

Annex 14 Progress of Annual Technical Cooperation Program (ATCP) *1999~2000

Calendar Year Technology Transfer Item / Japanese Fiscal Year	1999												2000												2001		
	1999												2000												2001		
	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3			
Term of Technical Cooperation	Signing of the R/D												JCC			JCC											
PO 2-2 Implement Technology Transfer to the C/P	[Shaded]												[Shaded]			[Shaded]											
0 Fundamentals (common items)																											
0.1 Precondition for mold technology																											
(1) General engineering drawings																											
a Design standards.	[Shaded]																										
b Method of section	[Shaded]																										
(2) Properties of plastic																											
a Types and characteristics	[Shaded]																										
b Forming methods.	[Shaded]																										
(3) Fundamentals of steel for mold																											
a General steel	[Shaded]																										
b Special steel	[Shaded]																										
(4) Fundamentals of metal processing																											
a Fundamentals of cutting	[Shaded]																										
b Fundamentals of EDM processing	[Shaded]																										
c Functions of processing equipment	[Shaded]																										
(5) Fundamentals of plastic injection																											
a Outline of injection molding machine																											
(a) Mold clamping mechanism	[Shaded]																										
(b) Injection mechanism	[Shaded]																										
b Injection molding process for thermoplastics	[Shaded]																										
0.2 Principles of injection mold																											
(1) Primary injection mold																											
(what is mold?. industrial standard etc.)																											
a what is a mold	[Shaded]																										
b Industrial standard	[Shaded]																										
(2) Name and function of components																											
(guide pin, locate ring etc.)																											
a Components of the two plate mold	[Shaded]																										
b Components of the three plate mold	[Shaded]																										
(3) Name and function of mold elements																											
(runner, gate etc.)																											
a Runner-basic configuration	[Shaded]																										
b Gate-basic configuration, advantages and disadvantages	[Shaded]																										
0.3 Mold design Standard																											
(1) Name and function of molded products																											
a Boss ejector system and mold design	[Shaded]																										
b Rib ejector system and mold design	[Shaded]																										
(2) Determination of injection condition																											
a Calculation of injection volume(weight) into designed mold	[Shaded]																										
b Calculation of clamping force for design mold	[Shaded]																										
c Design mold dimensions and injection molding machine specifications	[Shaded]																										
(3) Process from product model to mold design																											
a Methods of product model design	[Shaded]																										
b Reflecting study in mold design	[Shaded]																										
(4) Layout of basic mold																											

AA

Sanoh

Annex 14 Progress of Annual Technical Cooperation Program (ATCP) *1999~2000

Calendar Year Technology Transfer Item / Japanese Fiscal Year	1999												2000												2001											
	4			5			6			7			8			9			10			11			12			1			2			3		
	Signing of the R/D												JCC												JCC											
Term of Technical Cooperation	▼												▼												▼											
PO 2-2 Implement Technology Transfer to the C/P	■												■												■											
a General design													■																							
b Special design													■																							
(5) Design of molded product																																				
a Molded product design																																				
(a) Undercut													■																							
(b) Draft angle													■																							
b Quality of manufactured goods													■																							
(a) Dimensional tolerance													■																							
(b) P.L code													■																							
(c) U.L code													■																							
c Mold shrinkage													■																							
(Thickness of forming material and molded product)													■																							
d Plastics flow													■																							
(Fluid ratio [Length/thickness] at injection pressure P)													■																							
(6) Design of mold standard parts																																				
a Standard parts													■																							
b Selection and design of standard parts													■																							
(7) Undercut																																				
a Types of undercut method													■																							
b Selection of undercut method													■																							
(8) Fundamental design using target product-1 (pen tray)																																				
a Required function of the product																									■											
b Specification mold design																									■											
0.4 Fundamentals of mold processing and plastic injection molding																																				
(1) Mold processing																																				
a Mold processing methods													■																							
b Mold processing conditions													■																							
(2) Plastic injection molding																																				
a Three factor of molding																																				
(a) Mold													■																							
(b) Molding machine													■																							
(c) Material resin													■																							
b Three principles of molding																																				
(a) Temperature													■																							
(b) Pressure													■																							
(c) Cycle													■																							
0.5 Fundamentals of computer																																				
(1) Computer operation													■												Follow-up											
(2) Operation of CAD, CAM and CAD/CAM													■												Follow-up											
1 Injection mold design																																				
1.1 Fundamentals of mold design																																				
(1) Usage of the applications for Mold layout													■																							
(2) How to design target product-1 (Pen Tray)																																				
a Molded product													■																							

Sanuki

Annex 14 Progress of Annual Technical Cooperation Program (ATCP) *1999~2000

Calendar Year Technology Transfer Item / Japanese Fiscal Year	implemented			lectures			hands-on Training			Dispatch of S/E			C/P Training in Japan											
	1999						2000						2001											
	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
Term of Technical Cooperation																								
PO 2-2 Implement Technology Transfer to the C/P																								
b Specification of mold design																								
(3) How to design target product-2 (Front Case for Alarm Clock)																								
a Molded product																								
b Specification of mold design																								
(4) Common use of parts and standardization of common parts																								
a Objectives																								
b Specification																								
(5) Mold design based on prediction																								
a Predicted product defects																								
b Countermeasures for predicted product defects																								
1.2 Mold design by CAD/CAM																								
(1) Techniques of CAD,CAM and CAD/CAM																								
a CAD																								
b CAM																								
c Linking between CAD and CAM																								
(2) Guidance by each CAD/CAM software makers for mold making																								
(3) Exchange of CAD/CAM network data																								
(4) Computer programming																								
(5) CAD/CAM operation and mold design (2-dimension/2.5D/3D)																								
a Specification of CAD/CAM operation																								
b Specification of CAD/CAM operation in mold design																								
(6) Design of target product-1 by CAD (Pen Tray)																								
a Molded product																								
b Specification of mold design																								
(7) Design of target product-2 by CAD (Front Case for Alarm Clock)																								
a Molded product																								
b Specification of mold design																								
(8) Design of target product-3 by CAD (Front Panel for Personal Computer)																								
a Molded product																								
b Specification of mold design																								
(9) Design of target product-4 by CAD (Upper Case for Telephone)																								
a Molded product																								
b Specification of mold design																								
(10) Design of target product-5 by CAD (Camera Body)																								
a Molded product																								
b Specification of mold design																								
1.3 Design of prototyping molds (for requirements of model companies etc.)																								
1.4 Solve problem after trial shot																								

AM

Sanoh

Annex 14 Progress of Annual Technical Cooperation Program (ATCP) *1999~2000

Calendar Year Technology Transfer Item / Japanese Fiscal Year	1999												2000												2001																	
	1999												2000												2001																	
	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3																		
	implemented												lectures												hands-on Training												Dispatch of S/E			C/P Training in Japan		
Term of Technical Cooperation	Signing of the R/D												JCC												JCC																	
PO 2-2 Implement Technology Transfer to the C/P (Problems and solution of injection molding assembly)																																										
(1) Comparing molded product dimensions with design dimensions																																										
(2) Comparing design dimensions with mold component dimension																																										
2 Injection mold processing																																										
2.1 Fundamentals of processing																																										
(1) Cutting theory																																										
a Milling																																										
b Lathe																																										
c Grinding																																										
(2) EDM Processing theory (Edit of CAD/CAM/CNC data)																																										
a Deinking electric discharge machine																												Follow-up														
b Wirecut electric discharge machine																												Follow-up														
c Small hole EDM machine																												Follow-up														
(3) Inspection and measurement																																										
a 3D measurement data																												Follow-up														
b General measurement data																												Follow-up														
2.2 Operation and function of processing machinery																																										
(1) Operation and function of conventional machinery																												Follow-up														
(2) Operation and function of MC machinery																												Follow-up														
(3) Operation and function of CNC machinery (EDM, WEDM etc.)																												Follow-up														
(4) CAM operation and programming																												Follow-up														
(5) CAM/CNC operation and programming																												Follow-up														
(6) Mold production technology (Processing and tooling)																																										
a Planning of processing process																																										
b Tooling																																										
c Processing conditions																																										
(7) Processing of Provided mold parts (Provided mold)																																										
a Cavity making of target product-1																																										
b Undercut pin fabrication for target product-2 and the others core pins																																										
2.3 Processing of target products																																										
(1) Processing process planning																																										
a Planning of processing process of designing data																																										
b Quality control																																										
c Production control																																										

AN

Sanoh

Annex 14 Progress of Annual Technical Cooperation Program (ATCP) *1999~2000

Calendar Year Technology Transfer Item / Japanese Fiscal Year	1999												2000												2001		
	1999												2000												2001		
	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3			
Term of Technical Cooperation	Signing of the R/D												JCC												JCC		
PO 2-2 Implement Technology Transfer to the C/P	■												■												■		
(2) Processing of target product-1																											
a Preparations / setup													■														
b Action confirmation based on NC data bus													■														
c Machine processing													■														
d Inspection													■														
(3) Processing of target product-2																											
a Preparations / setup													■														
b Action confirmation based on NC data bus													■														
c Machine processing													■														
d Inspection													■														
(4) Processing of target product-3																											
a Preparations / setup													■														
b Action confirmation based on NC data bus													■														
c Machine processing													■														
d Inspection													■														
(5) Processing of target product-4																											
a Preparations / setup																											
b Action confirmation based on NC data bus																											
c Machine processing																											
d inspection																											
(6) Processing of target product-5																											
a Preparations / setup																											
b Action confirmation based on NC data bus																											
c Machine processing																											
d inspection																											
2.4 Processing of prototyping molds																											
2.5 Regular check and maintenance of machines																											
(1) Daily inspection													■												Follow-up		
(2) Periodic inspection													■												Follow-up		
2.6 Solving problems in processing and mold repair																											
(1) Investigation causes													■												Follow-up		
(2) Countermeasures													■												Follow-up		
(3) Corrective processing													■												Follow-up		
(4) Inspection													■												Follow-up		
3 Mold assembling, maintenance and trial shot of injection molding													■														
3.1 Fundamentals of finishing																											
(1) Lapping process													■														
(2) Lapping standard of cavity side													■												Follow-up		
(3) Lapping standard of core side													■												Follow-up		
3.2 Fundamentals of mold assembly																											
(1) Mold assembling																											
a Comparison of mold base with mold													■												Follow-up		

AAK

Someh

Annex 14 Progress of Annual Technical Cooperation Program (ATCP) *1999~2000

Calendar Year Technology Transfer Item / Japanese Fiscal Year	1999												2000												2001		
	1999												2000												2001		
	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3			
Term of Technical Cooperation	Signing of the R/D												JCC												JCC		
PO 2-2 Implement Technology Transfer to the C/P	■												■												■		
assembling drawing																											
b Checking of standard parts and assembling components													■												Follow-up		
(2) Trial shot process																											
a Mold fitting procedure																											
(a)Toggle mold clamp													■												Follow-up		
(b)Direct pressure mold clamp													■												Follow-up		
b Material replacement procedure													■												Follow-up		
c Material drying conditions (temperature, time)													■												Follow-up		
d Conversion of molding conditions (shot volume, injection pressure)													■												Follow-up		
e Setting mold temperature by type of resin and cooling circuit													■												Follow-up		
(3) Process of disassembling and assembling of standard parts													■												Follow-up		
(4) Trial assembling													■												Follow-up		
3.3 Trial shot of mold																											
(1) Preparation and check of mold specification (Comparison of mold dimensions with molding machine specification)													■												Follow-up		
(2) Setting conditions according to sample data													■														
(3) Moving check on mold attached to injection machine																											
a Setting of mold open stroke													■												Follow-up		
b Setting of ejector stroke													■												Follow-up		
c Confirmation of slide core action													■												Follow-up		
(4) Assembling and trial shot of target product-1 and 2 (Provided mold)													■														
a Sample molding													■														
b Rust prevention													■														
c Mold inspection													■														
(5) Assembling and trial shot of target product-3 (Provided mold)													■														
a Sample molding													■														
b Rust prevention													■														
c Mold inspection													■														
(6) Assembling and trial shot of target product-4 (Provided mold)													■														
a Sample molding													■														
b Rust prevention													■														
c Mold inspection													■														
(7) Assembling and trial shot of target product-5 (Provided mold)													■														
a Sample molding													■														
b Rust prevention													■														
b Mold inspection													■														
(8) Mold evaluation													■														
(9) Product evaluation													■														

AA

Samba

Annex 14 Progress of Annual Technical Cooperation Program (ATCP) *1999~2000

Calendar Year Technology Transfer Item / Japanese Fiscal Year	1999												2000												2001		
	1999												2000												2001		
	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3			
Term of Technical Cooperation	Signing of the R/D												JCC												JCC		
PO 2-2 Implement Technology Transfer to the C/P	[shaded]												[shaded]												[shaded]		
a Appearance (visual check)	[shaded]												[shaded]												[shaded]		
b Dimension measurement of molded product	[shaded]												[shaded]												[shaded]		
c Weight measurement of molded product	[shaded]												[shaded]												[shaded]		
3.4 Assembling and trial shot of target product manufactured under the project	[shaded]												[shaded]												[shaded]		
(1) Assembling and trial shot of target product-1 (Evaluation of mold and Products)	[shaded]												[shaded]												[shaded]		
(2) Assembling and trial shot of target product-2 (Evaluation of mold and Products)	[shaded]												[shaded]												[shaded]		
(3) Assembling and trial shot of target product-3 (Evaluation of mold and Products)	[shaded]												[shaded]												[shaded]		
(4) Assembling and trial shot of target product-4 (Evaluation of mold and Products)	[shaded]												[shaded]												[shaded]		
(5) Assembling and trial shot of target product-5 (Evaluation of mold and Products)	[shaded]												[shaded]												[shaded]		
3.5 Assembling and trial shot of prototyping molds	[shaded]												[shaded]												[shaded]		
(1) Mold and product evaluation	[shaded]												[shaded]												[shaded]		
3.6 Regular check and maintenance of machinery	[shaded]												[shaded]												[shaded]		
(1) Inspection of machinery startup	[shaded]												[shaded]												Follow-up		
(2) Monthly regular inspections	[shaded]												[shaded]												Follow-up		
(3) Annual inspections	[shaded]												[shaded]												Follow-up		
3.7 Solving problems in molding	[shaded]												[shaded]												[shaded]		
(1) Problems stemming from the mold	[shaded]												[shaded]												[shaded]		
a Investigation causes	[shaded]												[shaded]												[shaded]		
b Countermeasures	[shaded]												[shaded]												[shaded]		
c Prototype confirmation	[shaded]												[shaded]												[shaded]		
(2) Problems stemming from molding conditions	[shaded]												[shaded]												[shaded]		
a Investigation causes	[shaded]												[shaded]												[shaded]		
b Countermeasures	[shaded]												[shaded]												[shaded]		
c Prototype confirmation	[shaded]												[shaded]												[shaded]		
4 Monitoring and necessary feedback (Supplementary Technology Transfer)	[shaded]												[shaded]												[shaded]		

AA

Saneh

Annex 14 Annual Technical Cooperation Program (ATCP) *2000~2001

implemented
 lectures
 hands-on Training
 Dispatch of S/E
 C/P Training in Japan

Calendar Year Technology Transfer Item / Japanese Fiscal Year	2000												2001												2002								
	2000												2001																				
	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3									
b Reflecting study in mold design																FINISHED																	
(4) Layout of basic mold																FINISHED																	
a General design																											FINISHED						
b Special design																												FINISHED					
(5) Design of molded product																FINISHED																	
a Molded product design																FINISHED																	
(a) Undercut																FINISHED																	
(b) Draft angle																FINISHED																	
b Quality of manufactured goods																FINISHED																	
(a) Dimensional tolerance																											FINISHED						
(b) P.L code																												FINISHED					
(c) U.L code																												FINISHED					
c Mold shrinkage																FINISHED																	
(Thickness of forming material and molded product)																												FINISHED					
d Plastics flow																FINISHED																	
(Fluid ratio [Length/thickness] at injection pressure P)																												FINISHED					
(6) Design of mold standard parts																FINISHED																	
a Standard parts																												FINISHED					
b Selection and design of standard parts																												FINISHED					
(7) Undercut																FINISHED																	
a Types of undercut method																FINISHED																	
b Selection of undercut method																FINISHED																	
(8) Fundamental design using target product-1 (pen tray)																FINISHED																	
a Required function of the product																												FINISHED					
b Specification mold design																												FINISHED					
0.4 Fundamentals of mold processing and plastic injection molding																FINISHED																	
(1) Mold processing																FINISHED																	
a Mold processing methods																												FINISHED					
b Mold processing conditions																												FINISHED					
(2) Plastic injection molding																FINISHED																	
a Three factor of molding																FINISHED																	
(a) Mold																FINISHED																	
(b) Molding machine																FINISHED																	
(c) Material resin																FINISHED																	
b Three principles of molding																FINISHED																	
(a) Temperature																FINISHED																	
(b) Pressure																FINISHED																	
(c) Cycle																FINISHED																	
0.5 Fundamentals of computer																FINISHED																	
(1) Computer operation																FINISHED																	
(2) Operation of CAD, CAM and CAD/CAM																FINISHED																	
1 Injection mold design																FINISHED																	
1.1 Fundamentals of mold design																FINISHED																	
(1) Usage of the applications for Mold layout																FINISHED																	
(2) How to design target product-1																FINISHED																	

Sarah

Annex 14 Annual Technical Cooperation Program (ATCP) *2000~2001

implemented
 lectures
 hands-on Training
 Dispatch of S/E
 C/P Training in Japan

Calendar Year Technology Transfer Item / Japanese Fiscal Year	2000												2001												2002								
	2000												2001																				
	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3									
c Production control																																	
(2) Processing of target product-1																																	
a Preparations / setup								F															FINISHED										
b Action confirmation based on NC data bus								F															FINISHED										
c Machine processing								F															FINISHED										
d Inspection								F															FINISHED										
(3) Processing of target product-2																																	
a Preparations / setup								F															FINISHED										
b Action confirmation based on NC data bus								F															FINISHED										
c Machine processing																							F										
d Inspection																							F										
(4) Processing of target product-3																																	
a Preparations / setup													F																				
b Action confirmation based on NC data bus													F																				
c Machine processing																															F		
d Inspection																															F		
(5) Processing of target product-4																																	
a Preparations / setup																															F		
b Action confirmation based on NC data bus																															F		
c Machine processing																															F		
d inspection																															F		
(6) Processing of target product-5																																	
a Preparations / setup																															F		
b Action confirmation based on NC data bus																															F		
c Machine processing																															F		
d inspection																															F		
2.4 Processing of prototyping molds																																	
2.5 Regular check and maintenance of machines																																	
(1) Daily inspection																																	
(2) Periodic inspection																																	
2.6 Solving problems in processing and mold repair																																	
(1) Investigation causes								Follow-up																									
(2) Countermeasures								Follow-up																									
(3) Corrective processing								Follow-up																									
(4) Inspection								Follow-up																									
3 Mold assembling, maintenance and trial shot of injection molding																																	
3.1 Fundamentals of finishing																																	
(1) Lapping process								F																									
(2) Lapping standard of cavity side								Follow-up																									
(3) Lapping standard of core side								Follow-up																									

Calendar Year Technology Transfer Item / Japanese Fiscal Year	2002												2003												2004		
	2002												2003												2004		
	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3			
(b)Draft angle	FINISHED																										
b Quality of manufactured goods																											
(a)Dimensional tolerance	FINISHED																										
(b)P.L code	FINISHED																										
(c)U.L code	FINISHED																										
c Mold shrinkage (Thickness of forming material and molded product)	FINISHED																										
d Plastics flow (Fluid ratio [Length/thickness] at injection pressure	FINISHED																										
(6) Design of mold standard parts																											
a Standard parts	FINISHED																										
b Selection and design of standard parts	FINISHED																										
(7) Undercut																											
a Types of undercut method	FINISHED																										
b Selection of undercut method	FINISHED																										
(8) Fundamental design using target product-1(pen tray)																											
a Required function of the product	FINISHED																										
b Specification mold design	FINISHED																										
0.4 Fundamentals of mold processing and plastic injection molding																											
(1) Mold processing																											
a Mold processing methods	FINISHED																										
b Mold processing conditions	FINISHED																										
(2) Plastic injection molding																											
a Three factor of molding																											
(a)Mold	FINISHED																										
(b)Molding machine	FINISHED																										
(c)Material resin	FINISHED																										
b Three principles of molding																											
(a)Temperature	FINISHED																										
(b)Pressure	FINISHED																										
(c)Cycle	FINISHED																										
0.5 Fundamentals of computer																											
(1) Computer operation	FINISHED																										
(2) Operation of CAD, CAM and CAD/CAM	FINISHED																										
1 Injection mold design																											
1.1 Fundamentals of mold design																											
(1) Usage of the applications for Mold layout																											
(2) How to design target product-1 (Pen Tray)																											
a Molded product	FINISHED																										
b Specification of mold design	FINISHED																										
(3) How to design target product-2 (Front Case for Alarm Clock)																											
a Molded product	FINISHED																										
b Specification of mold design	FINISHED																										
(4) Common use of parts and standardization of common parts																											
a Objectives	FINISHED																										
b Specification	FINISHED																										
(5) Mold design based on prediction																											
a Predicted product defects	FINISHED																										
b Countermeasures for predicted product defects	FINISHED																										
1.2 Mold design by 3D CAD/CAM																											
(1) Techniques of CAD,CAM and CAD/CAM																											

Saneh

Calendar Year Technology Transfer Item / Japanese Fiscal Year	2002												2003												2004								
	2002												2003												2004								
	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6						
a CAD	Follow-up																																
b CAM	Follow-up																																
c Linking between CAD and CAM	Follow-up																																
(2) Guidance by each CAD/CAM software makers for mold making																																	
(3) Exchange of CAD/CAM network data	Follow-up																																
(4) CAD/CAM operation and mold design (2-dimension/2.5D/3D)																																	
a Specification of CAD/CAM operation	Follow-up																																
b Specification of CAD/CAM operation in mold design	Follow-up																																
(5) Design of target product-1 by CAD (Pen Tray)																																	
a Molded product	FINISHED																																
b Specification of mold design	FINISHED																																
(6) Design of target product-2 by CAD (Front Case for Alarm Clock)																																	
a Molded product	FINISHED																																
b Specification of mold design	FINISHED																																
(7) Design of target product-3 by CAD (Front Panel for Personal Computer)																																	
a Molded product	FINISHED																																
b Specification of mold design	FINISHED																																
(8) Design of target product-4 by CAD (Upper Case for Telephone)																																	
a Molded product																																	
b Specification of mold design																																	
(9) Design of target product-5 by CAD (Camera Body)																																	
a Molded product																																	
b Specification of mold design																																	
1.3 Design of semi prototyping molds																																	
a prototyping mold A (P.R. Gift : Business card Case)	FINISHED																																
b prototyping mold B (Soap Box)	FINISHED																																
c prototyping mold C (Medicine Box)	FINISHED																																
d prototyping mold D (Multi usage Mold)																																	
f prototyping mold E (CD-ROM File/Cace)																																	
(CD-ROM File/Opener)																																	
(CD-ROM File/Holder)																																	
1.4 Solve problem after trial shot (Problems and solution of injection molding assembly)																																	
(1) Comparing molded product dimensions with design dimensions	Follow-up																																
(2) Comparing design dimensions with mold component dimension	Follow-up																																
2 Injection mold processing																																	
2.1 Fundamentals of processing																																	
(1) Cutting theory																																	
a Milling	FINISHED																																
b Lathe	FINISHED																																
c Grinding	FINISHED																																
(2) EDM Processing theory																																	

AA

Saneh

Calendar Year Technology Transfer Item / Japanese Fiscal Year	2002												2003												2004		
	2002												2003												2004		
	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6
a Sample molding	FINISHED																										
b Rust prevention	FINISHED																										
c Mold inspection	FINISHED																										
(7) Assembling and trial shot of target product-5 (Provided mold)																											
a Sample molding	FINISHED																										
b Rust prevention	FINISHED																										
b Mold inspection	FINISHED																										
(8) Mold evaluation	FINISHED																										
(9) Product evaluation																											
a Appearance (visual check)	Follow-up															FINISHED											
b Dimension measurement of molded product	Follow-up															FINISHED											
c Weight measurement of molded product	Follow-up															FINISHED											
3.4 Assembling and trial shot of target product manufactured under the project																											
(1) Assembling and trial shot of target product-1 (Evaluation of mold and Products)	FINISHED																										
(2) Assembling and trial shot of target product-2 (Evaluation of mold and Products)	FINISHED																										
(3) Assembling and trial shot of target product-3 (Evaluation of mold and Products)																											
(4) Assembling and trial shot of target product-4 (Evaluation of mold and Products)																											
(5) Assembling and trial shot of target product-5 (Evaluation of mold and Products)																											
Assembling and trial shot of semi prototyping molds																											
a prototyping mold A (P.R. Gift : Business card Case)																											
b prototyping mold B (Soap Box)																											
c prototyping mold C (Medicine Box)																											
d prototyping mold D (Multi usage Mold)																											
f prototyping mold E (CD-ROM File)																											
(2) Contracted prototyping works and evaluation from the outside																											
3.6 Regular check and maintenance of machinery																											
(1) Inspection of machinery startup	Follow-up																										
(2) Monthly regular inspections	Follow-up																										
(3) Annual inspections	Follow-up																										
3.7 Solving problems in molding																											
(1) Problems stemming from the mold																											
a investigation causes	Follow-up															FINISHED											
b Countermeasures	Follow-up															FINISHED											
c Prototype confirmation	Follow-up															FINISHED											
(2) Problems stemming from molding conditions																											
a Investigation causes	Follow-up															FINISH											
b Countermeasures	Follow-up															FINISH											
c Prototype confirmation	Follow-up															FINISH											

Saneh

Calendar Year Technology Transfer Item / Japanese Fiscal Year	2002												2003												2004		
	2002												2003												2004		
	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3			
4 Monitoring and necessary feedback (Supplementary Technology Transfer)	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	■	
5 Pilot Training Course																											
6 Advisory Service																											

Saneh

Annex 15 Annual Plan of Operations (APO) *1999~2000

Output 0 The Project operation unit is enhanced.

Calendar Year	1999												2000												Remarks
	TFY 1999						JFY 1999						TFY 2000						JFY 2000						
	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10								
Term of Technical Cooperation	Signing of the R/D JCC																								
0 The Project operation unit is enhanced.																									
0-1 Allocate necessary personnel as planned.																									
0-1-1 Make personnel allocation plan.																									
0-1-2 Allocate personnel as planned.																									
0-1-3 Review personnel allocation, if necessary.																									
0-2 Formulate plans of activities.																									
0-2-1 Formulate plans of activities for the Project.																									
0-2-2 Formulate plans of activities for the first year.																									
0-2-3 Review plans of activities, if necessary.																									
0-2-4 Formulate plans of activities for the second year.																									
0-3 Make budget plan and execute properly.																									
0-3-1 Execute budget for TFY 1999 as planned.																									
0-3-2 Make budget plan for TFY 2000.																									
0-3-3 Approve budget for TFY 2000.																									
0-3-4 Execute budget for TFY 2000.																									
0-3-5 Make budget plan for TFY 2001.																									
0-3-6 Approve budget for TFY 2001.																									
0-4 Establish and operate management system.																									
0-4-1 Review existing management system.																									
0-4-2 Make plan of management system.																									
0-4-3 Establish management system.																									
0-4-4 Operate management system.																									
0-4-5 Monitor and review management system, if necessary.																									

<Japanese side>
IS : Implementation Study Team
CA : Chief Advisor
JPC : Project Coordinator
LE : Long-term expert
SE : Short-term expert

TPC : Thai Project Coordinator
TC : Technical Coordinator
C/P : Thai C/P

PD : Project Director
DPD : Deputy Project Director
PM : Project Manager

<Thai side>

Plan
Implemented

Saneh

Annex 15 Annual Plan of Operations (APO) *1999~2000

Output 1 The necessary machinery and equipment are provided, installed, operated and maintained properly.

Calendar Year	1999												2000				Remarks	
	TFY 1999						TFY 2000						Responsible person in the Project(*)	Input (*)				
	6	7	8	9	10	11	12	1	2	3	4	5			6	7		8
Term of Technical Cooperation	Signing of the R/D																	
1 The necessary machinery and equipment are provided, installed, operated and maintained properly.	JCC																	
1-1 Make facility refurbishment plan and implement as planned.																		
1-1-1 Make facility refurbishment plan.																		
1-1-2 Implement as planned.																		
1-2 Provide and install necessary machinery and equipment.																		
1-2-1 Identify specifications of necessary machinery and equipment.																		
1-2-2 Make the plan of dispatch of short-term experts for installation.																		
1-2-3 Implement tenders and select traders.																		
1-2-4 Procure and transport the machinery and equipment to the Project site.																		
1-2-5 Install the machinery and equipment.																		
1-3 Operate and maintain the machinery and equipment properly.																		
1-3-1 Make maintenance plan of the machinery and equipment.																		
1-3-2 Prepare or develop operation and maintenance manual.																		
1-3-3 Operate and maintain the machinery and equipment as planned.																		
1-3-4 Provide fundamental training on operation and maintenance of machinery and equipment.																		

<Japanese side>
IS : Implementation Study Team
CA : Chief Advisor
JPC : Project Coordinator
LE : Long-term expert
SE : Short-term expert

<Thai side>
TPC : Thai Project Coordinator
TC : Technical Coordinator
C/P : Thai C/P

PD : Project Director
DPD : Deputy Project Director
PM : Project Manager

Sanch

Annex 15 Annual Plan of Operations (APO) *1999~2000

Output 2 Technical capability of the counterpart personnel (hereinafter referred to as "C/P") are upgraded.

Calendar Year	1999												2000										Remarks	
	TFY 1999						JFY 1999						TFY 2000					JFY 2000						
	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10							
Term of Technical Cooperation	Signing of the R/D												JCC											
2 Technical capability of the counterpart personnel (hereinafter referred to as "the C/P") are upgraded.																								
2-1 Make Technical Cooperation Program.																							(IS), CA, PM	JPC, LE, TPC, TC
2-1-1 Evaluate technical capability of the C/P through interviews, test, factory visit and so on.																							(IS), CA, PD	JPC, LE, PM, TPC, TC
2-1-2 Make Technical Cooperation Program (TCP).																							(IS), CA, PD	JPC, LE, PM, TPC, TC
2-1-3 Make Annual Technical Cooperation Program (ATCP) for the first year of the Project.																							CA, PD	JPC, LE, PM, TPC, TC
2-1-4 Review TCP & ATCP.																							CA, PD	JPC, LE, PM, TPC, TC
2-1-5 Make ATCP for the second year of the Project.																							CA, PD	JPC, LE, PM, TPC, TC
2-1-6 Review TCP, if necessary.																							CA, PD	JPC, LE, PM, TPC, TC
2-2 Implement technology transfer to the C/P.																							LE, TC	LE, SE, TC, C/P
2-2-1 Prepare teaching material.																							LE, TC	LE, SE, TC, C/P
2-2-2 Implement technology transfer as planned.																							LE, TC	LE, SE, TC, C/P
2-2-3 Compile textbooks and necessary documents																							LE, TC	LE, SE, TC, C/P
2-3 Monitor and evaluate the result of technology transfer to the C/P.																							(IS), CA, PD	JPC, LE, PM, TPC, TC Refer to 0-4-2.
2-3-1 Make monitoring and evaluation plan.																							CA, PM	JPC, LE, TPC, TC Refer to 0-4-3.
2-3-2 Establish monitoring and evaluate plan.																							CA, PM	JPC, LE, SE, TPC, TC, C/P
2-3-3 Monitor the result of technology transfer to the C/P.																							CA, PD	JPC, LE, PM, TPC, TC, C/P
2-3-4 Evaluate the result of technology transfer to the C/P.																							CA, PD	JPC, LE, PM, TPC, TC, C/P

<Thai side>
 PD : Project Director
 DPD : Deputy Project Director
 PM : Project Manager
 TPC : Thai Project Coordinator
 TC : Technical Coordinator
 C/P : Thai C/P
 <Japanese side>
 IS : Implementation Study Team
 CA : Chief Advisor
 JPC : Project Coordinator
 LE : Long-term expert
 SE : Short-term expert

Sanche

Annex 15 Annual Plan of Operations (APO) *1999~2000
Output 3 Technical training and seminars are implemented systematically.

Calendar Year	1999												2000												Remarks
	TFY 1999						JFY 1999						TFY 2000						JFY 2000						
	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10								
Term of Technical Cooperation	Signing of the R/D JCC																								
3 Technical training and seminars are implemented systematically.																									
3-1 Make plan of technical training and seminars.																									
3-1-1 Grasp the needs for technical training and seminars.																									
3-1-1-1 Make plan of factory visit.																									
3-1-1-2 Implement factory visit.																									
3-1-1-3 Implement the regular meetings with industrial associations concerned.																									(IS), CA, PD
3-1-2 Analyze the results of the said needs survey.																									CA, PM
3-1-3 Make plan of technical training and seminars.																									CA, PM
3-1-4 Develop curricula for technical training.																									LE, TC
3-1-5 Decide theme and schedule for the opening seminar.																									CA, PM
3-2 Implement technical training and seminars.																									LE, TC
3-2-1 Prepare teaching material and textbooks for technical training.																									LE, SE, TC, C/P
3-2-1 Implement opening seminar.																									JPC, LE, SE, PM, TPC, TC
3-3 Monitor and evaluate technical training and seminars.																									
3-3-1 Make monitoring and evaluation plan.																									JPC, LE, PM, TPC, TC Refer to 0-4-2.
3-3-2 Establish monitoring and evaluation plan.																									JPC, LE, TPC, TC Refer to 0-4-3.
3-3-3 Evaluate the result of the opening seminar.																									JPC, LE, SE, TPC, TC, C/P

<Thai side>
 PD : Project Director
 DPD : Deputy Project Director
 PM : Project Manager
 TPC : Thai Project Coordinator
 TC : Technical Coordinator
 C/P : Thai C/P
 <Japanese side>
 IS : Implementation Study Team
 CA : Chief Advisor
 JPC : Project Coordinator
 LE : Long-term expert
 SE : Short-term expert

Annex 15 Annual Plan of Operations (APO) *1999~2000

Output 4 Technical information and advisory services as a trial are implemented systematically.

Calendar Year	1999												2000				Responsible person in the Project(*)	Input (*)	Remarks				
	TFY 1999						JFY 1999						TFY 2000							JFY 2000			
	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9				10			
Term of Technical Cooperation	Signing of the R/D												JCC										
4 Technical information and advisory services as a trial are implemented systematically.																							
4-1 Make plan of trial technical information and advisory services.																							
4-1-1 Identify necessary technical information and advisory service.																							
4-1-1-1 Make plan of factory visit.																	(IS), CA, PD	JPC, LE, PM, TPC, TC					
4-1-1-2 Implement factory visit.																	CA, PM	JPC, LE, SE, TPC, TC					
4-1-1-3 Implement the regular meetings with industrial associations concerned.																	CA, PM	JPC, LE, TPC, TC					
4-1-2 Analyze the result of the said needs survey.																	CA, PM	JPC, LE, TPC, TC					
4-1-3 Make plan of trial technical information and advisory services.																	CA, PM	JPC, LE, TPC, TC					
4-2 Collect and compile technical information and material.																	LE, TC	LE, SE, TC, C/P					
4-2-1 Collect and compile technical information and material.																							
4-3 Implement trial technical information and advisory services.																							
4-3-1 Implement trial technical information and advisory services as planned.																	LE, TC	LE, SE, TC, C/P					
4-4 Monitor and evaluate trial technical information and advisory services.																							
4-3-1 Make monitoring and evaluation plan.																	(IS), CA, PD	JPC, LE, PM, TPC, TC	Refer to 0-4-2.				
4-3-2 Establish monitoring and evaluation plan.																	CA, PM	JPC, LE, TPC, TC	Refer to 0-4-3.				
4-3-3 Monitor the trial technical information and advisory services.																	CA, PM	JPC, LE, SE, TPC, TC, C/P					

<Thai side>
 PD : Project Director
 DPD : Deputy Project Director
 PM : Project Manager
 TPC : Thai Project Coordinator
 TC : Technical Coordinator
 C/P : Thai C/P
 <Japanese side>
 IS : Implementation Study Team
 CA : Chief Advisor
 JPC : Project Coordinator
 LE : Long-term expert
 SE : Short-term expert

Saneh

Annex 15 Annual Plan of Operations (APO) *1999~2000

Output 5 Trial prototyping service is implemented systematically.

Calendar Year	1999												2000				Remarks	
	TFY 1999						JFY 1999						TFY 2000					Input (*)
	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9		
Term of Technical Cooperation	Signing of the R/D												JCC					
5 Trial prototyping service is implemented systematically.																		
5-1 Make plan of trial prototyping service.																		
5-1-1 Grasp the needs for prototyping service.																		
5-1-1-1 Make plan of factory visit.																		
3-1-1-2 Implement factory visit.																		
5-1-1-3 Implement the regular meetings with industrial associations concerned.																	(IS), CA, PD	
5-1-2 Make plan of trial prototyping service.																	CA, PM	
5-2 Implement trial prototyping service.																	CA, PM	
5-2-1 Implement trial prototyping service as planned.																	LE, TC	
5-3 Monitor and evaluate trial prototyping service.																		
5-3-1 Make monitoring and evaluation plan.																	(IS), CA, PD	
5-3-2 Establish monitoring and evaluation plan.																	CA, PM	
5-3-3 Monitor the trial prototyping service.																	CA, PM	

<Thai side>
 PD : Project Director
 DPD : Deputy Project Director
 PM : Project Manager
 TPC : Thai Project Coordinator
 TC : Technical Coordinator
 C/P : Thai C/P
 <Japanese side>
 IS : Implementation Study Team
 CA : Chief Advisor
 JPC : Project Coordinator
 LE : Long-term expert
 SE : Short-term expert

Sanch

Annex 15 Progress of Annual Plan of Operations (APO) * 2001

Output 0 The Project operation unit is enhanced.

Calendar Year	2001												Remarks			
	2000			TFY2001						2002				Responsible person in the Project(*)	Input (*)	
	JFY2000	JFY2001	JFY2002	1	2	3	4	5	6	7	8	9				10
Term of Technical Cooperation	JCC	JCC	JCC	JCC	JCC	JCC	JCC	JCC	JCC	JCC	JCC	JCC	JCC	JCC	JCC	
0 The Project operation unit is enhanced.																
0-1 Allocate necessary personnel as planned.																
0-1-1 Review personnel allocation, if necessary.																
0-1-2 Make personnel allocation plan.																
0-1-3 Allocate personnel as planned.																
0-2 Formulate plans of activities.																
0-2-1 Formulate plans of activities for the next year.																
0-2-2 Review plans of activities, if necessary.																
0-2-3 Implement periodic monitoring on the achievement of the plans.																
0-3 Make budget plan and execute properly.																
0-3-1 Execute budget for TFY 2001 as planned.																
0-3-2 Make budget plan for TFY 2002.																
0-3-3 Approve budget for TFY 2002.																
0-3-4 Execute budget for TFY 2002.																
0-4 Establish and operate management system.																
0-4-1 Operate management system.																
0-4-2 Monitor and review management system, if necessary.																

<Thai side>
 PD : Project Director TPC : Thai Project Coordinator
 DPD : Deputy Project Director TC : Technical Coordinator
 PM : Project Manager C/P : Thai C/P

<Japanese side>
 CA : Chief Advisor
 JPC : Project Coordinator
 LE : Long-term expert
 SE : Short-term expert

Sawhi

Annex 15 Progress of Annual Plan of Operations (APO) * 2001

Output 1 The necessary machinery and equipment are provided, installed, operated and maintained properly.

Fiscal Year	Calendar Year												Remarks		
	2000						2001								
	JFY2000						TFY2001								
	11	12	1	2	3	4	5	6	7	8	9	10	11	12	
Term of Technical Cooperation	JCC						JCC								
1 The necessary machinery and equipment are provided, installed, operated and maintained properly.															
1-1 Make facility refurbishment plan and implement as planned.															
1-1-1 Make facility refurbishment plan for technical training and seminars.															
1-1-2 Implement as planned.															
1-2 Provide and install necessary machinery and equipment.															
1-2-1 Make the commission plan of necessary machinery and equipment.															JPC, TPC
1-2-2 Procure and transport the machinery and equipment to the Project site.															JPC, TPC
1-2-3 Make the commission plan of necessary machinery and equipment for next year, if necessary.															JPC, LE, TPC, TC
1-3 Operate and maintain the machinery and equipment properly.															JPC, LE, TPC, TC
1-3-1 Make maintenance plan of the machinery and equipment.															JPC, LE, TPC, TC
1-3-2 Prepare or develop operation and maintenance manual.															JPC, LE, TPC, TC
1-3-3 Operate and maintain the machinery and equipment as planned.															JPC, LE, TPC, TC
_____ Plan															SE, C/P
_____ Implemented															SE, C/P

<Thai side>
 PD : Project Director
 DPD : Deputy Project Director
 PM : Project Manager
 TPC : Thai Project Coordinator
 TC : Technical Coordinator
 C/P : Thai C/P

<Japanese side>
 CA : Chief Advisor
 JPC : Project Coordinator
 LE : Long-term expert
 SE : Short-term expert

Savak

Annex 15 Progress of Annual Plan of Operations (APO) * 2001

Output 2. Technical capability of the counterpart personnel (hereinafter referred to as "C/P") are upgraded.

Calendar Year	2001												Remarks
	TFY2001						JFY 2001						
	1	2	3	4	5	6	7	8	9	10	11	12	
Target													
Term of Technical Cooperation	JCC												
2. Technical capability of the counterpart personnel (hereinafter referred to as "the C/P") are upgraded.													
2-1 Make Technical Cooperation Program.													
2-1-1 Review TCP, if necessary.													
2-1-2 Make Annual Technical Cooperation Program (ATCP) for the next year.													
2-1-3 Review ATCP, if necessary.													
2-2 Implement technology transfer to the C/P.													
2-2-1 Prepare teaching material.													
2-2-2 Implement technology transfer as ATCP.													
2-2-3 Compile textbooks and necessary documents													
2-3 Monitor and evaluate the result of technology transfer to the C/P.													
2-3-1 Review monitoring and evaluation method, if necessary.													
2-3-2 Monitor the result of technology transfer to the C/P.													
2-3-3 Evaluate the result of technology transfer to the C/P.													
2-3-4 Share the result of monitoring and evaluation on the occasion of JCC.													
Plan													
Implemented													

<Thai side>

PD : Project Director
 DPD : Deputy Project Director
 PM : Project Manager
 TPC : Thai Project Coordinator
 TC : Technical Coordinator
 C/P : Thai C/P

<Japanese side>

CA : Chief Advisor
 JPC : Project Coordinator
 LE : Long-term expert
 SE : Short-term expert

Santhi

Annex 15 Progress of Annual Plan of Operations (APO) * 2001
Output 3 Technical training and seminars are implemented systematically.

Calendar Year	2001												Remarks
	TFY2001						JFY 2001						
	11	12	1	2	3	4	5	6	7	8	9	10	
Term of Technical Cooperation	JCC												
3 Technical training and seminars are implemented systematically.	JCC												
3-1 Make plan of technical training and seminars.													
3-1-1 Grasp the needs for technical training and seminars.													
3-1-1-1 Review the plan of factory visit and meeting with factory, if necessary.													JPC, LE, PM, TPC, TC
3-1-1-2 Implement the regular meetings with industrial associations concerned.													JPC, LE, TPC, TC
3-1-2 Analyze the results of the said needs survey.													JPC, LE, TPC, TC
3-1-3 Make plan of technical training and seminars.													JPC, LE, TPC, TC
3-1-4 Develop curricula for technical training.													SE, C/P
3-2 Implement technical training and seminars.													SE, C/P
3-2-1 Prepare teaching material and textbooks for technical training.													LE, TC, C/P
3-2-2 Conduct a training method training for C/P.													JPC, LE, SE, PM, TPC, TC
3-2-3 Implement technical training and seminar.													JPC, LE, PM, TPC, TC
3-3 Monitor and evaluate technical training and seminars.													JPC, LE, SE, TPC, TC, C/P
3-3-1 Review monitoring and evaluation plan, if necessary.													JPC, LE, PM, TPC, TC
3-3-2 Monitor and evaluate the result of technical training and seminar.													JPC, LE, SE, TPC, TC, C/P

<Thai side>
 PD : Project Director TPC : Thai Project Coordinator
 DPD : Deputy Project Director TC : Technical Coordinator
 PM : Project Manager C/P : Thai C/P

<Japanese side>
 CA : Chief Advisor
 JPC : Project Coordinator
 LE : Long-term expert
 SE : Short-term expert

Santh

Annex 15 Progress of Annual Plan of Operations (APO) * 2001

Output 4 Technical information and advisory services as a trial are implemented systematically.

Calendar Year	2001												Remarks			
	2000						2001									
	JFY2000			JFY2001			JFY2000			JFY2001						
Target	11	12	1	2	3	4	5	6	7	8	9	10	11	12	Responsible person in the Project(*)	Input (*)
Term of Technical Cooperation	JCC	JCC	JCC	JCC	JCC	JCC	JCC	JCC	JCC	JCC	JCC	JCC	JCC	JCC		
4 Technical information and advisory services as a trial are implemented systematically.																
4-1 Make plan of trial technical information and advisory services.																
4-1-1 Identify necessary technical information and advisory service.																
4-1-1-1 Review the plan of factory visit and meeting with factory, if necessary.																
4-1-1-2 Implement factory visit and meeting with factory.																
4-1-1-3 Implement the regular meetings with industrial associations concerned.																
4-1-2 Analyze the result of the said needs survey.																
4-1-3 Make plan of trial technical information and advisory services.																
4-2 Collect and compile technical information and material.																
4-3 Implement trial technical information and advisory services as planned.																
4-4 Monitor and evaluate trial technical information and advisory services.																
4-4-1 Review the monitoring and evaluation plan, if necessary.																
4-4-2 Monitor and evaluate the result of trial technical information and advisory services.																

<Thai side>

PD : Project Director
 DPD : Deputy Project Director
 PM : Project Manager
 TPC : Thai Project Coordinator
 TC : Technical Coordinator
 C/P : Thai C/P

<Japanese side>

CA : Chief Advisor
 JPC : Project Coordinator
 LE : Long-term expert
 SE : Short-term expert

Plan

Implemented

Sanku

Annex 15 Progress of Annual Plan of Operations (APO) * 2001
Output 5 Trial prototyping service is implemented systematically.

Calendar Year	2001												Remarks		
	TFY2001						JFY 2001								
	1	2	3	4	5	6	7	8	9	10	11	12			
2000	11	12	1	2	3	4	5	6	7	8	9	10	11	12	
	JCC	▶					JCC	▶						JCC	
Term of Technical Cooperation															
5 Trial prototyping service is implemented systematically.															
5-1 Make plan of trial prototyping service.															
5-1-1 Grasp the needs for prototyping service.															
5-1-1-1 Review the plan of factory visit and meeting with factory, if necessary.															
3-1-1-2 Implement factory visit and meeting with factory.															
5-1-1-3 Implement the regular meetings with industrial associations concerned.															
5-1-2 Make plan of trial prototyping service.															
5-2 Implement trial prototyping service as planned.															
5-3 Monitor and evaluate trial prototyping service.															
5-3-1 Review the monitoring and evaluation plan, if necessary.															
5-3-2 Monitor and evaluate the trial prototyping service.															

<Thai side>
 PD : Project Director
 DPD : Deputy Project Director
 PM : Project Manager
 TPC : Thai Project Coordinator
 TC : Technical Coordinator
 C/P : Thai C/P
 <Japanese side>
 CA : Chief Advisor
 JPC : Project Coordinator
 LE : Long-term expert
 SE : Short-term expert

Santh

Annex 15 Annual Plan of Operations (APO) *2002
Output 0 The Project operation unit is enhanced.

Calendar Year	2002												Remarks
	TFY2002						JFY 2002						
	11	12	1	2	3	4	5	6	7	8	9	10	
Fiscal Year	JCC												
Term of Technical Cooperation	▼												
0 The Project operation unit is enhanced.													
0-1 Allocate necessary personnel as planned.													
0-1-1 Revise personnel allocation plan, if necessary.													
0-1-2 Allocate personnel as planned.													
0-2 Make annual plans of activities (APO and ATSI) and revise 5 years plans of activities (PO and TSI) if necessary.													
0-2-1 Formulate annual plans of activities for the next year and review 5years plans of activities.													
0-2-2 Approve a series of plans at JCC.													
0-2-3 Implement periodic monitoring and evaluation with the share of results at JCC.													
0-2-4 Revise plans of activities, if necessary.													
0-3 Make the project budget plan by Thai side and execute properly.													
0-3-1 Execute budget for TFY 2002 as planned.													
0-3-2 Make budget plan for TFY 2003.													
0-3-3 Approve budget for TFY 2003.													
0-3-4 Execute budget for TFY 2003.													
0-4 Operate project management system.													
0-4-1 Hold periodical meeting as planned. (SIC weekly meeting, Thai administrative C/P weekly meeting C/P monthly meeting, Experts weekly meeting)													
0-4-2 Hold JCC every half year.													

<Thai side>
 PD: Project Director
 DPD: Deputy Project Director
 PM: Project Manager
 TPC: Thai Project Coordinator
 TC: Technical Coordinator
 C/P: Thai C/P
 SP: Support Staff
 <Japanese side>
 CA: Chief Advisor
 JPC: Project Coordinator
 LE: Long-term expert
 SE: Short-term expert

Someth

Output 1 The necessary machinery and equipment are provided, installed, operated and maintained properly.

Calendar Year	2002												Remarks		
	JFY2001						JFY2002							Responsible person in the Project(*)	Input (*)
	11	12	1	2	3	4	5	6	7	8	9	10			
Term of Technical Cooperation	JCC ▼ JCC ▼														
1 The necessary machinery and equipment are provided, installed, operated and maintained properly. 1-1 Make facility refurbishment plan and implement as planned. 1-1-1 Make facility refurbishment plan for technical training, seminars and prototyping services, if necessary. 1-1-2 Implement as planned. 1-2 Provide and install necessary machinery and equipment. 1-2-1 Make the plan of necessary machinery and equipment to be purchased by Japanese side for next year, if necessary. 1-2-2 The plan is approved by Japanese Government. (The plan could be subjected to change under constraints such as budget appropriation.) 1-2-3 Procure and transport the machinery and equipment to the Project site. 1-2-4 Make the plan of necessary machinery and equipment, then purchase as planned by Thai side, if necessary. 1-3 Operate and maintain the machinery and equipment as planned. 1-3-1 Compose operation and maintenance manual. 1-3-2 Operate and maintain machinery and equipment as planned.	JPC, TPC JPC, TPC JPC, LE, TPC, TC, C/P JPC, LE, TPC, TC, C/P LE, TPC, TC, C/P CA, LE, PM, TC CA, LE, PM, TC CA, PM CA, PM PD, PM LE, TC LE, TC														

<Thai side>

- PD: Project Director
- DPD: Deputy Project Director
- PM: Project Manager
- TPC: Thai Project Coordinator
- TC: Technical Coordinator
- C/P: Thai C/P
- SP: Support Staff

<Japanese side>

- CA: Chief Advisor
- JPC: Project Coordinator
- LE: Long-term expert
- SE: Short-term expert

Santh

Output 2. Technical capability of the counterpart personnel (hereinafter referred to as "C/P") are upgraded.

Calendar Year	2001		2002							Remarks								
	Fiscal Year	Target	TFY2002			JFY 2002												
			11	12	1	2	3	4	5		6	7	8	9	10			
Term of Technical Cooperation																		
2 Technical capability of the counterpart personnel (hereinafter referred to as "the C/P") are upgraded.																		
2-1 Make plan of technology transfer to the C/P.																		
2-1-1 Formulate Annual Technical Cooperation Program (ATCP) for the next year and review Technical Cooperation Program for 5 years (TCP), if necessary.																		
2-1-2 Approve ATCP and TCP at JCC.																		
2-1-3 Revise ATCP and TCP, if necessary.																		
2-2 Implement technology transfer to the C/P.																		
2-2-1 Prepare teaching material.																		
2-2-2 Implement technology transfer as ATCP.																		
2-2-3 Compile textbooks and necessary documents.																		
2-2-4 Implement echo-training and self training by C/P.																		
2-2-5 Implement C/P training in Japan. (The plan could be subjected to change under constraints such as budget appropriation.)																		
2-3 Monitor and evaluate the result of technology transfer to the C/P.																		
2-3-1 Review monitoring and evaluation method, if necessary.																		
2-3-2 Develop the material for monitoring.																		
2-3-3 Monitor and evaluate the result of technology transfer to the C/P.																		
2-3-4 Share the results of monitoring and evaluation at JCC.																		

<Thai side>
 PD: Project Director
 DPD: Deputy Project Director
 PM: Project Manager
 TPC: Thai Project Coordinator
 TC: Technical Coordinator
 C/P: Thai C/P
 SP: Support Staff
 <Japanese side>
 CA: Chief Advisor
 JPC: Project Coordinator
 LE: Long-term expert
 SE: Short-term expert

Santh

Output 3 Technical training and seminars are implemented systematically.

Calendar Year	2002										Remarks
	TFY2002					JFY2002					
	1	2	3	4	5	6	7	8	9	10	
3	Term of Technical Cooperation										
	3 Technical training and seminars are implemented systematically.										
3-1	Grasp an appropriate perception of present situation of Thai plastic injection mold industry.										CA, TPC CA, TPC CA, PM
3-1-1	Visit factory and meet factory personnel at BSID.										
3-1-2	Conduct factory questionnaire survey.										
3-1-3	Hold information sessions with industrial associations.										
3-2	Complete training courses and implement them regularly.										PM, TPC CA, TPC LE, TC CA, PM TPC PM, TPC PM, TPC CA, PM CA, PM PM
3-2-1	Assign personnel to administrative work of training courses.										
3-2-2	Analyze present situation of Thai plastic injection mold industry.										
3-2-3	Revise curricula and textbooks, if necessary.										
3-2-4	Announce information regarding training courses.										
3-2-5	Accept applicants for training courses.										
3-2-6	Prepare material for hands-on-training and text books.										
3-2-7	Conduct teaching method training and practice sessions.										
3-2-8	Implement training courses.										
3-2-9	Revise attendants questionnaire, if necessary.										
3-2-10	Conduct questionnaire survey and produce analytical report.										
3-3	Make text book for pilot training course.										JPC, LE, TC, C/P JPC, LE, TC, C/P JPC, LE, TPC, TC, C/P, SP SP LE, TPC, TC, C/P, SP TC, C/P LE, TC, C/P, SP JPC, LE, TPC, TC, C/P TPC, TC, C/P, SP JPC, LE, TPC, TC, C/P C/P JPC, LE, TPC, TC, C/P C/P C/P C/P
3-3-1	Analyze present situation and make plan for pilot training course.										
3-3-2	Develop curricula for pilot training course.										
3-3-3	Hold Advisory Committee Meeting for finalizing curricula.										
3-3-4	Amend and complete curricula.										
3-3-5	Collect material for text book.										
3-3-6	Make text book.										
Plan											

<Thai side>
 PD: Project Director
 DPD: Deputy Project Director
 PM: Project Manager
 TPC: Thai Project Coordinator
 TC: Technical Coordinator
 C/P: Thai C/P
 SP: Support Staff

<Japanese side>
 CA: Chief Advisor
 JPC: Project Coordinator
 LE: Long-term expert
 SE: Short-term expert

Samet

Calendar Year		2002												Remarks			
Fiscal Year		TFY2002						JFY 2002						Responsible person in the Project(*)	Input (*)		
Term of Technical Cooperation		11	12	1	2	3	4	5	6	7	8	9	10				
		JCC				JCC											
		▼				▼											
<p>3-4 Implement pilot training course.</p> <p>3-4-1 Assign personnel to administrative work of pilot training course.</p> <p>3-4-2 Announce information regarding pilot training course.</p> <p>3-4-3 Accept applicants for pilot training course.</p> <p>3-4-4 Prepare material for hands-on-training and text books.</p> <p>3-4-5 Conduct teaching method training and practice sessions.</p> <p>3-4-6 Implement pilot training course.</p> <p>3-4-7 Revise attendants questionnaire, if necessary.</p> <p>3-4-8 Conduct questionnaire survey and produce analytical report.</p>															CA, PM PM, TPC CA, PM TPC PM, TPC PM, TPC CA, PM CA, PM CA, PM TPC	JPC, LE, TPC, TC TC, C/P, SP JPC, LE, TPC, TC, C/P, SP SP LE, TPC, TC, C/P, SP TC, C/P LE, TC, C/P, SP JPC, LE, TPC, TC, C/P TC, C/P, SP	
<p>3-5 Implement mold technology seminar.</p> <p>3-5-1 Decide objectives and theme/s for the seminar.</p> <p>3-5-2 Select suitable guest speaker/s for the seminar.</p> <p>3-5-3 Send invitation card to guests.</p> <p>3-5-4 Implement mold technology seminar.</p> <p>3-5-5 Conduct questionnaire survey and produce analytical report.</p>																	

<Thai side>

- PD: Project Director
- DPD: Deputy Project Director
- PM: Project Manager
- TPC: Thai Project Coordinator
- TC: Technical Coordinator
- C/P: Thai C/P
- SP: Support Staff

<Japanese side>

- CA: Chief Advisor
- JPC: Project Coordinator
- LE: Long-term expert
- SE: Short-term expert

Sanku

Output 4 Technical information and advisory services as a trial are implemented systematically.

Calendar Year	2002										Remarks						
	TFY2002					JFY 2002						Input (*)					
	11	12	1	2	3	4	5	6	7	8			9	10	Responsible person in the Project(*)		
	JCC					JCC											
4-1	Term of Technical Cooperation																
4-2	Technical information and advisory services as a trial are implemented systematically.																
4-3	Technical information and advisory services as a trial are implemented systematically.																
4-3-1	Grasp an appropriate perception of present situation of Thai plastic injection mold industry.																
4-3-2	Visit factory and meet factory personnel at BSID.																
4-3-3	Conduct factory questionnaire survey.																
4-3-4	Hold information sessions with industrial associations.																
4-3-5	Make plan of trial technical information and advisory services.																
4-3-6	Accept company's request for technical information and advisory services.																
4-3-7	-Revise questionnaire, if necessary.																
4-3-8	-Conduct questionnaire survey and produce analytical report.																
4-3-9	Make plan of trial technical information and advisory services..																
4-3-10	-Analyze questionnaire data and choose companies to be visited.																
4-3-11	-Make the appointment for the initial advisory meeting at BSID.																
4-3-12	Implement trial technical information and advisory services.																
4-3-13	Hold the initial advisory meeting at BSID.																
4-3-14	Visit factory as planned.																
4-3-15	Make factory visitation report.																
4-3-16	Visit any factory, if requested and make factory visitation report on each occasion.																
4-3-17	Monitor and evaluate trial technical information and advisory services.																
4-3-18	Revise the monitoring and evaluation questionnaire of factories visited, if necessary.																
4-3-19	Conduct questionnaire survey and produce analytical report.																

Plan

<Thai side>

<Japanese side>

PD: Project Director
DPD: Deputy Project Director
PM: Project Manager
TPC: Thai Project Coordinator
TC: Technical Coordinator
C/P: Thai C/P
SP: Support Staff
CA: Chief Advisor
JPC: Project Coordinator
LE: Long-term expert
SE: Short-term expert

Output 5 Trial prototyping service is implemented systematically.

Calendar Year	2002												Remarks	
	2001						2002							
	JFY2001			TFY2002			JFY 2002			TFY 2002				
Fiscal Year	11	12	1	2	3	4	5	6	7	8	9	10	Responsible person in the Project(*)	Input (*)
Term of Technical Cooperation	JCC ▼													
5 Trail prototyping service is implemented systematically.	JCC ▼													
5-1 Grasp an appropriate perception of present situation of Thai plastic injection mold industry.														
5-1-1 Visit factory and meet factory personnel at BSID.														
5-1-2 Conduct factory questionnaire survey.														
5-1-3 Hold information sessions with industrial associations.														
5-2 Make plan of trial prototyping service.														
5-2-1 Make plan of mold manufacturing service.														
5-2-2 Make plan of machine sharing service.														
5-2-3 Assign personnel to administrative work of trial prototyping service.														
5-2-4 Make plan of prototype mold for the SIC Internal Mold														
5-3 Implement trial prototyping service.														
5-3-1 Notify information of trial prototyping service.														
5-3-2 Implement trial prototyping service.														
5-3-3 Design, process and assemble the SIC Internal Mold														
5-4 Monitor and evaluate trial prototyping service.														
5-4-1 Revise the monitoring and evaluation questionnaire, if necessary.														
5-4-2 Conduct questionnaire survey and produce analytical report.														

<Thai side>

PD: Project Director
DPD: Deputy Project Director
PM: Project Manager

TPC: Thai Project Coordinator
TC: Technical Coordinator
C/P: Thai C/P
SP: Support Staff

<Japanese side>

CA: Chief Advisor
JPC: Project Coordinator
LE: Long-term expert
SE: Short-term expert

Plan

Sanki

Annex 15 Annual Plan of Operations (APO) #2003

<Japanese side>
 CA: Chief Advisor
 JPC: Project Coordinator
 LE: Long-term expert
 SE: Short-term expert

_____ Plan

Calendar Year	2003												Responsible person in the Project(*)	Input (*)	Remarks			
	Fiscal Year			TFY2003			TFY2004			Term of Technical Cooperation								
	JFY2002	JFY2003	TFY2003	JFY2003	TFY2003	TFY2004												
	11	12	1	2	3	4	5	6	7	8	9	10	11	12				
	JCC	▼						JCC	▼					JCC	▼			
<p>0 The Project operation unit is enhanced.</p> <p>0-1 Allocate necessary personnel as planned. 0-1-1 Revise personnel allocation plan, if necessary. 0-1-2 Allocate personnel as planned.</p> <p>0-2 Make annual plans of activities (APO and ATSI) and revise 5 years plans of activities (PO and TSI) if necessary. 0-2-1 Formulate annual plans of activities for the next year and review 5 years plans of activities. 0-2-2 Approve a series of plans at JCC. 0-2-3 Implement periodic monitoring and evaluation with the share of results at JCC. 0-2-4 Revise plans of activities, if necessary.</p> <p>0-3 Make the project budget plan by Thai side and execute properly. 0-3-1 Execute budget for TFY 2003 as planned. 0-3-2 Make budget plan for TFY 2004 0-3-3 Approve budget for TFY 2004 0-3-4 Execute budget for TFY 2004</p> <p>0-4 Operate project management system. 0-4-1 Hold periodical meeting as planned. (SIC weekly meeting, Thai administrative C/P weekly meeting C/P monthly meeting, Experts weekly meeting) 0-4-2 Hold JCC every half year.</p>																		
																CA, PD PD, PM	JPC, LE, PM, TPC, TC TPC, TC	Refer to 2-1
																CA, PM	JPC, LE, TPC, TC	
																CA, PD CA, PD	JPC, LE, PM, TPC, TC JPC, LE, PM, TPC, TC	
																CA, PD CA, PM PD	JPC, LE, TPC, TC JPC, LE, TPC, TC	
																CA, PM	JPC, LE, TPC, TC	
																CA, PM	JPC, LE, TPC, TC, C/P	
																CA, PD	JPC, LE, TPC, TC, C/P	

Saneh

Calendar Year	2003												Responsible person in the Project(*)	Input (*)	Remarks
	TFY2003						TFY2004								
	JFY2002			JFY2003			JFY2004			JFY2005					
11	12	1	2	3	4	5	6	7	8	9	10	11	12		
Term of Technical Cooperation															
Output 1 The necessary machinery and equipment are provided, installed, operated and maintained properly.															
1 The necessary machinery and equipment are provided, installed, operated and maintained properly.															
1-1 Make facility refurbishment plan and implement as planned.															
1-1-1 Make facility refurbishment plan for technical training, seminars and prototyping service, if necessary.															
1-1-2 Implement as planned.															
1-2 Provide and install necessary machinery and equipment.															
1-2-1 Make the plan of necessary machinery and equipment to be purchased by Japanese side for next year, if necessary.															
1-2-2 The plan is approved by Japanese Government. (The plan could be subjected to change under constraints such as budget appropriation.)															
1-2-3 Procure and transport the machinery and equipment to the Project site.															
1-2-4 Make the plan of necessary machinery and equipment, then purchase as planned by Thai side, if necessary.															
1-3 Operate and maintain the machinery and equipment as planned.															
1-3-1 Compose operation and maintenance manual.															
1-3-2 Operate and maintain machinery and equipment as planned.															

Sarath

Calendar Year	2003												Responsible person in the Project(*)	Input (*)	Remarks	
	TFY2003						TFY2004									
	JFY2002			JFY2003			JFY2003			TFY2004						
11	12	1	2	3	4	5	6	7	8	9	10	11	12			
Term of Technical Cooperation							JCC						JCC			
Output 2 Technical capability of the counterpart personnel (hereinafter referred to as "C/P") are upgraded.																
2 Technical capability of the counterpart personnel (hereinafter referred to as "the C/P") are upgraded.																
2-1 Make plan of technology transfer to the C/P.																
2-1-1 Formulate Annual Technical Cooperation Program (ATCP) for the next year and review Technical Cooperation Program for 5 years (TCP), if necessary.																JPC, LE, TPC, TC, CP
2-1-2 Approve ATCP and TCP at JCC.																JPC, LE, PM, TPC, TC
2-1-3 Revise ATCP and TCP, if necessary.																JPC, LE, PM, TPC, TC, CP
2-2 Implement technology transfer to the C/P.																SE, CP
2-2-1 Prepare teaching material.																SE, CP
2-2-2 Implement technology transfer as ATCP.																SE, CP
2-2-3 Compile textbooks and necessary documents.																SE, CP
2-2-4 Implement echo-training and self training by C/P.																CP
2-2-5 Implement C/P training in Japan. (The plan could be subjected to change under constraints such as budget appropriation.)																JPC, LE, PM, TPC, TC, CP
2-3 Monitor and evaluate the result of technology transfer to the C/P.																JPC
2-3-1 Review monitoring and evaluation method, if necessary.																JPC, TPC, TC, CP
2-3-2 Develop the material for monitoring.																JPC, LE, PM, TPC, TC, CP
2-3-3 Monitor and evaluate the result of technology transfer to the C/P.																JPC, LE, PM, TPC, TC, CP
2-3-4 Share the results of monitoring and evaluation at JCC.																

Saneh

Calendar Year	2003												Responsible person in the Project(*)	Input (*)	Remarks			
	JFY2002			TFY2003			JFY2003			TFY2004								
	11	12	1	2	3	4	5	6	7	8	9	10				11	12	
Term of Technical Cooperation	JCC			JCC			JCC			JCC			JCC					
Output 3 Technical training and seminars are implemented systematically.																		
3 Technical training and seminars are implemented systematically.																		
3-1 Grasp an appropriate perception of present situation of Thai plastic injection mold industry.																		
3-1-1 Visit factory and meet factory personnel at BSID.																		
3-1-2 Conduct factory questionnaire survey.																		
3-1-3 Hold information sessions with industrial associations.																		
3-2 Complete training courses and implement them regularly.																		
3-2-1 Assign personnel to administrative work of training courses.																		
3-2-2 Analyze present situation of Thai plastic injection mold industry.																		
3-2-3 Revise curricula and textbooks, if necessary.																		
3-2-4 Announce information regarding training courses.																		
3-2-5 Accept applicants for training courses.																		
3-2-6 Prepare material for hands-on-training and text books.																		
3-2-7 Conduct teaching method training and practice sessions.																		
3-2-8 Implement training courses.																		
3-2-9 Revise attendants questionnaire, if necessary.																		
3-2-10 Conduct questionnaire survey and produce analytical report.																		
3-3 Make text book for training course.																		
3-3-1 Analyze present situation and make plan for pilot training course.																		
3-3-2 Develop curricula for pilot training course.																		
3-3-3 Hold Advisory Committee Meeting for finalizing curricula.																		
3-3-4 Amend and complete curricula.																		
3-3-5 Collect material for text book.																		
3-3-6 Make text book.																		
3-4 Implement pilot training course.																		
3-4-1 Assign personnel to administrative work of pilot training course.																		
3-4-2 Announce information regarding pilot training course.																		
3-4-3 Accept applicants for pilot training course.																		
3-4-4 Prepare material for hands-on-training and text books.																		
3-4-5 Conduct teaching method training and practice sessions.																		
3-4-6 Implement pilot training course.																		
3-4-7 Revise attendants questionnaire, if necessary.																		
3-4-8 Conduct questionnaire survey and produce analytical report.																		
3-5 Implement mold technology seminar.																		
3-5-1 Decide objectives and theme/s for the seminar.																		
3-5-2 Select suitable guest speaker/s for the seminar.																		
3-5-3 Send invitation card to guests.																		
3-5-4 Implement mold technology seminar.																		
3-5-5 Conduct questionnaire survey and produce analytical report.																		

Saneh

Calendar Year	2003												Remarks		
	TFY2003						TFY2004								
	JFY2002			JFY2003			JFY2003			TFY2004					
11	12	1	2	3	4	5	6	7	8	9	10	11	12	Responsible person in the Project(*)	Input (*)
Term of Technical Cooperation							JCC							JCC	
Output 4 Technical information and advisory services as a trial are implemented systematically.															
4 Technical information and advisory services as a trial are implemented systematically.															
4-1 Grasp an appropriate perception of present situation of Thai plastic injection mold industry.															
4-1-1 Visit factory and meet factory personnel at BSID.															JPC, LE, TC, C/P
4-1-2 Conduct factory questionnaire survey.															JPC, LE, TC, C/P
4-1-3 Hold information sessions with industrial associations.															JPC, LE, TPC, TC, C/P
4-2 Make plan of trial technical information and advisory services.															
4-2-1 Accept company's request for technical information and advisory services.															JPC, LE, TPC, TC, C/P
-Revise questionnaire, if necessary.															TPC, TC, C/P, SP
-Conduct questionnaire survey and produce analytical report.															
4-2-2 Make plan of trial technical information and advisory services.															JPC, LE, TC
-Analyze questionnaire data and choose companies to be visited.															LE
-Make the appointment for the initial advisory meeting at BSID.															
4-3 Implement trial technical information and advisory services.															
4-3-1 Hold the initial advisory meeting at BSID.															TC, C/P
4-3-2 Visit factory as planned.															LE, TC, C/P
4-3-3 Make factory visitation report.															
4-3-4 Visit any factory, if requested and make factory visitation report on each occasion.															JPC, LE, TC, C/P
4-3 Monitor and evaluate trial technical information and advisory services.															TPC, TC, C/P, SP
4-3-1 Revise the monitoring and evaluation questionnaire of factories visited, if necessary.															
4-3-2 Conduct questionnaire survey and produce analytical report.															

Samet

Calendar Year	2003												Responsible person in the Project(*)	Input (**)	Remarks		
	TFY2002						TFY2003										
	11	12	1	2	3	4	5	6	7	8	9	10				11	12
Term of Technical Cooperation Output 5 Trial prototyping service is implemented systematically. 5 Trail prototyping service is implemented systematically. 5-1 Grasp an appropriate perception of present situation of Thai plastic injection mold industry. 5-1-1 Visit factory and meet factory personnel at BSID. 5-1-2 Conduct factory questionnaire survey. 5-1-3 Hold information sessions with industrial associations. 5-2 Make plan of trial prototyping service. 5-2-1 Make plan of mold manufacturing service. 5-2-2 Make plan of machine sharing service. 5-2-3 Assign personnel to administrative work of trial prototyping service. 5-2-4 Make plan of SIC Internal prototype mold 5-3 Implement trial prototyping service. 5-3-1 Notify information of trial prototyping service. 5-3-2 Implement trial prototyping service. 5-3-3 Design, process and assemble the SIC Internal Mold 5-4 Monitor and evaluate trial prototyping service. 5-4-1 Revise the monitoring and evaluation questionnaire, if necessary. 5-4-2 Conduct questionnaire survey and produce analytical report.																	

Sank

Annex 16 Annual Tentative Schedule of Implementation (ATSI)*1999~2001

Calendar Year /Japanese Fiscal Year	1999				2000				2001				2002																							
	1999												2000												2001											
	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3												
Term of Technical Cooperation	Signing of the												JCC				JCC				JCC															
The Japanese side																																				
I Dispatch of Mission																																				
(1) Implementation Study																																				
(2) Management Consultation																																				
II Dispatch of Long-term experts																																				
(1) Chief Advisor																																				
(2) Coordinator																																				
(3) Mold Design																																				
(4) Mold Processing																																				
(5) Mold Assembling and Trial Short																																				
III Dispatch of Short-term experts																																				
(1) CAD/CAM/DNC																																				
(2) Installation and Operation (CAD/CAM/DNC)																																				
(3) EDM/W-EDM																																				
(4) Lapping																																				
(5) Production Control																																				
(6) Heat Treatment																																				
(7) Surface Treatment																																				
(8) Seminar																																				
(9) Others (If necessary)																																				
IV Training of the C/P in Japan																																				
(1) CAD/CAM operatiopn																																				
(2) CAD/CAM operatiopn																																				
(3) CAD/CAM operatiopn																																				
(4) Mold processing																																				
(5) Mold processing																																				
(6) Mold assembling & trial shot																																				
V Provision of Machinery and Equipment																																				
The Thai side																																				
I Building and Facilities																																				
II Machinery and Equipment																																				
III Allocation of the C/P and necessary staff																																				
IV Allocation of Budget																																				

— Plan
— Implemented

Smith

Annex 16 Annual Tentative Schedule of Implementation (ATSI) * 2002~2003

Calendar Year Japanese Fiscal Year	2003												2004											
	2002						2003																	
	4	5	6	7	8	9	10	11	12	1	2	3	4	5	6	7	8	9	10	11	12	1	2	3
Term of Technical Cooperation	JCC			JCC			JCC			JCC														
The Japanese side																								
I Dispatch of Mission																								
(1) Management Consultation																								
(2) Mid term Evaluation Team																								
II Dispatch of Long-term experts																								
(1) Chief Advisor																								
(2) Coordinator																								
(3) Mold Design・3D CAD/CAM																								
(4) Mold Processing																								
(5) Mold Assembling and Trial Short																								
III Dispatch of Short-term experts																								
(1) Lapping																								
(2) Seminar																								
(3) CAD/CAM operation																								
(4) Design																								
(5) Maintenance																								
(6) Processing																								
(7) Measurement																								
IV Training of the C/P in Japan																								
(1) Mold processing																								
(2) Mold assembling & trial shot																								
(3) Mold processing																								
(4) Mold Design(3D)																								
(5) Mold Design(3D)																								
V Provision of Machinery and Equipment																								
The Thai side																								
I Building and Facilities																								
II Machinery and Equipment																								
III Allocation of the C/P and necessary staff																								
IV Allocation of Budget																								

— Plan
— Implemented

Sarich

Annex 17 Annual Technical Cooperation Program (ATCP)*2004

 Implemented
 Hands-on Training
 Dispatching a S/E
 C/P Training in Japan
 Advisory service
 Training course

Calendar Year Technology Transfer Item Japanese Fiscal Year	2004											
	2003			2004								
	1	2	3	4	5	6	7	8	9	10	11	12
Term of Technical Cooperation PO 2-2 Implement Technology Transfer to the C/P												
0 Fundamentals (common items)												
0.1 Precondition for mold technology												
(1) General engineering drawings												
a Design standards.	FINISHED											
b Method of section	FINISHED											
(2) Properties of plastic												
a Types and characteristics	FINISHED											
b Forming methods.	FINISHED											
(3) Fundamentals of steel for mold												
a General steel	FINISHED											
b Special steel	FINISHED											
(4) Fundamentals of metal processing												
a Fundamentals of cutting	FINISHED											
b Fundamentals of EDM processing	FINISHED											
c Functions of processing equipment	FINISHED											
(5) Fundamentals of plastic injection												
a Outline of injection molding machine												
(a)Mold clamping mechanism	FINISHED											
(b)Injection mechanism	FINISHED											
b Injection molding process for thermoplastics	FINISHED											
0.2 Principles of injection mold												
(1) Primary injection mold (what is mold?, industrial standard etc.)												
a what is a mold	FINISHED											
b Industrial standard	FINISHED											
(2) Name and function of components (guide pin, locate ring etc.)												
a Components of the two plate mold	FINISHED											
b Components of the three plate mold	FINISHED											
(3) Name and function of mold elements (runner, gate etc.)												
a Runner-basic configuration	FINISHED											
b Gate-basic configuration, advantages and disadvantages	FINISHED											
0.3 Mold design Standard												
(1) Name and function of molded products												
a Boss ejector system and mold design	FINISHED											
b Rib ejector system and mold design	FINISHED											
(2) Determination of injection condition												
a Calculation of injection volume(weight) into designed mold	FINISHED											
b Calculation of clamping force for design mold	FINISHED											
c Design mold dimensions and injection molding machine specifications	FINISHED											
(3) Process from product model to mold design												
a Methods of product model design.	FINISHED											
b Reflecting study in mold design	FINISHED											
(4) Layout of basic mold												
a General design	FINISHED											
b Special design	FINISHED											
(5) Design of molded product												
a Molded product design												
(a)Undercut	FINISHED											
(b)Draft angle	FINISHED											
b Quality of manufactured goods												
(a)Dimensional tolerance	FINISHED											
(b)P.L code	FINISHED											
(c)U.L code	FINISHED											
c Mold shrinkage (Thickness of forming material and molded product)	FINISHED											
d Plastics flow (Fluid ratio [Length/thickness] at injection pressure P)	FINISHED											
(6) Design of mold standard parts												
a Standard parts	FINISHED											
b Selection and design of standard parts	FINISHED											
(7) Undercut												
a Types of undercut method	FINISHED											
b Selection of undercut method	FINISHED											
(8) Fundamental design using target product-1(open tray)												
a Required function of the product	FINISHED											
b Specification mold design	FINISHED											
0.4 Fundamentals of mold processing and plastic injection molding												
(1) Mold processing												
a Mold processing methods	FINISHED											
b Mold processing conditions	FINISHED											
(2) Plastic injection molding												
a Three factor of molding												
(a)Mold	FINISHED											
(b)Molding machine	FINISHED											

AM

Sank

Annex 17 Annual Technical Cooperation Program (ATCP)*2004





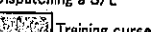
 Implemented
  Hands-on Training
  Dispatching a S/E
  C/P Training in Japan
  Advisory service
  Training course

Calendar Year Technology Transfer item / Japanese Fiscal Year	2004											
	2003			2004			2004			2004		
	1	2	3	4	5	6	7	8	9	10	11	12
(c)Material resin	FINISHED											
b Three principles of molding	FINISHED											
(a)Temperature	FINISHED											
(b)Pressure	FINISHED											
(c)Cycle	FINISHED											
0.5 Fundamentals of computer	FINISHED											
(1) Computer operation	FINISHED											
(2) Operation of CAD, CAM and CAD/CAM	FINISHED											
1 Injection mold design	FINISHED											
1.1 Fundamentals of mold design	FINISHED											
(1) Usage of the applications for Mold layout	FINISHED											
(2) How to design target product-1 (Pen Tray)	FINISHED											
a Molded product	FINISHED											
b Specification of mold design	FINISHED											
(3) How to design target product-2 (Front Case for Alarm Clock)	FINISHED											
a Molded product	FINISHED											
b Specification of mold design	FINISHED											
(4) Common use of parts and standardization of common parts	FINISHED											
a Objectives	FINISHED											
b Specification	FINISHED											
(5) Mold design based on prediction	FINISHED											
a Predicted product defects	FINISHED											
b Countermeasures for predicted product defects	FINISHED											
1.2 Mold design by 3D CAD/CAM	FINISHED											
(1) Techniques of CAD,CAM and CAD/CAM	FINISHED											
a CAD	Follow-up											
b CAM	Follow-up											
c Linking between CAD and CAM	Follow-up											
(2) Guidance by each CAD/CAM software makers for mold making	FINISHED											
(3) Exchange of CAD/CAM network data	Follow-up											
(4) CAD/CAM operation and mold design (2-dimension/2.5D/3D)	FINISHED											
a Specification of CAD/CAM operation	Follow-up											
b Specification of CAD/CAM operation in mold design	Follow-up											
(5) Design of target product-1 by CAD (Pen Tray)	FINISHED											
a Molded product	FINISHED											
b Specification of mold design	FINISHED											
(6) Design of target product-2 by CAD (Front Case for Alarm Clock)	FINISHED											
a Molded product	FINISHED											
b Specification of mold design	FINISHED											
(7) Design of target product-3 by CAD (Front Panel for Personal Computer)	FINISHED											
a Molded product	FINISHED											
b Specification of mold design	FINISHED											
(8) Design of target product-4 by CAD (Upper Case for Telephone)	FINISHED											
a Molded product	FINISHED											
b Specification of mold design	FINISHED											
(9) Design of target product-5 by CAD (Camera Body)	FINISHED											
a Molded product	FINISHED											
b Specification of mold design	FINISHED											
1.3 Design of semi prototyping molds	FINISHED											
a prototyping mold A (P.R. Gift : Business card Case)	FINISHED											
b prototyping mold B (Soap Box)	FINISHED											
c prototyping mold C (Medicine Box)	FINISHED											
d prototyping mold D (Multi usage Mold)	FINISHED											
f prototyping mold E (CD-ROM File/Case)	FINISHED											
(CD-ROM File/Opener)	FINISHED											
(CD-ROM File/Holder)	FINISHED											
1.4 Solve problem after trial shot (Problems and solution of injection molding assembly)	FINISHED											
(1) Comparing molded product dimensions with design dimensions	Follow-up											
(2) Comparing design dimensions with mold component dimension	Follow-up											

AA






Sanche

Annex 17 Annual Technical Cooperation Program (ATCP)*2004

Calendar Year Technology Transfer Item: / Japanese Fiscal Year	Implemented											
	 C/P Training in Japan  Hands-on Training  Advisory service  Dispatching a S/E  Training course											
	2003			2004								
	1	2	3	4	5	6	7	8	9	10	11	12
2 Injection mold processing												
2.1 Fundamentals of processing												
(1) Cutting theory												
a Milling												
b Lathe												
c Grinding												
(2) EDM Processing theory (Edit of CAD/CAM/CNC data)												
a Die sinking electric discharge machine												
b Wirecut electric discharge machine												
c Small hole EDM machine												
(3) Inspection and measurement												
a 3D measurement data												
b General measurement data												
2.2 Operation and function of processing machinery												
(1) Operation and function of conventional machinery												
(2) Operation and function of MC machinery												
(3) Operation and function of CNC machinery (EDM, W-EDM etc.)												
(4) CAM operation and programming												
(5) CAM/CNC operation and programming												
(6) Mold production technology (Processing and tooling)												
a Planning of processing process												
b Tooling												
c Processing conditions												
(7) Processing of Provided mold parts (Provided mold)												
a Cavity making of target product-1												
b Undercut pin fabrication for target product-2 and the others core pins												
2.3 Processing of target products												
(1) Processing process planning												
a Planning of processing process of designing data												
b Quality control												
c Production control												
(2) Processing of target product-1												
a Preparations / setup												
b Action confirmation based on NC data bus												
c Machine processing												
d Inspection												
(3) Processing of target product-2												
a Preparations / setup												
b Action confirmation based on NC data bus												
c Machine processing												
d Inspection												
(4) Processing of target product-3												
a Preparations / setup												
b Action confirmation based on NC data bus												
c Machine processing												
d Inspection												
(5) Processing of target product-4												
a Preparations / setup												
b Action confirmation based on NC data bus												
c Machine processing												
d Inspection												
(6) Processing of target product-5												
a Preparations / setup												
b Action confirmation based on NC data bus												
c Machine processing												
d Inspection												
Processing of semi prototyping molds												
a prototyping mold A (P.R. Gift ; Business card Case)												
b prototyping mold B (Soap Box)												
c prototyping mold C (Medicine Box)												
d prototyping mold D (Multi usage Mold)												
f prototyping mold E (CD-ROM File)												
(3) Contracted prototyping works from the outside												
3 Mold assembling, maintenance and trial shot of injection molding												
3.1 Fundamentals of finishing												
(1) Lepping process												
(2) Lepping standard of cavity side												
(3) Lepping standard of core side												

Sample

Annex 17 Annual Technical Cooperation Program (ATCP)*2004

Implemented  Hands-on Training  Dispatching a S/E
 C/P Training in Japan  Advisory service  Training course

Calendar Year Technology Transfer Item / Japanese Fiscal Year	2004												
	2003			2004									
	1	2	3	4	5	6	7	8	9	10	11	12	
3.2 Fundamentals of mold assembly													
(1) Mold assembling													
a Comparison of mold base with mold assembling drawing	FINISHED												
b Checking of standard parts and assembling components	FINISHED												
(2) Trial shot process													
a Mold fitting procedure													
(a) Toggle mold clamp	FINISHED												
(b) Direct pressure mold clamp	FINISHED												
b Material replacement procedure	FINISHED												
c Material driving conditions (temperature, time)	FINISHED												
d Conversion of molding conditions (shot volume, injection pressure)	FINISHED												
e Setting mold temperature by type of resin and cooling circuit	FINISHED												
(3) Process of disassembling and assembling of standard parts	FINISHED												
(4) Trial assembling	FINISHED												
3.3 Trial shot of mold													
(1) Preparation and check of mold specification (Comparison of mold dimensions with molding machine specification)	FINISHED												
(2) Setting conditions according to sample data	FINISHED												
(3) Moving check on mold attached to injection machine													
a Setting of mold open stroke	Follow-up							FINISHED					
b Setting of ejector stroke	Follow-up							FINISHED					
c Confirmation of slide core action	Follow-up							FINISHED					
(4) Assembling and trial shot of target product-1 and 2 (Provided mold)													
a Sample molding	FINISHED												
b Rust prevention	FINISHED												
c Mold inspection	FINISHED												
(5) Assembling and trial shot of target product-3 (Provided mold)													
a Sample molding	FINISHED												
b Rust prevention	FINISHED												
c Mold inspection	FINISHED												
(6) Assembling and trial shot of target product-4 (Provided mold)													
a Sample molding	FINISHED												
b Rust prevention	FINISHED												
c Mold inspection	FINISHED												
(7) Assembling and trial shot of target product-5 (Provided mold)													
a Sample molding	FINISHED												
b Rust prevention	FINISHED												
c Mold inspection	FINISHED												
(8) Mold evaluation	FINISHED												
(9) Product evaluation													
a Appearance (visual check)	Follow-up							FINISHED					
b Dimension measurement of molded product	Follow-up							FINISHED					
c Weight measurement of molded product	Follow-up							FINISHED					
3.4 Assembling and trial shot of target product manufactured under the project													
(1) Assembling and trial shot of target product-1 (Evaluation of mold and Products)	FINISHED												
(2) Assembling and trial shot of target product-2 (Evaluation of mold and Products)	FINISHED												
(3) Assembling and trial shot of target product-3 (Evaluation of mold and Products)	FINISHED												
(4) Assembling and trial shot of target product-4 (Evaluation of mold and Products)	FINISHED												
(5) Assembling and trial shot of target product-5 (Evaluation of mold and Products)	FINISHED												
Assembling and trial shot of semi prototyping molds													
a prototyping mold A (P.R. Gift : Business card Case)	FINISHED												
b prototyping mold B (Soap Box)	CANCELED												
c prototyping mold C (Medicine Box)	FINISHED												
d prototyping mold D (Multi usage Mold)	FINISHED												
f prototyping mold E (CD-ROM File)													
(2) Contracted prototyping works and evaluation from the outside													

AA

Sanoh

Annex 17 Annual Technical Cooperation Program (ATCP)*2004

Calendar Year Technology Transfer Item / Japanese Fiscal Year	Implemented											
	C/P Training in Japan			Hands-on Training			Advisory service			Dispatching a S/E		
	2003			2004								
	1	2	3	4	5	6	7	8	9	10	11	12
3.6 Regular check and maintenance of machinery												
(1) Inspection of machinery startup												
(2) Monthly regular inspections												
(3) Annual inspections												
3.7 Solving problems in molding												
(1) Problems stemming from the mold												
a Investigation causes												
b Countermeasures												
c Prototype confirmation												
(2) Problems stemming from molding conditions												
a Investigation causes												
b Countermeasures												
c Prototype confirmation												
4 Monitoring and necessary feedback (Supplementary Technology Transfer)												
5 Pilot Training Course												
6 Advisory Service												

AA

Sanele