailed knowledge on types, application, characteristics, and machining examples of commonly used machines for die manufacturing.

A. Possess above knowledge as for the machines located in the training workshop.
B. Possess above knowledge as for the machines used in practical training.
C. Possess overall knowledge as for the machines used in the training.
D. Possess part of the above knowledge as for most of

the machines used in the training.
E. Possess no knowledge.

1.6.2 Detailed knowledge on types, application, and handling/ maintenance of the tools used in die manufacturing.
A. Possess above knowledge as for cutting tools, grinding wheels (stones), or other tools in the training workshop.
B. Possess above knowledge as for the tools actually used.
C. Possess most of above knowledge as for the tools actually used.
D. Possess part of above knowledge as for the tools actually used.
E. Possess no knowledge.

1.6.3 Detailed knowledge on names, application, and handling/ maintenance of the measuring equipments for die parts and products.
A. Possess above knowledge as for the tools in the training workshop.
B. Possess above knowledge as for the tools actually used.
C. Possess overall knowledge as for the tools actually used.
D. Possess part of the above knowledge.
E. Possess no knowledge.

1.6.4 General knowledge on causes and countermeasures against troubles common in machining of precision die parts.
A. Possess above knowledge as for the die parts machined in the practical training.
B. Possess above knowledge as for the parts one actually machined.
C. Possess above knowledge as for troubles actually occurred.
D. Possess above knowledge as for some of the troubles actually occurred.
E. Possess no knowledge.

1.6.5 Detailed knowledge on machining process and attention required in machining of die parts.
A Possess above knowledge as for the assigned die parts.
B. Possess overall knowledge.
C. Possess above knowledge as for parts one actually machined.
D. Possess overall knowledge as for parts one actually machined.
E. Possess no knowledge.

1.7 Possess overall knowledge on heat treatment to die parts.
A. Possess overall knowledge on heat treatment device or method for the assigned die parts.
B. Possess overall knowledge.
C. Possess knowledge on how to place an order of heat treatment.
D. Possess knowledge on some ways to place an order of heat treatment.
E. Possess no knowledge.

1.8 Finishing and assembly of dies.

1.8.1 Detailed knowledge on finishing method of die parts.
A. Possess knowledge on methods of chamfering, polishing, and removing of burr for the assigned die parts.
B. Possess above knowledge as for those actually experienced in the practical training.
C. Possess overall knowledge as for those actually experienced in the practical training.
D. Possess part of above knowledge.
E. Possess no knowledge.

1.8.2 Detailed knowledge on die assembly.
A. Possess knowledge on die assembly process, attention required, checking method after assembly of assigned die.
B. Possess overall knowledge on the above.
C. Possess above knowledge as for those done in practical training.
D. Possess overall knowledge as for those done in practical training.
E. Possess no knowledge.

1.8.3 General knowledge on methods of try run.
A. Possess knowledge on mounting assigned die onto the press machine, machining of sample products, and checking of products.
B. Possess overall knowledge on the above.
C. Able to understand the above by reading manuals.
D. Able to understand part of the above by reading manuals.
E. Possess no knowledge.

2. Practical skills

As for practical skills, it is regarded satisfactory when one is able to do the following by using manuals, reference books or any other materials.

2.1 Reading and understanding of drawings.

2.1.1 Understanding contents of the assembly drawing of precision progressive die.
A. Able to compare the assembly drawing of the assigned die to its part drawings.
B. Able to do most of the above.
C. Able to do the above as for the parts one actually machined.
D. Able to do part of the above as for the parts one actually machined.
E. Not able to recognize part drawings from the assembly drawing.

2.1.2 Able to set up machining contents and machining process by looking at the part drawings of precision progressive die.

(A.) Able to set up machining process of assigned die parts by following the instruction in the manual.
B. Able to set up the process roughly by looking at the manual.
C. Able to set the process as for die parts one actually machined.
D. Able to set up part of the process as for die parts one actually machined.
E. Not able to set the above.

2.2 Machining of parts using the machines for die manufacturing.

2.2.1 Able to machine the assigned die parts using the following machines.

Cutting machines : lathes, vertical milling machines, Machining Center.
Grinding machines: surface grinders, NC jig grinders, NC form grinders.
Electric machines: NC die sinking EDM, NC wire-cut EDM.

(A.) Able to use most of the machines used in the practical training and able to manufacture required parts.
B. Able to do the machining in one's specialized area.
C. Able to do most of the machining in one's specialized area.
D. Not able to do some of the machining even in one's specialized area.
E. Not able to use any of the machines nor make parts.

2.2.2 Able to select and prepare cutting tools, grinding wheels, or electrodes etc. for each machine by looking at the drawing of the die part to be machined.

(A.) Able to properly prepare tools etc. required for the assigned die parts.
B Able to prepare most of the tools etc. required for the assigned die parts.
C. Able to prepare tools in one's specialized area.
D. Able to prepare most of the tools in one's specialized area.
E. Not able to prepare by oneself.

2.2.3 Inspection of the manufactured parts.

(A.) Able to measure the manufactured parts by using measuring equipments in the training workshop and to judge whether or not they satisfy the requirement by comparing them with the drawings.
B. Able to measure and judge those experienced in the training.
C. Able to measure most of those experienced in the training.
D. Able to measure and judge part of those experienced in the training.
E. Not able to measure nor judge.

2.3 Finishing and assembly of dies.

2.3.1 Able to apply necessary finishing on the manufactured die parts.

A. Able to apply finishing, such as, chamfering or polishing etc. on the manufactured die parts.
B. Able to do the above as for those experienced in the practical training.
D. Able to do part of the above as for those experienced in the practical training.
E. Not able to apply any finishing.

2.3.2 Able to carry out assembly and adjustment of precision dies.

A. Able to assemble the assigned die parts according to the assembly drawing.
B. Able to do most of the assembly of the assigned die parts.
C \ble to do part of the above.
D. Mostly able to do part of the above.
E. Not able to do the above.

2.4 Carrying out trial runs and preparing samples.

2.4.1 At the time of try run of assigned die, able to recognize the problems and to correct the problems (scrap return, malfunction of movable parts, etc.) should the problems occur.

A. At the time of try run, able to correct the problems which have been pointed out.
B. Able to take countermeasures for the problems experienced in the practical training.
C. Able to take countermeasures for most of the problems experienced in the practical training.
D. Able to handle some of the problems occurred during the practical training.
E. Not able to do the above.

2.4.2 Able to carry out inspection of the products manufactured in the try run.

A. Able to inspect the manufactured product and to judge its quality (scratches, deformation, etc.) and dimensional accuracy.
B. Able to do the above where instruction was given in the practical training.
C. Able to do most of the above where instruction was given in the practical training.
D. Able to do part of the above where instruction was given in the practical training.
E. Not able to do the above.

VTC (JICA HK)

EVALUATION OF TECHNOLOGY TRANSFER

DIE SETTING AND PRESS OPERATION COURSE

Mr LEUNG Kwok-Hung

1 Course Work

1.1 Pressworking Method

1.1.1 General knowledge on blanking.

A. Able to calculate blanking force or select proper clearance for general materials (mainly sheet metal).
B. Mostly able to do the above.
C. Able to do the above as for the assigned product.
D. Mostly able to do the above as for the assigned product.
E. Unable to do the above.

1.1.2 General knowledge on bending.

A. Able to recognize where and how bending is applied to a general product by looking at it.
B. Able to do the above as for the products similar to the assigned product (connector).
C. Able to do the above as for the assigned product only.
D. Mostly able to do the above as for the assigned product.
E. Unable to do the above.

1.1.3 General knowledge on drawing.

A. Able to understand the relationship between the order of drawing stages and drawing depth by looking at the sample of drawing stages of a general drawing product.
B. Possess above knowledge as for the product (motor case) processed using the assigned transfer die.
C. Possess overall knowledge on the above.
D. Possess knowledge on most of the above.
E. Possess no knowledge.

1.2 Countermeasures against troubles

1.2.1 General knowledge on causes of troubles and countermeasures in blanking.

A. In most cases, able to recognize the causes of troubles and countermeasures, such as quality flaws including improper dimension and burr, scrap return or scrap jamming during operation, etc. which may occur in general blanking.
B. In most cases, recognize the above as for the assigned product.
C. Recognize the above as for those actually occurred during training.
D. Recognize the above as for some of those actually occurred during training.
E. Unable to recognize the above.

1.2.2 General knowledge on troubles in bending.

A. In most cases, able to recognize the causes of troubles and countermeasures, such as quality flaws including improper dimension, improper bending angle, or cracks, products raising with punch, etc. which may occur in general bending.
B. In most cases, recognize the above as for the assigned product.
C. Recognize the above as for those actually occurred during training.
D. Recognize the above as for some of those actually occurred during training.
E. Do not recognize the above.

1.2.3 General knowledge on troubles in drawing.

A. In most cases, able to recognize the causes of troubles and countermeasures, for example, quality flaws such as improper dimension, wrinkles and cracks, or galling during operation which may occur in general cylindrical drawing.
B. Recognize the above as for the assigned product.
C. Recognize the above as for those actually occurred during training.
D. Recognize the above as for some of those actually occurred during training.
E. Do not recognize the above.

1.3 Materials

1.3.1 General knowledge on materials used in pressworking.

A. Possess knowledge on common types and application of cold rolling steel plate, stainless steel plate, and copper alloy.
B. Possess above knowledge as for cold rolling steel plate.
C Possess above knowledge only as for the two materials used for the assigned products.
D. In most cases, possess above knowledge as for one of the two materials.
E. Possess no knowledge.

1.3.2 Overall knowledge on materials used for dies.

A. Possess knowledge on types of the materials used for punch and die of the assigned die.
B. Possess knowledge on most of the above.
C. Possess knowledge on part of the above.
D. Possess little knowledge on the above.
E. Possess no knowledge at all.

1.4 Presses and Devices

1.4.1 Detailed knowledge on the characteristics and application of common presses.

A. Possess knowledge on the difference among Crank Press, High-speed Automatic Press and Transfer Press and their application.
B. Possess knowledge on most of the above.
C. Possess above knowledge only on the presses used in the practical training.
D. Possess above knowledge on some of the presses used in the practical training.
E. Possess no knowledge.

1.4.2 Detailed knowledge on capacity and specification of Crank Press.

A. Possess knowledge on specification of a crank press, such as three capacities and stroke length.
B. Possess above knowledge as for the presses used in the practical training.
C. Possess knowledge only on specification of the presses used in the practical training.
D. Possess overall knowledge only on specification of the presses used in the practical training.
E. Possess no knowledge.

1.4.3 Detailed knowledge on operation/maintenance of common presses.

A. Possess knowledge on inspection before operation and operation method of the presses used in the practical training.
B. Mostly possess above knowledge.
C Possess above knowledge on some of the presses.
D. Possess overall knowledge on some of the presses.
E. Possess no knowledge.

1.4.4 General knowledge on equipment for presses.

A. Possess knowledge on application and operation/maintenance of safety device and die cushion etc. for the presses used in the practical training.
B. Possess knowledge on most of the above.
C. Possess knowledge on part of the above.
D. Possess overall knowledge on some of the equipment for the presses used in the practical training.
E. Possess no knowledge.

1.4.5 General knowledge on types, characteristics, and operation/maintenance of the common automatic devices.

A. Possess knowledge on automatic devices for the presses located in the training workshop.
B. Possess knowledge on most of the above.
C. Possess knowledge on part of the above.
D. Possess overall knowledge on some of the devices for the presses used in the practical training.
E. Possess no knowledge.

1.5 Tooling Die

1.5.1 General knowledge on types, structures, and characteristics of tooling dies.

A. Possess knowledge on types and structures of the dies used in the practical training.
B. Possess knowledge on most of the above.
C. Possess knowledge on some of the dies.
D. Possess overall knowledge on some of the dies.
E. Possess no knowledge.

1.5.2 General knowledge on names and application of die parts.

A. Able to recognize names and application of die parts used in the practical training.
B. Mostly able to recognize the above.
C. Able to recognize above as for some of the parts.
D. Able to recognize names but not application.
E. Unable to recognize the above.

1.6 Drawing.

1.6.1 Able to understand the contents of the assembly drawing of a die.

A. Able to understand the die structure and how each part is assembled by looking at the assigned die.
B. Mostly able to understand most of the above.
C. Able to understand the above as for some dies.
D. Able to understand outline of the above as for some dies.
E. Unable to understand the above.

1.7 Die Manufacturing

1.7.1 Overall knowledge on machining contents of critical die parts.

A. Possess overall knowledge on machining stages of die parts (punches, dies, or plates) of the assigned die.
B. Possess overall knowledge on some of the parts.
C. Possess above knowledge as for some of the machines.
D. Possess little knowledge on machining.
E. Possess no knowledge at all.

1.7.2 Possess general knowledge on finishing and assembly of dies.

A. Possess knowledge on how to deassemble, assemble, and make adjustment on the dies used in the training.
B. Possess overall knowledge on the above.
C. Possess knowledge on how to deassemble and assemble but not how to make adjustment.
D. Possess overall knowledge on deassembly and assembly.
E. Possess no knowledge.

1.8 Try run.

1.8.1 Detailed knowledge on try run.

A. Possess knowledge on how to mount the assigned die onto the press and how to make adjustment of the press and devices.
B. Possess knowledge on most of the above.
C. Possess knowledge on die mounting method but not the adjustment.
D. Possess overall knowledge on die mounting method.
E. Possess no knowledge.

1.8.2 Detailed knowledge on inspection and evaluation of products.

A. Possess knowledge on how to measure the sample products processed in try run and how to evaluate whether or not samples meet the product standard.
B. Possess knowledge on most of the above.
C. Possess above knowledge as for those experienced in the practical training.
D. Possess overall knowledge as for those experienced in the practical training.
E. Possess no knowledge.

2. Practical skills

As for practical skills, it is regarded satisfactory when one is able to do the following by using manuals, reference books or any other materials.

2.1 Inspection of die, machine, and devices.

2.1.1 Inspection of die before operation to confirm there is no abnormality.

A. Able to inspect the die to be used in the practical training to see if there is any abnormality.
B. Mostly able to do the above.
C. Able to do the above as for what has been experienced in practical training.
D. Able to do the above as for some of those experienced in the practical training.
E Unable to do the above.

2.1.2 Able to inspect the press before operation and to refill the oils if so required.

A. Able to inspect the press used in the practical training before operation and to refill its oils as required.
B. Mostly able to do the above.
C. Able to do part of the above.
D. Mostly able to do part of the above.
E. Unable to do the above.

2.1.3 Able to inspect and adjust the safety device and automatic device.

A. Able to confirm that the safety device, feeding device etc. are operated properly.
B. Mostly able to do the above.
C Able to do part of the above.
D. Mostly able to do part fo the above.
E. Unable to do the above.

2.2 Preparation and adjustment.

2.2.1 Transporting and storing die properly.

A. Able to transfer the die to be used in the practical training from its storing place to the press machine and to store it properly after use.
B. Mostly able to do the above.
C. Mostly able to do the above as for those experienced in the practical training.
D. Mostly able to do part of the above.
E. Unable to do the above.

2.2.2 Transporting, mounting, demounting, and storing of workpiece material.

A. Able to transport the material to be used in the practical training from its storing place to the press and to mount onto or demount it from the device, and to store properly.
B. Mostly able to do the above.
C. Mostly able to do the above as for those experienced in the practical training.
D. Able to do part of the above as for those experienced in the training.
E. Unable to do the above.

2.2.3 Mounting die onto the press and making adjustment.

A. Able to mount the die onto the press and make adjustment for operation.
B. Mostly able to do the above.
C. Able to do the above as for those experienced in the training.
D. Able to do the above as for part of those experienced in the training.
E. Unable to do the above.

2.2.4 Preparing container for products (product collector) and container for scrap.

A. Able to prepare specified containers in the proper manner.
B. Mostly able to do the above.
C. Mostly able to do the above as for those practiced in training.
D. Able to do the above as for part of those practised in training.
E. Unable to do the above.

2.2.5 Able to clean up after operation.

A. After operation, able to inspect the press, shut off the main power, and to clean up etc.
B. Mostly able to do the above.
C. Mostly able to do the above as for those experienced in training.
D. Able to do the above as for part of those experienced in training.
E. Unable to do the above.

2.3 Try run and production.

2.3.1 Feeding the material into the press and conducting try run.

A. After mounting die and adjusting the press, able to feed the material and conduct try run to make samples.
B. Mostly able to do the above.
C. Mostly able to do the above as for those experienced in training.
D. Able to do the above as for part of those experienced in training.
E. Unable to do the above.

2.3.2 Discovering a problem by looking at the product or machining condition, and taking necessary measures to correct the problem.

A. Able to discover the problem and take necessary measures by observing samples or machining condition.
(B) Mostly able to do the above.
C. Mostly able to do the above as for those experienced in training.
D. Able to do the above as for part of those experienced in training.
E. Unable to do the above.

2.3.3 Inspection and evaluation of products.

(A) Able to inspect the assigned product and to evaluate whether or not it satisfies the standard.
B. Mostly able to do the above.
C. Mostly able to do the above as for those experienced in training.
D. Able to do the above as for part of those experienced in training.
E Unable to do the above.

2.3.4 Conducting automatic running of an automatic press.

(A) After try run, able to conduct automatic continuous machining of high speed press and transfer press.
B. Mostly able to do the above.
C. Mostly able to do the above, but with some anxiety.
D. Able to do the above if under 10 shots.
E. Unable to do the above.

2.4 Maintenance of dies.

2.4.1 When a part of die, such as punch, is damaged, able to deassemble the die and exchange the damaged part.

(A) When repair or exchange of a part is required to the assigned die, able to deassemble the die and exchange the part.
B. Mostly able to do the above.
C. Mostly able to do the above as for those experienced in training.
D. Able to do the above as for part of those experienced in training.
E. Unable to do the above.

2.4.2 Regrinding of cutting edges of punch and die.

(A) Able to regrind cutting edges of punch and die of the assigned die using surface grinder.
B. Mostly able to do the above.
C. Mostly able to do the above as for those experienced in training.
D. Able to do the above as for part of those experienced in training.
E. Unable to do the above.

Vocational
TRAINING COUNCIL

Fourth Meeting

of

VTC/JICA Project

Joint Committee

24th September 1992

Membership

Chairman

Mr. H.R. Knight, ISO, MBE, JP	(Executive Director, Vocational Training Council)

(or in his absence, Mr. M.T. Au-Yeung, Assistant Executive Director, Vocational Training Council)

Members (Hong Kong Side)

Dr. Henry T. Yu, MBE	(Chairman, Committee on Precision Tooling Training of VTC)
Mrs. Patricia Keung	(Representative of the Director General of Industry)
Dr. S.W. Lui	(Representative of the Hong Kong Productivity Council)
Mr. S.K. Chong	(Representative of the Executive Director of VTC)
Mr. A.J. Twitchett	(Centre Manager of the Precision Tooling Training Centre of VTC)

Members (Japan Side)

Mr. K. Tanigawa	(Leader, JICA Evaluation Survey Team)
Mr. H. Yoshida	(Member, JICA Evaluation Survey Team)
Mr. K. Hamada	(Member, JICA Evaluation Survey Team)
Mr. K. Tanaka	(Member, JICA Evaluation Survey Team)
Mr. T. Yamada	(Member, JICA Evaluation Survey Team)
Mr. N. Ochiai	(Member, JICA Evaluation Survey Team)
Mr. S. Shimizu	(Chief Advisor, JICA)
Mr. T. Nakamura	(Expert, JICA)
Mr. K. Kawamura	(Expert, JICA)
Mr. S. Sano	(Expert, JICA)
Mr. K. Kato	(Expert, JICA)

Secretary

Mr. FU Siu-pun	(VTC)

Observer

Officials of the Consulate-General of Japan

VTC/JICA Project

Joint Committee

Functions

1. To formulate the annual work plan of the project in line with the tentative schedule of implementation formulated under the framework of the Record of Discussion.

2. To review the overall progress of the technical cooperation programme as well as to take effective measures for the achievements of the above mentioned annual work plan.

3. To review and exchange views on the major issues arising from or in connection with the technical cooperation programme.

R E S T R I C T E D

Agenda

for the Fourth Meeting

of the

VTC/JICA Joint Committee

to be held

in the Council Conference Room (Room 1901)

of the

Vocational Training Council

19/F, VTC Tower, 27 Wood Road,

Wanchai, Hong Kong

at 2:30 p.m. on Thursday, 24th September 1992

* * * * * *

1. Welcoming speech by Chairman of Joint Committee

2. Report on the Progress of the Project
   - January 1992 to August 1992 (Paper VTC/JICA (JC)1/92 attached)

3. Evaluation Report on the Project prepared jointly by JICA and VTC
   - (Paper VTC/JICA (JC) 2/92 to follow)

4. Any other business

R E S T R I C T E D

Progress Report on the Joint Project December 1991 to September 1992

This report presents in the following paragraphs the progress of the VTC/JICA project since the third Joint Committee meeting in December 1991.

Machine and Equipment Installation and Commissioning

2. Two Hewlett Packard workstations and peripherals, procured by the VTC, were delivered and installed on 28th January 1992.

3. The two sets of ADMS software supplied by JICA were installed by a JICA short term expert in February 1992.

4. VTC is in the process of procuring a single stroke power press which is expected to be installed on the G/F workshop by December 1992.

5. The upgrading of the ADMS software and the on line linkage of the ADMS system to the machining centre was carried out by a JICA short term expert in August 1992.

6. JICA also supplied additional tools for the machining centre in August 1992.

Local Counterparts and JICA Long-term Experts

7. There has been no change in personnel of the JICA team since December 1991.

8. The 6 local counterparts (Precision Tooling Trainers) continued to conduct the various training courses under the guidance of the JICA experts.

JICA Short-term Experts

9. Another JICA short-term expert came to Hong Kong during the period 10.8.92 to 15.8.92 to supervise and instruct on the assembly of transfer and progressive dies.

Courses

10. The third 44-week Progressive and Transfer Die Design Course commenced on 13.4.92 with 7 trainees enrolled. Two trainees had subsequently dropped out. As a number of applications had been received after commencement of the course, it was agreed to start another course on the 14th September 1992 operating concurrently with the first course. To date 5 trainees have been enrolled.

11. The second 44-week CAD/CAM Die Manufacturing Course ended on 1.8.92 with 8 trainees completing training. One trainee dropped out early in July as he had found employment. The third course will commence on 28.9.92.

12. Because of the unsatisfactory enrolment situation, the full-time die setting and operation course had been restructured to operate as a 11-week part-time evening course. The new course is scheduled to commence on 15.9.92. Six trainees have been enrolled against a planned capacity of 5 and 12 trainees have been wait-listed.

Publicity

13. Ample publicity has been given to the VTC/JICA Training Unit and its courses. Publicity activities included:

(i) Trainee recruitment advertisements in leading local newspapers;

(ii) Promotion letters to establishment in the machine shop and metal working industry, in particular the tool and die makers, and electrical and electronic firms with in-house tool making and sheet metal part production facilities;

(iii) TV feature programmes;

(iv) A feature article on the Asian Weekly Magazine; and

(v) Guided tours for employers from relevant industries.

Miscellaneous

Seminar 120人 参加予定

14. A 2 half-days seminar on 'Transfer and Progressive Die Technology' has been scheduled for 17th and 18th September 1992 at the Precision Tooling Training Centre. The following lectures would be delivered by JICA experts and VTC staff:

(i) Latest Technology in the Design and Manufacture of Progressive and Transfer Dies by Mr. Kazuo Hamada;

(ii) Transfer Press and Peripheral Equipment by Mr. Tsuneo Nakamura;

(iii) Rationalisation, Labour Saving and Automation in Stamping Operation. Response to High Accuracy and Quality. Transfer Press Technology and Practical Application by Mr. Hiromi Yoshida;

(iv) Progressive Die or Transfer Die - the Deciding Factors by Mr. Rishi Bhatnagar.

A total of (120) persons, the majority of whom from the industry and tertiary educational institutions, would be attending the seminar.

Training of Substitute Trainer

15. In order to create a larger pool of trainers to cater for unforeseen circumstances, five trainers from the Precision Tooling Training Centre had received a total of 8 weeks intensive training in the use of various machinery and equipment in the Precision Sheet Metal Processing Training Unit during the month of March 1992. The training was conducted by the counterparts and the Japanese experts. Similar arrangement has been planned for March 1993.

Temperature and Humidity Control for the 6/F Workshop

16. To rectify the temperature and humidity problem, a two package air conditioning unit was installed on the 6/F and came into operation in March 1992.

- 8th September 1992 -

AYMT/SKC/SPF/AJT/sc

（資料－５）　コンサルタント業務報告書

香港金型技術開発協力事業
終了時評価調査団

業　務　報　告　書

濱　田　一　男
吉　田　弘　美

派遣期間　平成４年９月13日 ～ ９月26日

1　終了時評価調査団派遣の経緯

香港において、「精密金型製造に必要な人材の育成」を目的として、R／Dにより4年間の計画で実施中の本プロジェクトは、現在まで約3年半を経過し、終了時まで約半年を残すのみである。

協力実績として、延べ8名の長期専門家派遣（現在5名派遣中）、18名の短期専門家派遣、6名の研修員受入れ、機材の供与等が実施された。

また、プロジェクトの目的を達成するために、協力先の機関である香港職業訓練局（VTC）において、新規に3つのコース（金型設計コース、金型製作コース及びプレス加工コース）を開設し、日本人専門家の指導を受けたトレーナー（カウンターパート）が訓練を行い、既に卒業生を産業界に送り出している。本評価調査は、上記を踏まえ、日本側及び香港側の合同で実施した。

2　調 査 機 関

コンサルタント　　平成4年9月13日(日)より9月26日(土)まで

官　ベ　ー　ス　　平成4年9月20日(日)より9月26日(土)まで

3　調査団員構成

(1)	谷川　和男	団　　長	国際協力事業団鉱工業開発協力部計画課長
(2)	田中耕太郎	技術協力計画	通商産業省機械情報局鋳鍛造品課総括係長
(3)	山田　忠昭	プロジェクト評価管理	(財)素形材センター企画室次長
(4)	落合　直之	プロジェクト実施管理	国際協力事業団鉱工業開発協力部工業開発協力課
(5)	濱田　一男	コンサルタント	型研精工株式会社社長
(6)	吉田　弘美	コンサルタント	吉田技術士研究所所長

4　現地での活動内容（日報）

9月13日（日）

終了時調査団コンサルタント・チーム香港着

12：45　濱田　一男　　ＣＸ－４６１

13：20　吉田　弘美　　ＪＬ－７３１

宿　舎　　ROYAL　PACIFIC　HOTEL

ＪＩＣＡ専門家の清水リーダーから現状を聞き、明日からのスケジュールについて打合せを行なう。

9月14日（月）

9：30　在香港日本領事館訪問（清水リーダー同行）。

面　会　者

服部勝己領事　　経済部部長

田中広文領事　　経済部

挨拶と評価調査団の目的等の説明を行ない、懇談。

領事館に対して香港側から、本プロジェクトの評判が良く、成功した状態で終了しても引き続き技術移転之継続を要望しているとのことである。

11：00　職業訓練局総部（Vocational Training Council）の Head Office を訪問。

面　会　者

Mr. Horace R. KNIGHT （The Executive Director of VTC）

Mr. T. Y. CHUI （Deputy Director of VTC）

Mr. AU - YEUNG Man TAK （Assistant Director of VTC）

Mr. S. K. CHONG （Senior Industrial Training Officer of VTC）

Mr. FU Si Pun （Senior Industrial Training Officer of VTC）

Mr. Alec J. TWITCHETT （Centre Manager of PTTC VTC）

訪問の目的、調査内容、スケジュール等の説明をし、併せて、現在の当プロジェクトの進捗状況、技術移転の内容、残された課題等についての意見を聞く。

技術移転の状況については非常に満足しており、当初の予想を超える成果を上げているとのこと。

主な議事内容

① プロジェクトが終了し、日本の専門家が帰り、日本とのパイプが切れるのが残念とのことであり、何らかの形で継続したいとの希望が述べられた。

② 心配していたプロジェクト終了後のカウンターパート（以下、C／Pと略す）の退職については、全員が継続の意志を示しているとのこと。

また、6名のC／Pを多能化する、PTTCの他のコースのC／Pにも勉強させる等の対策も行っている。

③ C／P 6名のうち、リーダーとしてのシニアカウンターパートの人選について具体的な相談があった。

これについては名前を上げず、選択する場合の考え方と判断基準を重点にアドバイスをする。

12：00　職業訓練局主催昼食会

14：00　日本人専門家と打合せ

出　席　者

濱田　一男　JICAコンサルタント
吉田　弘美　JICAコンサルタント
清水　清司　JICAチーフアドバイザー
中村　康夫　JICAプレス加工専門家
川村　和徳　JICA金型設計専門家
佐野　勝健　JICA金型製作専門家
加藤　健吾　JICA金型製作専門家

主な打合せ事項

これまでの技術移転の状況と現状の確認、プロジェクト終了（1993年3月）までの予定表について打合せを行なう。

R／Dで決められた内容については、ほぼ技術移転が終了し、相談に来る回数も少なく、マニュアルの整備等、終了後に備えた業務を行なっている。

特に通常のマニュアルとは別にC／Pが疑問に感じたこと、訓練中に分からなかったこと、日本人専門家が気の付いたことなどを書き加えた教師用マニュアルはすばらしいものであり、技術移転の心髄にあたる貴重なものである。

また、前回の計画打合せ調査団の派遣時（1991年12月）に協力を約束した新しい課題の指導をしているとのこと。ただし、これはプラスα（アルファ）の支援であり、終了時評価の対象とは別に扱うことでVTC側が了解している。

訓練生が少なく、懸案となっていたプレス加工コースも夜間コースを設定したところ受講者が増加し、順調に行なえるようになったとのことである。

9月15日（火）

9：30　職業訓練局スタッフとの会議

出　席　者

Mr. S. K. CHONG
Mr. Fu Sin Pun
Mr. Alec J. TWITCHETT
Mr. Philip KEUNG (Centre Secretary of PTTC VTC)
濱田　一男

吉田　弘美

清水　清司

主な議事内容

今回の終了時評価調査団の目的、調査の内容と方法を説明し、スケジュール等の打合せを行ない、これまでの技術移転の状況、残された課題、問題点等について話し合う。

① 調査は、施設の視察、C／Pの面接、本コースの卒業生及び卒業生の就職先の企業、産業界を代表する人のインタビュー等で行ないたい旨を伝える。

② 現在までの訓練状況

現在までの訓練状況は次のとおりである。

・金型設計コースは2期生が卒業し、3期生を訓練中である。

・金型製作コースは2期生が卒業し、3期生の訓練が9月28日からスタートする（募集は済んでいる）。

・プレス加工コースはこれまで4回行なったが、夜間コースとして9月14日から新たにスタートした（募集定員を超える応募があった）。

③ 前回調査団が帰国後から現在までの実施事項の確認

・短期専門家の派遣

金型仕上げ（組立て）　1992年8月9日～8月15日に完了

CAD / CAMのバージョンアップ　1992年8月23日～8月28日に完了

・機材供与（追加）

CAD / CAMシステムのソフトウェア5セット

マニシングセンター用治具16セット

CAD / CAMとCNCマシンとのオンライン化

・香港側で購入した機材（追加）

小型プレス機械（プレス加工コース専用）

・新しい金型の資料2点（順送り型及びトランスファ型）を日本の支援委員会より提供

14：00　C／Pのインタビュー

面　接　者

Mr. Chak Tong WONG	PTTCのトレーナー（金型製作担当）
Mr. KA Ming CHAN	PTTCのトレーナー（金型製作担当）
Mr. Kwok Hing CHAW	PTTCのトレーナー（金型製作担当）

評　価　者

Mr. S. K. CHONG

Mr. Fu Sin Pun

Mr. Alec J. TWITCHETT

Mr. Philip KEUNG

濱田　一男

吉田　弘美

清水　清司

別紙の「技術移転の評価基準」により１人ずつ、６名のうち３名の面接を行なう。実際の評価の詳細は別紙の「技術移転の評価基準」に示すが、全体として、次のような意見または要望があった。

① 課題の金型の種類が少なく、もっと多くの事例について学びたい。

これについては「如何に基礎が大切か、基礎をしっかり身に付ければ、あとは応用の問題であること」を強調して説明する。

この考え方にPTTCのスタッフも賛成し、C／Pを説得していたのは、我々の考え方を理解してくれたものとして感動した。

② マニュアル等が完備しており、訓練生が設計、製作しても失敗が少なく、トラブル及び失敗の事例が少ない。

これについては、残された期間で失敗やトラブルの実例とマニュアルの作成を専門家にアドバイスする。

③ プロジェクト終了後の勉強の方法が分からない。

この件については、金型設計担当者は金型製作及びプレス加工の実際を見て学ぶように話す。これにより、自分の書いた図面がどのように加工され使われるかが分かり、無限に多くの情報を与えてくれる。

また、形状及び寸法をアレンジするのも有効である旨、アドバイスする。

④ プロジェクト終了後の技術の進歩への対応（陳腐化が心配）

この件については、当課題が10年程度先まで陳腐化することはないが、さらに考えるなら、当課題の内容について経済性などを付加すればよいと説明する。

２つの課題の金型は２種類の製品用である以上に、精密高速プレス型及び自動プレス加工の必要な要素を盛り込んだ象徴的な金型であることの理解が、C／Pはもとよりの PTTCのスタッフにも今回で漸くできたように思える。

なお、金型製作担当者は３人別々に面接したが、評価は機械及び作業等の評価すべき内容を３人の総合力にまとめた。

9月16日（水）

9：30　C／Pのインタビュー

面　接　者

Mr. Wu Man SING　　PTTCのトレーナー（主として順送り金型設計担当）

Mr. Chi Fai FUNG　　PTTCのトレーナー（主としてトランスファ金型設計担当）

Mr. Kwok Hung LEUNG　PTTCのトレーナー（プレス加工担当）

評　価　者

Mr. S. K. CHONG

Mr. Fu Sin Pun

Mr. Alec J. TWITCHETT

濱田　一男

吉田　弘美

清水　清司

前日に引き続き、別紙の「技術移転の評価基準」によって面接とアドバイスを行なう。

14：00　訓練コース卒業生の就職先企業訪問

企　業　名

NICS　ENGINEERING　LIMITED

面　会　者

中村　凱史　(General Manager)

Mr. Frankie CHOU　(Factory Manager)

就職した卒業生

Mr. YU Pu Hong

面　接　者

Mr. Fu Sin Pun

Mr. Alec J. TWITCHETT

濱田　一男

吉田　弘美

清水　清司

中村凱史、Mr. Frankie CHOH の両氏に話を聞き、併せて卒業生のインタビュー、工場見学等を行なう。

以下にその概略を記す。

① 当社はプラスチック型のメーカーであり、本訓練内容とは多少異なるが、機械加工

(CNCワイヤカット放電加工機、マシニングセンター等) での基礎技術は優秀であり、採用できてよかったと満足している。

② 本訓練コースの卒業生は優秀だが、賃金の高いのが悩みである (安いと採用できず、また、他社に引き抜かれる)。

③ 香港は人件費が高く、中国の深圳に進出する企業が多く、当社も工場がある。この場合、香港の技術者が必要である。

④ 今後も本訓練コースの卒業生を採用したい。

同社の金型は、当訓練コースの金型ほど精密ではないが、高精密度化を目指しており、卒業生はそれに対応できるだけでなく、全体のレベルアップの参考と刺激になると思われる。

9月17日 (木)

9 : 20　産業界の代表者のインタビュー (訓練校の会議室にて)

業界代表

Mr. C. C. CHAN (Sunnex Products Ltd Senir Engineer)

面接者

Mr. Fu Sin Pun

濱田　一男

吉田　弘美

Sunnex Products Ltd 社は、当プロジェクトの事前調査から、これまで常に業界を代表する形でかかわってきた Dr. Henry Yu の会社であり、同氏が米国へ出張中のため同氏及び VTC の推薦で Mr. C. C. Chan へのインタビューとなった。

同氏のコメントの概要は次のとおり。

① 香港の工業は雑貨類の生産から、精密工業の脱皮を図っており、この意味で当プロジェクトの果たす役割は大きい。

② 新しい設備や技術を導入しても、人材がいなくては効果が上がらない。CAD/CAM での金型設計と製作に産業界での期待は強い。

③ 決められた内容の技術移転だけでなく、この間にもたらされた技術情報、仕事に対する姿勢等、学ぶものが多かった。

④ 当社もプレス加工の合理化、金型技術の向上を目指しており、自分個人としても期待している。

これに対し産業界の人がもっと理解を深めるため、当訓練コースの見学に来たり、PTTC のスタッフと会合を持つ等の交流を図ってほしいと要望する。

9：30　資料の整理（訓練校の会議室にて）

出　席　者

濱田　一男

吉田　弘美

14：00　卒業生の就職先の企業のインタビュー

企　業　名

KUK JE MOLD & DIES (International) LTD

面　会　者

Mr. Chan Wing Chiu (Operation Manager)

就職した卒業生

Mr. LAM Chung YI

面　接　者

Mr. Fu Sin Pun

Mr. Alec J. TWITCHETT

濱田　一男

吉田　弘美

清水　清司

企業を訪問してインタビューをし、併せて工場見学をする。

同社は総合半導体生産メーカー（グループ）の金型製作専門会社であり、グループ内で使用する金型を製作している。

機械設備は最新鋭のCNC成形研削盤（ドイツ製）、ワイヤカット放電加工機（スイス製）等を次々に導入しており、卒業生に最もふさわしい企業である。

Mr. Chan Wing Chiu のコメント

① 当社は半導体の総合メーカーの一翼を担い、急成長をしており、設備投資も積極的に行なっている。

その中で、一番心配していた人材の確保ができて、ありがたい。今後もぜひ、卒業生を採用したい。

② 採用した卒業生は、ワイヤカット放電加工機を担当しているが、技術は満足できるレベルにある。

③ 賃金は、能力に対して、現在の程度であれば、納得して支払える。

当社は香港を代表する精密金型の地元企業であり、当プロジェクトの目的に合う成果が期待できる。

当社のような企業はVTCとの関係をもっと密にしてほしいと同社とPTTCの両者に要請した。

9月18日（金）

9：30　資料の整理とりまとめ

出　席　者

濱田　一男

吉田　弘美

14：00　評価調査資料の整理会議

出　席　者

Mr. S. K. CHONG

Mr. Fu Sin Pun

Mr. Alec J. TWITCHETT

Mr. Philip KEUNG

濱田　一男

吉田　弘美

清水　清司

9月19日（土）

9：00　JICA 専門家と打合せ

これまでの調査をもとに、プロジェクト終了までの実施事項についてアドバイスを行なう。

また教育、訓練に対する相談を受け、これらについてもアドバイスを行なう。

10：00　Hong kong Productivity Council(HKPC)を訪問

当プロジェクトについて、香港側の専門家として事前調査の段階から参画していたDr. S. W. Lueを訪問し、プロジェクト終了後も引き続き当訓練に協力してくれるよう依頼する。

HKPCは企業の指導を行っており、香港の技術の向上には人材育成と併せて合理化、省力化等の支援が重要である。

さらに、CAD/CAM、レーザー等の開発も行なっており、金型業界のためには協力が欠かせない。

15：00　評価調査資料のまとめ

前日に引き続き資料のまとめを行なう。

9月20日（日）

評価調査団香港に到着。

構　成　員

谷川　和男	団　　長	国際協力事業団鉱工業開発協力部計画課長
田中耕太郎	技術協力計画	通商産業省機械情報局鋳鍛造品課総括係長
山田　忠昭	プロジェクト評価管理	(財)素形材センター企画室次長
落合　直之	プロジェクト実施管理	国際協力事業団鉱工業開発協力部工業開発課

宿　泊　ROYAL PASIFIC HOTEL

コンサルタント・チーム2名が加わり、評価調査団となる。

コンサルタント・チームよりこれまでの調査状況を報告し、明日からの日程と内容の打合せを行なう。

9月21日（月）

9：30　在香港日本総領事館表敬訪問（谷川和男団長以下4名）

面　会　者

小鵜　光昭	首席領事	
服部　　勝	領事	経済部部長
田中　弘文	領事	経済部

11：00　職業訓練局総部（VTC Head office）表敬訪問（谷川和男団長以下4名）

面　会　者

Mr. Horece R. KNIGHT

Mr. T.Y. CHUI

Mr. AU - YEUNG Man TAK

Mr. S. K. CHONG

Mr. Fu Si Pun

Mr. Alec J. TWITCHETT

この間、コンサルタント2名は資料の整理にあたる。以降は終了時調査団に加わり、行動を共にする。

14：00　九龍湾職業訓練校にてJICA専門家と打合せ

出　席　者

終了時評価調査団　　6名

JICA 専門家　　5名

評価調査団には初めての訪問となる人がおり、また、交替したJICA 専門家もいるため、これまでの経緯、現状等の説明等を受ける。

また、コンサルタント・チームより、これまでの調査結果を詳しく説明する。

9月22日（火）

9：30　PTTCと日本側の評価調査団との協議

出　席　者

Mr. S. K. CHONG

Mr. Fu Si Pun

Mr. Alec J. TWITCHETT

Mr. C. Y. Man

谷川　和男

田中耕太郎

山田　忠昭

落合　直之

濱田　一男

吉田　弘美

これまでのプロジェクトの進捗状況の確認、調査結果と評価内容についての協議、合同評価レポート案の打合せ等を行なう。

13：00　職業訓練局主催昼食会

14：00　職業訓練局総部にてVTCスタッフと評価調査の資料整理

午前中の協議メンバーで評価調査の整理を行なう。

18：30　日本領事館主催の夕食会

9月23日（水）

9：00　九龍湾職業訓練局の他の訓練コースの視察

見学した訓練コースは次のとおり。

① PRECISION TOOLING TRAINING CENTRE

② HOTEL INDUSTRY TRAINING CENTRE

③ ELECTRON INDUSTRY TRAINING CENTRE

④ PRINTING INDUSTRY TRAINING CENTRE

⑤ PRASTICS INDUSTRY TRAINING CENTRE

当訓練局には、ホテルの従業員、電子、プラスチック成形、印刷等のコースがあり、PTTC関係でも、機械加工、精密機械加工、プラスチック金型製作等のコースがある。

ホテルの従業員コースを除き、訓練のシステム化が不十分であり、結果も芳しくないように思える。

この意味からも、当プロジェクトは職業訓練のシステムとして、VTC全体の参考になると思われる。

9月24日（木）

9：30　合同評価レポート（案）作成と協議

前日のPTTCメンバーと日本側評価調査団のメンバーにて協議のうえ、合同評価レポートの作成を行なう。

14：30　　合同委員会

出　席　者

Mr. Horace R. KNIGHT

Dr. S. W. LUI (Principal Consultant.HKPC)

Mrs. Patricia K.M.KEUNG (Trade Officer)

Mr. S. K. CHONG

Mr. FU Si Pun

Mr. Alec J. TWITCHETT

Mr. AU - YEUNG Man TAK

Mr. C. Y. Man

谷川　和男

田中耕太郎

山田　忠昭

落合　直之

濱田　一男

吉田　弘美

清水　清司

中村　康夫

川村　和徳

佐野　勝健

加藤　健吾

田中　弘文

日本側及び香港側共、本プロジェクトの内容については満足しているが、終了後も何らの形での技術協力がほしいということを、繰返しMr.Horace R.KNIGHTから要望された。

9月25日(金)

9：00　職業訓練局総部にて合同委員会議事録作成

出　席　者

Mr. S. K. CHONG

Mr. FU Si Pun

Mr. C. Y. Man

落合　直之

10：00　在香港日本領事館へ報告

面　会　者

服部　勝　領事

田中　弘文　領事

報　告　者

谷川和男団長以下終了時評価調査団員

15：30　合同委員会議事録・評価レポート署名

出　席　者

Mr. Horace R. KNIGHT

Dr. S. W. LUI

Mrs. Patricia K. M. KEUNG

Mr. S. K. CHONG

Mr. Alec J. TWITCHETT

Mr. Fun Sin Pun

Mr. AU - YEUNG Man TAK

Mr. C. Y. Man
谷川　和男
田中耕太郎
山田　忠昭
落合　直之
濱田　一男
吉田　弘美
清水　清司
中村　康夫
川村　和徳
佐野　勝健
加藤　健吾
田中　弘文
内容の詳細は合同委員会議事録、評価レポートによる。

19：30　JICA終了時評価調査団主催夕食会

9月26日（土）
11：30　終了時評価調査団香港発　ＪＬ－００２にて帰国

5　ま と め

9月13日より26日までの派遣期間中、13日から19日まではコンサルタント・チーム２名でカウンターパート６名の面接、産業界の代表のインタビュー、卒業生の就職先企業のインタビュー、PTTCスタッフとの協議、日本人専門家との打合せ等を行なった。

調査内容に対してスケジュールが詰まっており、夜間にかかる場合もあったが、香港側のスタッフも「オーバータイム」と言いつつ熱心に協力してくれ、十分な成果を上げることができた。

9月20日からは調査団の一員として、谷川調査団長ほか３名の調査団員と共にPTTCとの協議、合同評価レポートの作成、合同委員会等に参加した。

VTCはもとより、カウンターパート、卒業生本人、卒業生の就職先企業の経営者、産業界の代表者などから本プロジェクトに対する様々な話とともに感謝の言葉を聞き、実際企業で成果を上げている姿を見て成功を確信した。

現在、香港の工業は雑貨類から電気及び電子機器を中心とする高精度精密化への転換が進みつつあり、その中で精密金型製作技術は産業界の望むところであり、内容的にも、タイミング

的にも非常に合っていることが分かった。

本プロジェクトは順調に進みつつあり、所期の目的を達成し、予定どおりに終了できると確信したが、これには、本プロジェクトに携わる日本人専門家とカウンターパートの人間関係が良く、熱意を持って進めていることはもちろん、日本側（JICA）と香港側（VTC）の信頼関係、日本での支援委員会での支援等の力が大きい。

本プロジェクトの特徴は、一貫した基本思想、システムとしての完成度が高いこと、カリキュラム、到達点の設定、評価基準、スケジュールなどが整っていることである。

また、テキスト、マニュアル、技術データ、参考資料等の教材が整っており、これほどのものは、日本はもとより、世界的にも例が無く、将来にわたってVTCはもちろん、香港の大きな財産として技術の向上に貢献するものと思われる。

これらにより、本プロジェクト終了後も安定した内容で訓練が継続できるものと確信する。