

### 3. 運営指導調査（2006年9月）報告資料（ミニッツ含む）

運営指導調査（2006 年 9 月）報告資料（ミニッツ含む）

## 技術教育開発・訓練センタープロジェクト運営指導調査 団長所感

### 1. プロジェクトの進捗について

- (1) プロジェクトは、①技術短期大学教員の技術レベルの確認、②技術短期大学教員の研修プログラム策定、③DTC 指導員の能力向上に取り組んできており、プロジェクト活動は段階的に進展している。
- (2) 今次調査団の協議において、技術短大教官に対する研修計画が合意され、2006 年 9 月以降、研修が順次開始される見込み。
- (3) 供与機材及び長期専門家派遣の遅れは、プロジェクト活動の開始に影響を与えたと言わざるを得ない。また、カウンターパートである DTC 指導員の交代や専門性及び語学力不足はプロジェクト活動の進捗に大きく影響したと考えられる。以上の要因が組み合わさることで、DTC の指導員の能力向上に当初計画以上に時間を要し、技術短大教員への研修実施が遅れたと考えられる。
- (4) 今調査では、DTC 所長から日本人専門家に対して、研修プログラムの開始時期等について質問を投げかける場面が非常に多く、DTC 指導員が所長の質問に応答する姿勢は残念ながら見られなかった。日本人専門家及び JICA 事務所の再三再四の働きかけにも関わらず、本プロジェクトの主体は先方政府にあるという考えが共有されているとは言い難い状況にある。今後、本プロジェクトの終了に向けて、「サ」側の主体的な取り組みを引き続き促していく必要があると考えられる。

### 2. 提言

本調査では、今後のプロジェクト運営に関して、以下の提言を行った。

- (1) 残る 1 年のプロジェクト期間を効率的に進めるため、進捗管理を徹底するとともに、関係者間の情報共有を一層行う。
- (2) 日本人専門家の技術指導により、C/P（機械科、電気科）は研修を実施できるだけの段階にあることから、可能な限り早期に C/P による研修を開始する。

### 3. 今後の検討課題（プロジェクト期間の延長）

今次協議では、サ側よりプロジェクト期間延長の必要性が強調された。プロジェクト終了にむけた今後の対応における要点は以下のとおり。

- ① 今次協議で合意された計画に基づき、研修プログラムの詳細を作成し、研修コース数等の目標設定を行う。
- ② 先方の主体性を引き出し、C/P が独自で研修を実施できる体制を構築する。
- ③ プロジェクト当初期間で目標を達成するため、短期専門家等の追加投入を積極的に行う。

2007 年 3 月の終了時評価では、プロジェクト期間内にコース数の目安が達成されるか、研修実施体制が構築されるかを評価し、プロジェクト延長の必要性を検討する。

以上

## サウジアラビア技術教育開発・訓練 センタープロジェクト 運営指導調査団帰国報告会

独立行政法人国際協力機構(JICA)  
人間開発部  
2006年9月21日

## 発表構成

1. 調査団概要
2. プロジェクトの背景
  - ・ サウジアラビアの産業構造・人口問題・労働問題
  - ・ サウダイゼーション政策
  - ・ 教育・職業訓練制度
3. プロジェクト概要
4. プロジェクトの実績及び実施プロセス
5. 提言及び今後の活動計画
6. その他事項
7. 池守団員報告(別紙参照)

## 調査団概要

- 団員構成
  - ・ 渡辺 元治 (総括) 国際協力機構 人間開発部 技術教育チーム
  - ・ 池守 進 (技術教育行政) 文部科学省 初中等教育局参事官付 教科調査官
  - ・ 丸山 隆央 (協力企画) 国際協力機構 人間開発部 技術教育チーム
- 調査期間
  - ・ 平成18年9月1日(金)から9月7日(木)まで
- 調査目的
  - ① PDM及び活動計画(PO)に基づき、サウジアラビア関係機関とプロジェクトの実績及び実施プロセスを確認。
  - ② 技術教育開発・訓練センターの本プロジェクト終了後の運営計画を確認の上、プロジェクトの活動計画について「サ」関係機関と合意する。
  - ③ プロジェクト期間の延長の有無は、本調査及び今後のプロジェクトの進捗を踏まえ、2007年2月の終了時評価において決定。

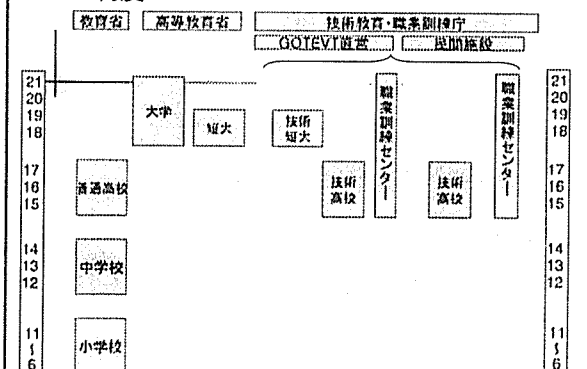
## プロジェクトの背景(1) サウジアラビアの産業構造・人口問題・労働問題

- 石油依存経済
  - ・ 石油精製業 GDPの30%
  - ・ 政府財政において石油産業の占める割合 7~8割
- 人口増加率
  - ・ 15歳以下の人口が全人口に占める割合 45%
  - ・ サウジアラビア 2.6%(2001-2005) 4.4%(1975-2001)
  - ・ アラブ諸国 2.7%(2001-2005) 2.1%(1975-2001)
  - ・ 他途上国 1.9%(2001-2005) 1.4%(1975-2001)
- 外国人労働者
  - ・ サウジアラビア人 約1600万人
  - ・ 外国人労働者 約600万人

## プロジェクトの背景(2) サウダイゼーション政策

- 開発計画(技術教育・職業訓練)
  - ・ 労働市場ニーズへの対応改善
  - ・ OJTの拡大
  - ・ 生徒指導、フォローアップ、入学試験の導入による教育成果向上
  - ・ 訓練施設の有効活用
  - ・ サウジアラビア全土をカバー 等
- 担当官庁
  - ・ 労働省 技術教育・職業訓練庁 (GOTEVT)
- 予算措置
  - ・ 政府予算の25%

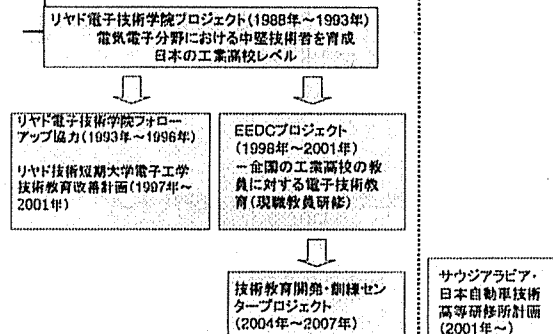
## 制度



## プロジェクトの背景(4) GOTEVT訓練校

- GOTEVT訓練施設・生徒数
  - 技術短大 12校(1998) → 28校(2004)
  - 生徒数 22835(1998) → 43234(2004)
- 産業界のニーズに対応したカリキュラム開発
  - 国家職業技能基準(NOSS)を作成。
- 課題
  - 急速な拡大に伴う教員不足への対応 (量)
    - 3年制から2年制への変更(教育内容への影響)
  - 教育内容の改善 … 就職率の向上 (質)

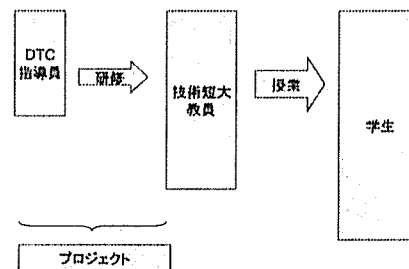
## プロジェクトの背景(4) 技術教育・職業訓練における日本の協力



## プロジェクト概要(1)

- プロジェクト実施期間
  - 2004年9月から2007年8月まで(3年間)
- 協力機関
  - 技術教育・職業訓練 技術教育開発訓練センター
- プロジェクト目標
  - 技術教育開発・訓練センターの指導員による研修実施能力が向上される。
- 上位目標
  - 機械科、電気科、建設科において、産業界の求める技術力を備えた学生が、技術短大において育成される。
- 成果
  - 産業界から技術短大に求められている技術レベルが確認される。
  - 技術短大教員を対象にした研修プログラムが作成される。
  - 技術短大教員を対象にした研修実施体制が整備される。
  - DTCの運営管理体制が確立される。

## プロジェクト概要(2) プロジェクトの戦略



## プロジェクト概要(3) 協力科目

- 協力科目
  - 機械技術
    - 成型加工、CAD、CNC、材料試験、溶接
  - 電気技術
    - PLCワークショップ、パワーエレクトロニクス、ドライブコントロール、自動制御、ファクトリーオートメーション
  - 建設技術
    - 模型、測量、建築技術、3D-CAD、製図

## プロジェクトの実績及び実施プロセス(1) プロジェクトの投入実績

[人員配置]	
日本側	: 専門家(11名)
サウジアラビア側	: プロジェクトディレクター、プロジェクトマネージャー、機械技術指(4名)、電気技術指導員(4名)、建設技術指導員(3名)
[本邦研修]	
機械技術	4名
電気技術	3名
[機材供与]	
日本側	: 約82,006,000円
サウジアラビア側	: 約5,280,000円
[金銭経費]	
日本側	: 約206,748,000円
サウジアラビア側	: 約26,490,000円

## プロジェクトの実績及び実施プロセス (2)

### 機械技術

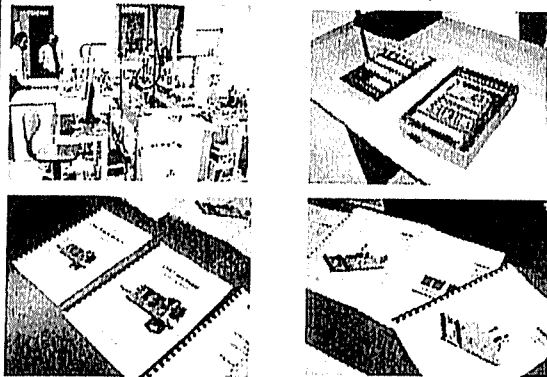
- 研修プログラム準備
  - DTC指導員の指導計画作成
  - 供与機材選定
  - 溶接に関する研修教材(英語版)を作成
  - CAD、CNCに関する研修教材ドラフトを作成
- 研修実施体制整備
  - 5科目に関する理論、実習指導
  - 本邦研修において、レーザー加工、材料試験に関する技術指導
  - CADに関する理論、実習指導のため、現地のCADスクールを活用
  - レーザー加工機材維持管理、使用法に関する短期技術指導
  - カウンターパートの技術評価

## プロジェクトの実績及び実施プロセス (3)

### 電気技術

- 研修プログラム準備
  - DTC指導員の指導計画作成
  - 供与機材選定
  - 研修教材(12)を作成
- 研修実施体制整備
  - 5科目に関する理論、実習指導
  - 本邦研修において、パワーエレクトロニクス、ドライブレコントロール、自動制御に関する技術指導
  - 短期専門家による自動制御に関する技術指導
  - 各科目の研修担当を決定
  - カウンターパートの技術評価

## プロジェクトの実績 電気技術



## プロジェクトの実績及び実施プロセス (4)

### 建設技術

- 研修プログラム準備
  - 短期専門家による技術短大カリキュラムの分析
- 研修実施体制整備
  - 短期専門家による2D-CADと模型に関する技術指導
  - 協力科目の見直し

## プロジェクトの実績及び実施プロセス (5)

### センター運営管理体制の整備

- 1)運営管理委員会
  - 過去10回開催。
- 2)機材管理委員会
  - 機材設置に伴い、9月に設置予定。
- 3)安全管理委員会
  - 機材設置に伴い、9月に設置予定。

## プロジェクトの実績及び実施プロセス(6) 実施プロセス

- プロジェクトの進捗に影響をもたらした要因
  - 機材調達
    - 機械技術・電気技術 (2006年2月)
  - 長期専門家派遣
    - 建設技術専門家派遣 (2006年2月)
    - 機械技術後任派遣 (2006年8月)
  - カウンターパートの配置
    - 日本の技術協力のカウンターパートを過去につとめた経験あり。
    - 言語レベル、学歴が多様

## プロジェクトの実績及び実施プロセス(7)

- 現職教員研修の対象である技術短期大学の技術水準の確認、C/Pの技術向上、研修プログラム作成が取り組まれ、プロジェクトは段階的に進展してきている。
- 今次調査団の協議において、技術短大教官に対する研修計画が合意され、2006年9月以降、研修が順次開始される見込み。

## 提言

- (1) コミュニケーションと情報共有
  - ・ DTCとの定期会合 (月1回)
  - ・ 学科内の定期会合 (週1回)
  - ・ 日本人専門家間の情報共有 (週1回)
- (2) 早期の研修開始
- (3) 安定したカウンターパートの配置
- (4) 機材管理

## プロジェクト活動計画

- 技術教育開発・訓練センターの位置づけ
- 機械技術・電気技術
  - ・ 2006年11月より技術短大教員を対象とした研修を開始。
  - ・ カウンターパートの技術レベルは、これまでの技術指導を通じて向上しているため、専門家の協力のもと、教材開発を進める。
- 建設技術
  - ・ 協力科目の変更
    - (旧) 模型、測量、建築技術、3D-CAD、製図
    - (新) 3D-CAD、建築技術、プロジェクトマネジメント
  - ・ 測量、模型 …… 技術短大は研修の必要性が低い。
  - ・ 製図 …… 3DCADに含まれる。
  - ・ プロジェクトマネジメント …… 研修ニーズが高い。
  - ・ 2006年2月より、研修を開始。

# Members List and Tentative Schedule

## Consultation Team on the Development and Training Center

### Members' List

**6 Sep. 2006**

- |                                                            |                                                                                                     |                                                                                                                                                                                  |
|------------------------------------------------------------|-----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| (1) Mr. Motoharu <b>WATANABE</b><br>(From 2 ~ 6 Sep. 2006) | Team Leader                                                                                         | JICA Human Development Department<br>Technical & Higher Education Team                                                                                                           |
| (2) Mr. Shigeru <b>IKEMORI</b><br>(From 1 ~ 6 Sep. 2006)   | Administration of Technical &<br>Vocational Education & Training<br>Senior Specialist for Curricula | Ministry of Education, Culture, Sports<br>Science & Technology. Elementary &<br>Secondary Education Bureau.<br>Vocational Education and Information<br>Technology Educ. Division |
| (3) Mr. Takao <b>MARUYAMA</b><br>(From 1 ~ 6 Sep. 2006)    | Project Planning                                                                                    | JICA Human Development Department<br>Technical & Higher Education Team                                                                                                           |

### Schedule

DATE	TIME		SCHEDULE	REMARKS
	From	To		
1 Sep. Fri.		22:00	* Arrival of Mr. Ikemori and Mr. Maruyama in Riyadh CX 733 coming from Hong Kong (Via Bahrain)	* JICA Car pick-up Mr. Kanamoto from Res. and receive Mission at Airport "Mr. HAMID" * Accommodation: Riyadh Intercontinental Tel. 465-5000 Fax: 405-3697
2 Sep. Sat.	08:00	08:30	* Leave Hotel to JICA Office	* 08:00 Hertz Rent-A-Car will be ready at Hotel Driver: Mr. Shamahd Mob. 056-417-1298 * Mr. Wael go to Hotel and accompany to the Office
	08:30	09:30	* Meeting at JICA Office	
	09:30	10:00	* Move from JICA to Development & Training Center (D & T Center)	
	10:00	12:30	* Discussion with JICA Experts	* Mr. Kanamoto receive guest from Airport "Mr. Hamid" * Accommodation: Riyadh Intercontinental Tel. 465-5000 Fax: 405-3697
	15:30	17:00	Meeting at JICA Office	
		19:05	* Arrival of Mr. WATANABE in Riyadh EK 817 from Dubai	
3 Sep. Sun.	08:30	08:55	* Move from Hotel to GOTEVT HQ.	* 08:30 Hertz Rent-A-Car will be ready at Hotel Driver: Mr. Shamahd Mob. 056-417-1298 * Mr. Nakauchi, Mr. Kanamoto, Mr. Wael go to Hotel & all move to GOTEVT HQ. (Mr. Abdo)
	09:00	9:30	* Courtesy call on H.E. Dr. Hamad Al-Aqlaa Vice Governor (GOTEVT)	
	9:45	10:30	* Move from GOTEVT to D & T Center	
	10:30	14:00	* Consulting with the D & T Center officials and C/P, & observation of installed equipment at the D & T Center	
	16:00	17:00	* Meeting at JICA Office	
4 Sep. Mon.	08:30	08:55	* Leave Hotel to GOTEVT Office	* 08:00 Hertz Rent-A-Car will be ready at Hotel Driver: Mr. Shamahd Mob. 056-417-1298
	09:00		* Hold Joint Coordinating Committee	
	15:30	16:30	* Meeting at JICA Office	
5 Sep. Tue.	08:30	09:15	* Leave Hotel to DTC	* 08:30 Hertz Rent-A-Car will be ready at Hotel Driver: Mr. Shamahd Mob. 056-417-1298
	09:00	10:30	* Consulting with the D & T Center officials and C/P	
	10:30	11:30	* Discussion with JICA Experts	
	12:30	14:00	* Visit to the Riyadh Technical College	
	15:30	16:30	* Meeting at JICA Office	
	20:00	21:00	* Signing M/M	
6 Sep. Wed.	10:00	12:00	* Report to JICA Office	* 08:30 Hertz Rent-A-Car will be ready at Hotel Check-out from Hotel and keep baggage in the car * Mr. Hagos send guests to Airport
	15:00	16:00	* Report to Embassy of Japan	
	20:15	21:00	* Leave the city to Airport	
	21:00	23:10	* Leave Riyadh to Hong Kong by CX 732	





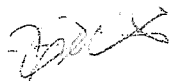
**MINUTES OF MEETINGS**  
**BETWEEN THE JAPANESE CONSULTATION TEAM**  
**AND**  
**THE AUTHORITIES CONCERNED OF THE GOVERNMENT**  
**OF THE KINGDOM OF SAUDI ARABIA**  
**ON**  
**JAPANESE TECHNICAL COOPERATION FOR**  
**THE DEVELOPMENT AND TRAINING CENTER PROJECT**

The Japanese Consultation Team (hereinafter referred to as "the Japanese Team"), organized by the Japan International Cooperation Agency (hereinafter referred to as "JICA") and headed by Mr. Motoharu Watanabe, visited the Kingdom of Saudi Arabia from September 1 to September 6, 2006.

During its stay in the Kingdom of Saudi Arabia, the Japanese Team had a series of discussions with the authorities concerned of the Government of the Kingdom of Saudi Arabia, jointly reviewed the achievement of Japanese Technical Cooperation project, 'Development and Training Center Project' (hereinafter referred to as "the Project") and exchanged views on the project activities to fulfill the Record of Discussions (hereinafter referred to as "R/D") signed on September 1, 2004, and the Project Design Matrix (hereinafter referred to as "PDM") signed on July 30, 2005.

As a result of the discussions, the Japanese Team and the Saudi Arabian authorities concerned agreed the matters referred in the document attached hereto.

Riyadh, September 5, 2006



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Mr. Motoharu Watanabe  
Team Leader,  
Japanese Consultation Team  
Japan International Cooperation Agency  
Japan



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Dr. Hamad O. Alogla  
Deputy Governor  
General Organization of the Technical  
Education and Vocational Training  
Kingdom of Saudi Arabia

## ATTACHED DOCUMENT

### 1. Introduction

The term of the Project on "Development and Training Center" is from September 2004 to August 2007 (3 years), which indicates that the project remaining project period is approximately one year. The Japanese Team has visited the Kingdom of Saudi Arabia to review the achievement of Project and its implementation process, and discuss the Project Plan of Operation up to August 2007.

#### 1-1. Objectives of the Review

The Objectives of this review are as follows;

- 1) To examine the inputs, activities, achievement of outputs, and implementation process.
- 2) To discuss the plan up to August 2007.

#### 1-2. Participants of the Joint Coordinating Committee

##### 1-2-1. Saudi Arabian side

Name	Title
Dr. Hamad O. Alogla	Vice Governor of Education and Training of GOTEVT
Dr. Ibrahim Al Shafi	General Director of DTC
Mr. Yasser Al-Humaid	Project Manager of DTC
Mr. Khalid. A Al-Rumaizan	Mechanical Instructor
Mr. Khalid Al-Harabi	Mechanical Instructor
Mr. Saud D. Al-Dokhail	Mechanical Instructor
Mr. Khaled Mohammad Al-Khrash	Mechanical Instructor
Mr. Ahmed R. H. Al-Zaharani	Electric Instructor
Mr. Ahmed Al-Fouzan	Construction Instructor

##### 1-2-2. Japanese side

Name	Title
Mr. Motoharu Watanabe	The Japanese Team Leader
Mr. Shigeru Ikemori	The Japanese Team Leader
Mr. Takao Maruyama	The Japanese Team Leader
Mr. Kiyofumi Nakauchi	Resident Representative of JICA Saudi Arabia Office
Mr. Yosuke Kusunoki	JICA Saudi Arabia Office
Mr. Yoshio Kanamoto	JICA Saudi Arabia Office
Mr. Wael G. Moh'd Abdullah	JICA Saudi Arabia Office
Mr. Fumio Bito	Embassy of Japan (Observer)

### 1-3. Background of the Project

As Saudi Arabia faces rapid increase of the youth population, General Organization for Technical Education and Vocational Training (GOTEVT) has decided to increase the number of technical colleges. However, with the expansion of technical colleges, it is necessary to train the college teachers and upgrade the technological level of them to the industrial demand.

The GOTEVT has decided to establish the Development and Training Center for the purpose of in-service training, and requested the technical assistance from the Japanese Government.

Based on series of discussions, the Official Record of Discussion (R/D) of the Project was signed on September 2004, followed by signing the Project Design Matrix (PDM) and the Plan of Operation (PO) on June 2005. The Project's purpose is that the training capabilities of the instructors of Development and Training Center in the field of Mechanical Technology, Electrical Technology, and Construction Technology are improved.

The subjects of training in this Project were defined in the R/D as follows:

- Mechanical Technology

Material Testing, Forming Technology, CNC Workshop, Welding Technology, and Computer Aided Design

- Electrical Technology

Power Electronics, Electronic Control of Electrical Machine (Drive Technology), Automatic Control Technology, PLC Workshop, and Factory Automation

\* Factory automation was added after signing of R/D.

- Construction Technology

Surveying, Models, Working Drawing, Architectural Technology, and 3D CAD.

## 2. Achievement of the Plan (refer to ANNEX 3. for further detail)

### 2-1. Mechanical Technology

The training plan for DTC instructors and the plan for technical colleges have been produced. Teaching material of Welding (English version) has been produced. The teaching materials of CAD and CNC have also been partly drafted.

Technical practice training has been implemented for 163 times (up to 2006 Feb.) by Japanese Expert, and the Training of Counterparts in Japan has been also conducted. Technical seminar of CAD was implemented at the CAD school. The short-term technical guidance of Laser Cutting Machine (Forming Technology) was also implemented by the AMADA.

### 2-2. Electorical Technology

The training plans for the Development and Training Center instructors and the plans for

technical colleges have been produced.

Technical courses of Electrical Technology have been implemented for 213 times (up to 2006 July) by Japanese long-term Experts, and the training in Japan in the field of Power Electronics, Electronic Control of Electrical Machine (Drive Technology), and Automatic Control is being implemented. Technical guidance of Feedback control (Automatic Control) was implemented by the Japanese short-term Expert.

### 2-3. Construction Technology

The curriculum of the technical college was analyzed by the Japanese short-term Expert. The newly assigned Counterpart and the Japanese long-term Expert examine the subjects, and revised part of them. Technical courses of 2D-CAD and Model for the Counterparts were implemented.

### 3. Implementation Process of the Project

The factors that influence the implementation of Project Plan were observed as follows.

- The installation of equipment procured by Japanese side was delayed due to the procurement process.
- The dispatch of Japanese long-term Expert (Construction Technology) was delayed.
- Assignment of Counterparts of the former JICA Projects has contributed to the progress of technological transfers and communication in the Project.

### 4. Plan of the Project (further refer to ANNEX 6)

#### 4-1. Mechanical Technology

The workshop for college teachers (Introduction of laser cutting machine) will be commencing in September 2006. As the Counterparts has almost reached the level for teacher's training, the training material for each subject will be developed with the assistance of Japanese Expert.

#### 4.2 Electrical Technology

The training for college teachers will be commencing from November 2006. The contents of the training will be PLC, Factory Automation, Power Electronics, Drive Technology, and Automatic Control will be added to the training items.

#### 4.3 Construction Technology

The subjects for cooperation in this Project were reviewed to be changed, Architectural Technology, Project Management, and Auto CAD 3D.

The reasons are as follows.

- The required level of skills and technology of surveying are too basic for teacher training.
- Model is not necessary because college teachers have already acquired the techniques well.

- Auto-CAD can include working drawing.
- The Project Management is added to the subjects because the demand for teacher's training is high.

The seminar for college teachers will be conducted from February 2006.

## 5. Recommendations

Based on the achievement of the Project and its implementation process, both sides recommend the following points:

### (1) Further Communication and Information Sharing

The Project should hold all staff meeting at least once a month to share the progress across each subject. The Project should have operational management meeting to confirm the plan and necessary actions. Progress reports should be also submitted.

Evaluation of instructors, trainees (college teachers), and training programs should be done regularly and the results should be submitted.

### (2) Early Implementation of Training Program (Seminar)

Most of the Project's Counterparts have almost reached the level necessary to implement training programs (basic courses) for college teachers. Training (Seminar) of the college teachers should be planned and implemented as soon as possible. The training should be planned and implemented by the Counterparts assisted by the Japanese Experts.

### (3) Stable Assignment of Counterparts

For the sake of efficient implementation of Project, the assignment of the Counterparts should be stable.

### (4) Maintenance of Equipment

Equipment Management Board and Safe Operation Board should be established for the proper management of equipment.

## 6. Other Issues

### 6-1. Dispatch of Long-term Expert

Saudi Arabian side emphasized that it is important to place Japanese long-term Expert because it will enhance consistency of technical guidance, and communication among Counterparts and Expert.

## 6-2. The Extension of Project Term

Saudi Arabian side requested to extend the Project term, because some activities are behind the schedule due to the delay of inputs. The overall evaluation of Project will be conducted on March 2007.

### List of ANNEX

- ANNEX 1      PDM (12 June 2005)
- ANNEX 2-1.   Accomplishment of the Plan (Mechanical Technology)
- ANNEX 2-2.   Accomplishment of the Plan (Electrical Technology)
- ANNEX 2-3.   Accomplishment of the Plan (Construction Technology)
- ANNEX 3.      Achievement of the Plan and Project Implementation Process
- ANNEX 4.      Personnel Assignment
- ANNEX 5.      Equipments Procured by the Project
- ANNEX 6-1.   Plan of Operation from September 2006 (Mechanical Technology)
- ANNEX 6-2.   Plan of Operation from September 2006 (Electrical Technology)
- ANNEX 6-3.   Plan of Operation from September 2006 (Construction Technology)



# Project Design Matrix (PDM)

Version No.1

Date of preparation: 12 June 2005

1/2

Country: The Kingdom of Saudi Arabia

Project title: Development and Training Center Project

Cooperation period: 1 September 2004 to 31 August 2007

Executing agency: GOTEVOT (Saudi side), JICA (Japanese side)

Project site: The Development & Training center (D&T center), Riyadh

Target area: The Kingdom of Saudi Arabia

Target group: Instructors/ teachers of the colleges of technology in the field of Mechanical, Electrical and Construction technology.

Preparation method: Prepared by Project team without PCM workshop, based on survey results and the master plan.

Narrative Summary	Objectively Verifiable Indicators	Means of Verification	Important Assumptions
<b>OVERALL GOAL</b> Technical colleges in the Kingdom can produce students who are equipped with the required technical level of industries in the fields of mechanical, electrical and construction technologies.	1. Number of graduates employed in the relevant fields of industries 2. Number of student who pass the examination of occupational classification 3. Reputation of the college graduate's technical skill in the industries.	1. Documents of the Collages of Technologies 2. Documents of GOTEVOT 3. Survey reports of GOTEVOT	a. Demand of employment is not negatively affected by the condition of the economy of Saudi Arabia. b. Government continue its policy to strengthen the Colleges of Technologies.
<b>PROJECT PURPOSE</b> Training capabilities of the instructors of Development and Training Center are improved in the above mentioned fields.	1. Evaluation results for training courses. 2. Number of training programs prepared by the Project. 3. Number of college teachers trained by the project. 4. Number of courses implemented in the D&T center under the Project.	1. Evaluation reports of training courses 2. Documents of the D&T center 3. Documents of the D&T center 4. Documents of the D&T center	a. Relevant fields of industries employ graduates of the Collages of Technologies. b. Colleges of technology make use of skill obtained in the D&T center training courses. c. GOTEVOT continues its policy to strengthen the D&T center.
<b>OUTPUT</b> 1. The technological level of the college teachers and the skill level necessary for industries in the target fields are identified. 2. The training programs for the college teachers are developed. 3. The training system for the college teachers are developed and implemented. 4. The Operational system of the D&T center for training programs in the above mentioned fields are established.	1-1. Required technical skill and level based on new college curriculum is identified timely. 1-2. Required technical skill and level for teacher training is identified timely. 1-3. Required technical skill and level for related industries is monitored timely. 2-1. Number of training programs prepared. 2-2. Number of teaching manuals/materials prepared under the project. 3-1. Report on needs analysis of the DTC instructors 3-2. Technical guidance offered to the D&T center' instructors 3-3. Number of training courses/seminars for college teachers implemented. 3-4. Evaluation results of training courses. 4-1. Number of meetings held for training management board. 4-2. Number of meetings held for equipment management board (EMB). 4-3. Condition of equipment/tools for training. 4-4. Number of meetings held for safe operation board (SOB). 4-5. Preventive measures for accidents and injuries	1-1. Survey reports of the Project 1-2-1. Survey reports of the Project 1-2-2. Monitoring report on trainer's evaluation of GOTEVOT 1-3. DACUM/NOSS monitoring report of GOTEVOT 2-1. Documents of the D&T center 2-2. Report of the D&T center 3-1. Report of the project 3-2. Report of the project (Monitoring Sheet for Technology Transfer) 3-3. Documents of the D&T center 3-4. Documents of the D&T center 4-1. Documents of the D&T center 4-2. Record of meeting of EMB 4-3. Equipment record book 4-4. Record of meeting of SOB 4-5. Record of meeting of SOB	a. Colleges of Technologies continue send their teachers to training courses at the D&T center b. Financial support to the D&T center are appropriately secured by GOTEVOT.
<b>ACTIVITIES</b> <b>1. Identifying training needs</b> 1-1. To scrutinize and analyze the curriculums of the technical colleges in the above mentioned fields. 1-2. To survey and analyze the technical level of the college teachers. 1-3. To survey the technical skills and level required in the industries. <b>2. Developing training program</b> 2-1. To draw up the training programs for the colleges teachers based on their current skills. 2-2. To draw up the training programs for the DTC instructors. 2-3. To develop training materials for the training of college teachers. <b>3. Implementing C/P and teacher training</b> 3-1. To implement the technical training to the DTC instructors in the field of mechanical, electrical and construction technologies. 3-2. To implement the technical training to the college teachers by the DTC instructors with support of Japanese experts. 3-3. To evaluate training courses for the college teachers and reflect the result of evaluation into the forthcoming training programs. 3-4. To conduct seminars on teaching methodologies for the college teachers. <b>4. Improvement of operational system</b> 4-1. To attend the operational management board once a month and give necessary advice. 4-2. To make up an evaluation standard for operation. 4-3. To establish and run an Equipment Management Board. 4-4. To make an inventory of equipment, materials and expendables in order to utilize them effectively. 4-5. To make out a procurement standard for equipment, materials and expendables. 4-6. To establish a monitoring system for checking the condition of equipment and expendables. 4-7. To organize and run a Safe Operation Board. 4-8. To make out a criteria for safe operations.	<b>INPUT</b> <b>Saudi Arabian side</b> 1. Personnel Assignment 1) Counterparts (C/Ps) *Project director: 1 *Project manager: 1 *Technical Counterparts: 15 2. Building and facilities 1) Headquarter/Work shop of the D&T Centre including office space for Japanese Experts. 2) Existing equipment of the D&T Centre and the Colleges of Technologies 3) Transportation vehicles 4) Office equipment for the project office 3. Allocation of budget 1) Operational cost of the D&T Centre 2) Project implementation cost 3) Operational cost of the project office 4) Travel allowance of C/Ps 5) Custom clearance/transport/ installation of equipment 6) Maintenance cost of equipment 7) Electricity, Water 8) Training expense of the college teachers 4. Provision of equipment 1) Office equipment 2) Training equipment	<b>Japanese side</b> 1. Dispatch of Japanese Experts 1) Long-term experts Team leader Mechanical technology Electrical technology Construction technology Project coordinator *Team leader holds a post of technical expert concurrently 2) Short-term experts 2. Counterpart Training in Japan 3. Allocation of budget * Allowance of Japanese experts * Expenses of counterpart training in Japan 4. Provision of equipment	a. Counterparts remain in the D&T center <b>Preconditions</b> a. D&T Center allocates qualified counterparts who have sufficient English ability. b. Financial resources are appropriately secured.

ANNEX 2-1. ACCOMPLISHMENT of MECHANICAL TECHNOLOGY (as of August, 2006)

Plan  
Accomplishment

Year	Pre	P/J	Project year 1												Project year 2												Accomplishment										
Month	2004												2005												2006												Remarks
	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	7	8	Date of R/D: 1st September 2004									
Record of Discussionsz(RD), Preparatory Study(P)				RD																																	
Joint Coordinating Committee(JCC)																																					
1-1. To scrutinize and analyze the curriculum of the technical colleges.																																					
1-2. To survey and analyze the technical level of the college teachers.																																					
1-3. To survey the technical skills and level required in the industries.																																					
2-1. To draw up the training programs for the colleges teachers based on their current skills.																																					
2-2. To draw up the training programs for the DTC instructors.																																					
2-3. To develop training materials for training of the college teachers.																																					
3-1. To implement the technical training to the DTC instructors in the target fields.																																					
3-2. To implement the technical training to the college teachers by the DTC instructors with support of Japanese experts .																																					
3-3. To evaluate training courses for the college teachers and reflect the result of evaluation into the forthcoming training programs.																																					
3-4. To conduct seminars on teaching methodologies for the college teachers.																																					
4-1. To attend the operational management board once a month and give necessary advice.																																					
4-2. To make up an evaluation standard for operation.																																					
4-3. To establish and run an Equipment Management Board.																																					
4-4. To make an inventory of equipment, materials and expendables in order to utilize them effectively.																																					
4-5. To make out a procurement standard for equipment, materials and expendables.																																					
4-6. To establish a monitoring system for checking the condition of equipment and expendables.																																					
4-7. To organize and run a Safe Operation Board.																																					
4-8. To make out a criteria for safe operations.																																					



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ANNEX 3 Achievement of the Plan as of August, 2006

(1) Actual results of Inputs and Outputs

INPUTS See ANNEX 4 and 5	
<p>1) Summary of Resources</p> <p>-Human Resources -Training in Japan -Equipment Supply -Project Cost -Other</p>	<p>[Human Resource] Japanese side: Eleven (11) Japanese Experts. Saudi Arabian side: Project Director, Project Manager, Mechanical Instructor (4), Electrical Instructor (4), Construction Instructor (3).</p> <p>[Training in Japan] Four (4) Mechanical Instructors (2 weeks). Expense: approx. SR 126,466 (approx. JPY 3,794,000) Four (3) Electrical Instructors (3 weeks). Expense: approx. SR 116,666 (approx. JPY 3,500,000)</p> <p>[Equipment Supply] Japanese side : Expense approx. SR 2,733,533 (approx. JPY 82,006,000) Saudi Arabian Side : Expense approx. SR 176,000 (approx. JPY 5,280,000)</p> <p>[Total Project Cost] Japanese side : Expense approx. SR 7,052,500 (approx. JPY 211,575,000) Saudi Arabian Side : Expense approx. SR 883,000 (approx. JPY 26,490,000)</p> <p>1 Saudi Real = 30 yen</p>
Achievement of Outputs See ANNEX 2	
<p>(1) Identification of the technical skills and level</p> <p>1) The Identification of the technical skill and level based on new college curriculum (Indicator 1-1)</p>	<ul style="list-style-type: none"> <li>The subjects of the training in this Projects were defined with the GOTEVT on Sep. 2004 as follows: <ul style="list-style-type: none"> <li>[Mechanical Technology] Material Testing, Forming Technology, CNC Workshop, Welding Technology, and Computer Aided Design</li> <li>[Electrical Technology] Power Electronics, Electronic Control of Electrical Machine (Drive Technology), Automatic Control Technology, PLC Workshop, and Factory Automation * Factory automation was added after signing of R/D.</li> <li>[Construction Technology] Surveying, Models, Working Drawing, Architectural Technology, and 3D CAD.</li> </ul> </li> <li>The technical skills and level based on new college curriculum were analyzed and identified.</li> <li>The technical skills and level for teacher training were analyzed and identified.</li> </ul>
<p>2) The Identification of skill and level for teacher training is identified. (indicator 1-2)</p>	

<p>3) The Monitoring of the Required technical skill and level for related industries (indicator 1-3)</p>	<ul style="list-style-type: none"> <li>• The technical level and skills of construction technology required in the industries was planned to be surveyed.</li> <li>• The technical level required by industry was decided as NOSS and updated regularly by GOTEVT. The curriculum of the technical college was written based on the NOSS.</li> </ul>
<p>(2) Preparation of the training program</p> <p>1) Number of training program prepared (indicator 2-1)</p>	<p>[Mechanical Technology]</p> <ul style="list-style-type: none"> <li>• The training plans for DTC instructors have been produced.</li> <li>• The training plans for technical colleges have been produced.</li> <li>• List of equipment for DTC has been drafted and the equipments have been installed except material testing.</li> </ul> <p>[Electronic Technology]</p> <ul style="list-style-type: none"> <li>• The training plans for DTC instructors have been produced.</li> <li>• The training plans for technical colleges have been produced.</li> <li>• List of equipment for DTC has been drafted and the equipments have been partly installed.</li> </ul> <p>[Construction Technology]</p> <ul style="list-style-type: none"> <li>• The curriculum of the technical college was analyzed by the Japanese short-term Expert.</li> <li>• The newly assigned Counterpart and the Japanese long-term Expert examine the subjects, and revised part of them.</li> </ul>
<p>2) Number of teaching manuals/materials prepared under the Project (indicator 2-2)</p>	<p>[Mechanical Technology]</p> <ul style="list-style-type: none"> <li>• The teaching material of Welding (English version) has been produced.</li> <li>• The teaching materials of CAD and CNC have been partly drafted.</li> </ul> <p>[Electronic Technology]</p> <ul style="list-style-type: none"> <li>• 12 training materials of Electrical Technology (English version) have been produced (PLC and etc).</li> </ul>
<p>(3) Implementation of the training program</p> <p>1) Report on needs analysis of the DTC instructors (indicator 3-1)</p> <p>2) Technical guidance offered to the D&amp;T center' instructors (indicator 3-2)</p>	<ul style="list-style-type: none"> <li>• The evaluation sheet of technical level of each Counterpart has been introduced when the Project started. The sheet is submitted regularly to GOTEVT</li> </ul> <p>[Mechanical Technology]</p> <ul style="list-style-type: none"> <li>• Technical practice training has been implemented for 163 times (up to 2006 Feb.) for CAD, CNC, welding, laser cutting, material testing, and the technical education in the field of mechanical technology in Japan.</li> <li>• The Counterparts were trained in Japan in the field of laser cutting (Forming Technology) and material testing.</li> <li>• Teaching methodology including evaluation method and material producing method was taught to the Counterparts.</li> <li>• Technical seminar of CAD was implemented at the CAD school (Autodesk).</li> <li>• The short-term technical guidance of Laser Cutting Machine (Forming Technology) was implemented by AMADA.</li> </ul> <p>[Electronic Technology]</p> <ul style="list-style-type: none"> <li>• Technical courses of Electrical Technology have been implemented for 213 times (up to 2006 July) for Power Electronics, PLC Workshop, and Factory Automation.</li> <li>• Technical courses of Feedback control (Automatic Control) was implemented by short-term Expert.</li> <li>• The Counterparts are being trained in Japan in the field of power electronics, drive technology, and automatic control at Nippon Institute of Technology.</li> <li>• The Counterparts went to Malaysia to visit the Center for Instructor and Advanced Skill Training (CIAST), Japan Malaysia Technical Institute (JMTI), and Penangs Skills Development Center (PSDC).</li> </ul>

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	<p>[Construction Technology]</p> <ul style="list-style-type: none"> <li>• Technical courses of construction technology (2D-CAD and Models) were implemented</li> </ul> <p>[Educational Methodology]</p> <ul style="list-style-type: none"> <li>• Technical course of educational technology was implemented by short-term Expert.</li> </ul>
3) Number of training course/seminar for college teachers implemented. (indicator 3-3)	<ul style="list-style-type: none"> <li>• The training courses/seminars are planned to be implemented from Sep. 2006 (See ANNEX 6).</li> <li>• The mechanical and electrical instructors in charge of each field technical courses have been decided.</li> </ul>
4) Evaluation results of training courses. (indicator 3-4)	<ul style="list-style-type: none"> <li>• The training courses/seminars are planned to be implemented from Sep. 2006 (See ANNEX 6).</li> </ul>
(4) Establishment of the Operational System	<ul style="list-style-type: none"> <li>• The meeting is held for 10 times.</li> </ul>
1) Number of meeting held for operational management meeting of the D&T center. (indicator 4-1)	
2) Number of meeting held for equipment management board (EMB). (indicator 4-2)	<ul style="list-style-type: none"> <li>• The EMB is established with the install of the equipment procured by Japanese side. The maintenance and management manual is being drafted.</li> </ul>
3) Condition of equipment/tools for training. (indicator 4-3)	<ul style="list-style-type: none"> <li>• The equipment will be maintained according to the manual developed.</li> </ul>
4) Number of meeting held for safe operation board (SOB). (indicator 4-4)	<ul style="list-style-type: none"> <li>• The SOB will be organized on Sep. 2006. The establishment is delayed because of the install of the equipment procured by Japanese side.</li> </ul>
5) Number of countermeasures for accidents and injuries. (indicator 4-5)	<ul style="list-style-type: none"> <li>• There happen no accidents.</li> </ul>

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Achievement of the Project Purpose	
1) Number of training programs prepared by the Project. (Indicator 2)	<ul style="list-style-type: none"> <li>• The training programs are under the preparation.</li> </ul>
2) Number of courses implemented in the D&T center under the Project. (Indicator 4)	<ul style="list-style-type: none"> <li>• The training programs are planned to be implemented from Sep. 2006 (See ANNEX 6).</li> </ul>
Implementation Process	
1) The factor that influence the implementation of Project plan	<ul style="list-style-type: none"> <li>• The install of equipment procured by Japanese side was delayed due to the procurement process. The equipments are installed on Feb. to June 2006.</li> <li>• The dispatch of long term Expert (construction technology) was delayed.</li> <li>• The Development and Training Center promptly reform the building for install of equipment.</li> <li>• Assignment of Counterparts of the former JICA Project has contributed progress of technological transfers and communication in the Project.</li> <li>• The language and technical level of instructors is diverse.</li> </ul>
2) Status of monitoring, JCC meeting held	<ul style="list-style-type: none"> <li>• Evaluation of the technical level of DTC instructors are regularly conducted by Japanese Experts</li> <li>• First JCC was held on Sep 1. 2005.</li> </ul>
3) Implementing structure, Counterparts assignment, Participation of the Implementing Agency	<ul style="list-style-type: none"> <li>• The Electrical Instructor (Mr. Abdulla Al-Humood) was moved on May 2005, and Mr. Saleh Al-Dahriy was assigned on Sep. 2005.</li> <li>• The Construction Instructors (Mr. Saleh Alzahrani) was assigned on September 2004. Mr. Ahmed Al Fouzan and Mr. Ahmed Al-Murbarak were assigned on September 2005.</li> </ul>

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#### ANNEX 4. Personnel Assignment

##### (1) Assignment of JICA Experts

Name	Title	Agency	Assigned from	until
Mr. Shuici Fujinawa	Chief-Advisor, Mechanical Technology	Japan International Cooperation Agency (JICA)	February, 03	February, 06
Mr. Takashi Tsuchiya	Electric Technology	JICA	February, 04	August, 07
Mr. Kazuhisa Takahashi	Coordinator	JICA	January, 05	January, 07
Mr. Masaru Takimoto	Construction Technology	JICA	February, 05	March, 05
ditto	Construction Technology	JICA	April, 05	May, 05
Mr. Motohiro Kobayashi	Teaching Methodology	JICA	November, 05	December, 05
Mr. Kazumitsu Onda	Constructive Technology (CAD)	JICA	December, 05	December, 05
Mr. Tetsuya Kaneko	Construction Technology	JICA	February, 06	March, 06
Mr. Yoshitaka Ishii	Construction Technology	JICA	August, 05	August, 05
ditto	Construction Technology	JICA	April, 06	August, 07
Mr. Masaya Inoue	Automatic Control Technology	JICA	February, 06	March, 06

##### (2) Assignment of Project Counterparts

Name	Title	Agency	Assigned from	until
Dr. Ibrahim Al Shafi	General Director	Development and Training Center	September, 04	
Mr. Yasser Al-Humaid	Project Manager	Development and Training Center	September, 04	
Mr. Khalid. A Al-Rumaizan	Mechanical Instructor	Development and Training Center	September, 04	
Mr. Khalid Al-Harabi	Mechanical Instructor	Development and Training Center	September, 04	
Mr. Saud D. Al-Dokhail	Mechanical Instructor	Development and Training Center	September, 04	
Mr. Khaled Mohammad Al-Khrashi	Mechanical Instructor	Development and Training Center	September, 04	
Mr. Abdulla Al-Humood	Electric Instructor	Development and Training Center	September, 04	May, 05
Mr. Ahmed R. H. Al-Zaharani	Electric Instructor	Development and Training Center	September, 04	
Mr. Saud A. Al-Oraini	Electric Instructor	Development and Training Center	September, 04	
Mr. Abdulrahman A. Al-Ghamdi	Electric Instructor	Development and Training Center	September, 04	
Mr. Saleh Al-Dahriy	Electric Instructor	Development and Training Center	September, 05	
Mr. Ahmed Al-Fouzan	Construction Instructor	Development and Training Center	September, 05	
Mr. Ahmed Al-Mubarak	Construction Instructor	Development and Training Center	September, 05	
Mr. Saleh Alzahrani	Construction Instructor	Development and Training Center	September, 04	

## (1) Equipment procured by JICA

as of August 2006

S/NO	NAME OF THE EQUIPMENTS	Related Field	Q'ty	Use Frequency: Please Check the equipment never used to date as X.	Condition: A: Usable without problems B: Usable with problems C: Not usable / broken
1	CAD/CAM 3D Milling System	Machinery			
1-1	3D Milling Machine Unit	Machinery			
1-1-1	3D Milling Machine Main Unit including Standard Accessories	Machinery	1	not fully operated	A: (installed in June 2006)
1-1-2	High Torque Spindle Unit	Machinery	1	not fully operated	A: (installed in June 2006)
1-1-3	Collets - 10 units -	Machinery	1	not fully operated	A: (installed in June 2006)
1-1-4	Collets Set	Machinery	1	not fully operated	A: (installed in June 2006)
1-1-5	Vacuum Adapter	Machinery	1	not fully operated	A: (installed in June 2006)
1-1-6	High Precision Spindle Unit	Machinery	1	not fully operated	A: (installed in June 2006)
1-1-7	Collets Set - 7 units -	Machinery	1	not fully operated	A: (installed in June 2006)
1-1-8	Rotary Axis Unit	Machinery	1	not fully operated	A: (installed in June 2006)
1-1-9	Table Spacer Set - 4 units -	Machinery	1	not fully operated	A: (installed in June 2006)
1-1-10	Safety Cover	Machinery	1	not fully operated	A: (installed in June 2006)
1-1-11	Chemical Wood - 5 pcs set -	Machinery	20	not fully operated	A: (installed in June 2006)
1-1-12	Expansion Magazine	Machinery	1	not fully operated	A: (installed in June 2006)
1-1-13	Tool Holders	Machinery	1	not fully operated	A: (installed in June 2006)
1-1-14	Collets - 9 Units -	Machinery	1	not fully operated	A: (installed in June 2006)
1-1-15	Wrenches - 3 units -	Machinery	1	not fully operated	A: (installed in June 2006)
1-1-16	Connecting Cable	Machinery	1	not fully operated	A: (installed in June 2006)
1-1-17	Machine Stand	Machinery	1	not fully operated	A: (installed in June 2006)
1-2	3D Scanning & Milling Unit	Machinery			
1-2-1	3D Scanning & Milling Unit including Standard Accessories	Machinery	3	Twice a week	A:
1-2-2	Spindle - 6 units -	Machinery	3	Twice a week	A:
1-2-3	Engraving Tools Set	Machinery	3	Twice a week	A:
1-2-4	Square end mill (HSS) set	Machinery	3	Twice a week	A:
1-2-5	Square end mill (Cemented Carbide) set	Machinery	3	Twice a week	A:
1-2-6	Ball end mill set (Cemented Carbide)	Machinery	3	Twice a week	A:
1-2-7	Replacement Spindle Motor	Machinery	3	Twice a week	A:
1-2-8	Modelling Wax - 10 pcs set - (ZW 100)	Machinery	3	Twice a week	A:
1-2-9	Modelling Wax - 10 pcs set - (ZW 200)	Machinery	3	Twice a week	A:
1-2-10	Connecting Cable	Machinery	3	Twice a week	A:
1-3	Autodesk Inventor Professional 9 EDU 10 packs NLM license + (1 Teacher License)	Machinery	1	Twice a week	A:
2	Laser Cutting Learning System	Machinery	1		
2-1	Laser Cutting Machine/CNC Controller Unit	Machinery	1	every day	A:
2-1-1	Laser Cutting Machine Main Unit	Machinery	1	every day	A:
2-1-2	Laser Gun	Machinery	1	every day	A:
2-1-3	CNC Controller	Machinery	1	every day	A:
2-1-4	2D CAD/CAM for Laser	Machinery	1	once a week	A:
3	Factory Automation System	Electricity	1	Twice a week	A:
4	Electronic, Electronics & Control Technology Learning System	Electricity			
4-1	Power Electronics Learning System	Electricity	3	Twice a week	A:
4-2	Electronic Control of Electronic Machines Learning System	Electricity	1	Twice a week	A:
4-3	Automatic Control Learning System	Electricity	4	Twice a week	A:
4.4	PLC Motor Control Workshop	Electricity	5	Twice a week	A:

## (2) Equipment procured by Saudi Arabia

S/NO	NAME OF THE EQUIPMENTS	Related Field	Q'ty	Use Frequency: Please Check the equipment never used to date as X.	Condition: A: Usable without problems B: Usable with problems C: Not usable / broken
1	MDX 20	Mechanical	3	Twice a week	A:
2	CAD software (Autodesk Inventor)	Mechanical	1	Twice a week	A:
3	Computer	All	30	Everyday	A:



ANNEX 6-1. Plan of Operation from September 2006 (Mechanical Technology)

Subject of activities	Target	Project year 3																Counterpart (C/P) in charge	Remarks
		2007																	
1. Instruction of Training Plan Making and Improvement	Teaching plan for AutoCAD																Saud, Rumaizan	All the activities	
	Teaching plan for CNC																Khrashi, Harabi		
	Teaching plan for Welding Technology																Harabi, Saud	All the activities	
	Teaching plan for Laser Machine																Rumaizan, Saud	All the activities	
	Teaching plan for Material Testing																Khrashi, Harabi	All the activities	
2. Instruction for DTC instructors (counterparts)																			
2-1 Basic theory required for practical training	Basic Knowledge of CAD, Drafting rules																Saud, Rumaizan	All the activities	
	System of CNC - MDX20/MDX650-																Khrashi, Harabi		
	Principle of Welding Technology																Harabi, Saud	All the activities	
	Principle of Laser cutting Machine																Rumaizan, Saud	All the activities	
	Testing Method of Material Testing																Khrashi, Harabi	All the activities	
2-2 Instruction of machine operation	AutoCAD Operation																Saud, Rumaizan	All the activities	
	Operation of CNC MDX20/MDX650-																Khrashi, Harabi		
	Operation of Gas /Arc Welding																Harabi, Saud	All the activities	
	Operation of Laser cutting machine																Rumaizan, Saud		
	Testing Method of Tension/Hardness/ Metal organization																Khrashi, Harabi	All the activities have been	
2-3 Instruction of teaching material and training manual	Training Manual for Auto CAD																Saud, Rumaizan	All the activities	
	Training Manual for CNC -MDX20/MDX650-																Khrashi, Harabi		
	Training Manual for Gas/Arc welding																Harabi, Saud	All the activities	
	Training Manual for Laser Processing Machine																Rumaizan, Saud		
	Training Manual for Material Testing																Khrashi, Harabi		
2-4 Overseas training	Laser cutting, Material testing in Japan																Rumaizan, Saud, Harabi	All the activities	
3. College teacher training	Auto CAD Operation																Saud, Rumaizan		
	Operation of CNC machine																Khrashi, Harabi		
	Operation of Gas /Arc Welding																Harabi, Saud		
	Operation of Laser cutting machine																Rumaizan, Saud		
	Testing Method of Tension/Hardness/ Metal																Khrashi, Harabi		
4. Evaluation of technology transfer to C/Ps	Evaluation of Training																Rumaizan, Saud		

ANNEX 6-2. Plan of Operation from September 2006 (Electrical Technology)

Subject of activities	Target	Project year 3												Remarks
		9	10	11	12	1	2	3	4	5	6	7	8	
1. Guide, how to make and improve a training plan	Power Electronics, Microcontroller, Drive Technology, PLC, Automatic control, FA system	FA System				PE & Drive Technology								Short term expert for Automatic control
2. Basic theory for teaching the training subject	Power Electronics, Microcontroller, Drive Technology, PLC, Automatic control, FA system	FA System				PE & Drive Technology								Short term expert for Automatic control
3. Guide, how to operate equipment	Power Electronics, Microcontroller, Drive Technology, PLC, Automatic control, FA system			PE		Drive Technology								
4. Guide, how to make a experimental materials	Making a PLC training board	Automatic Control												
4.1 PLC programing	PLC programing													
4.2 Draw a draft circuits for training thema	Concentrate to basic and simple													All of this activity has been finished
4.3 Make a circuit on a breadboard for testing	Take care polarity of the electronics parts													All of this activity has been finished
4.4 Test with simple programs	Good work and good stability													All of this activity has been finished
4.5 Revise the circuit and program	For good understandable of the circuit characteristics													All of this activity has been finished
4.6 Draw the fixed circuit	Use a drawing software or CAD software													All of this activity has been finished
4.7 Make a board with drilling machine	Care about handling of machines (Safty check)													All of this activity has been finished
4.8 Assemble the circuit	Beautifully and firmly													All of this activity has been finished
4.9 Make a teaching materials	Good contents and good understandable explanation for the attendances	Automatic Control												All of this activity has been finished
4.10 Follow up														
5. Guide, how to make a training guide	Power Electronics, Microcontroller, Drive Technology, PLC, Automatic control, FA system	FA System				PE & Drive Technology								
5.1 Check the textbook of the College of Technology														All of this activity has been finished
5.2 Investigate the equipment of the College of Technology														All of this activity has been finished
5.3 Practice and Measure with the equipment														All of this activity has been finished
5.4 Write a draft training guide														
5.5 Rerry the practice or the experiment		Automatic Control												All of this activity has been finished
5.6 Write the training guide		PLC				FA System		PE & Drive Technology						All of this activity has been finished
6. Over sea training	Training in Japan or in othe countries													
7. Teacher Training and Evaluation	Short Course for teachers and instructors of College Teachers	Training in Japan												Implementation time and period will be changed
8. Evaluation for Technical Transfer		PLC												

Power Electronics, Drive Technology and Automatic control adding to the previous items

ANNEX 6-3. Plan of Operation from September 2006 (Construction Technology)

Subject of activities	Target	Project year 3												Remarks
		2007												
		9	10	11	12	1	2	3	4	5	6	7	8	
1. Architectural technology (paint test, visit construction site, collect sample, collect books, see exhibition, etc)	C/P Training													visit construction site, collect sample, test, etc
	Text or Material making													
	Teacher Training													
2. 3D CAD (Working Drawing)	C/P Training													
	Text or Material making													
	Teacher Training													
3. Project management (software operation + management techniques)	C/P Training													
	Text or Material making													
	Teacher Training													
4. Training in Japan	C/P Training													
5. Monitoring														
6. Evaluation for Technical Transfer and Follow-up	3D CAD													
	Project management													
	Architectural technology													