**APE MALAYSIA SOFTWARE DEVELOPMENT REQUIREMENTS**

1. **Software development technology:**
2. Development technology: the system is developed by using Microsoft ASP.NET on .NET Framework 3.5
3. Database system: MS SQL Server 2008
4. Programing languages: C#, JavaScript, jQuery, HTML5
5. Runtime environment:
   1. Workstation/Terminal: the system is developed to run on web environment and cloud computing. The terminal is required web browser which is supported HTML5, JavaScript (jQuery) (recommendation: Safari 5.x, Firefox 2x, Chrome 2x).
   2. Minimum server: Windows Server 2008. Pre-requirement: Microsoft .NET Framework 3.5; Crystal Report for Web; Multi-Core CPU; At least 2 GB RAM free; High-speed hard disk with 3GB free for software installation & database; At least 100Mbps network connection for LAN, fiber optic cable connection for outside.
6. **Functions and specifications:**

| **Sn.** | **Functions / specifications** | **Unit** | **Working days** |
| --- | --- | --- | --- |
| **I. GUI re-design, database re-structure** | | | |
| 1 | ***Database design & structure:***  - Analysis requirements to re-design and re-structure database.  - Create database in SQL Server 2008.  - Create data access layer. | System | 7 |
| 2 | ***GUI, printing form design:***  - Design general GUI for the system.  - Design GUI template for functions.  - HTML layout for GUI design.  - Design and layout printing/report template. | System | 15 |
| **II. System functions** | | | |
| 3 | ***System settings + business logic layer***  - Login, log-out system.  - System configurations.  - SMTP configuration for email notification.  - Business logic layer | System | 6 |
| 4 | ***User/staff management and permission:***  - User information: username, password, email, full name,…  - Assign user/staff to a department.  - System permission base on functions and roles.  - Limit action per role. | Function | 4 |
| 5 | ***Customer management***  - Customer list support sort and filter/search.  - Auto filter / suggestion when search in dropdown list.  - Support export list to Excel.  - Add/remove/inactive/modify customer information - Customer information: base on the data fields in old system - unlimited data field (upon request). Modifiable as in meeting and in future evo cycle. | Function | 7 |
| 6 | ***Quotation and price lookup for customer***  - Manage quotation as standard price for every customer.  - Manage price lookup table for every job.  - Modifiable as in meeting and in future evo cycle. | Function | 5 |
| 7 | ***Job details management:***  - Support to select old customer and quick add new.  - Auto filter / suggestion when search in dropdown list.  - Support export list of Job to Excel.  - Add/remove/inactive/modify job  - Search job by date, barcode, customer, job number, job name, design name, sale representative  - Support add new revision, copy job and record root job number  - Revision history.  - Manage job status.  - Job detail information: base on the data field in old system - unlimited data field (upon request). Modifiable as in meeting and in future evo cycle. | Function | 10 |
| 8 | ***Job sheet: Parameters, Delivery, Repro, Cylinder,… management:***  - Support to search for customer, job by cylinder code.  - Job sheet: base on the data field in old system: Parameter, Delivery, Repro, Cylinder, Proofing, S+R - unlimited data field (upon request). Modifiable as in meeting and in future evo cycle.  - Manage cylinder status.  - Able to apply tax by select kind of tax and calculate tax value automatic. | Function | 15 |
| 9 | ***Workflow management***  - Workflow designer: drag-and-drop node (connection line, department), support zoom, undo/redo, item properties.  - Build workflow for each department.  - Core process flow for system.  - Support scan barcode to acknowledge start/end time when a job come in / go out a department. | Function | 15 |
| 10 | ***Job timeline***  - Support job tracking in timeline interface with user-friendly and stages in detail of job, cylinder.  - Support to view progress in every department. | Function | 7 |
| 11 | ***Production schedule / Progress***  - View list of job has to do repro.  - From Repro: change status to “Approved” then go to Engraving.  - From Engraving: change status to “Aw. Approval” then go back to Repro.  - Able to change delivery date, Engraving date by drag-n-drop to re-schedule.  - Able to show report of Product schedule with filter by date, status.  - View/modify de/re chrome status and delivery date.  - Friendly for manager to tracking and updating.  - Modifiable in future evo cycle. | Function | 10 |
| 12 | ***Order information:***  - Order confirmation: enter customer order information by key in or select from list.  - Delivery order: enter information by key in or select from list.  *-* Cylinder order: List of cylinder steel base have to be orders, view status of cylinder order. | Function | 10 |
| 13 | ***Service job***  - Enter service information.  - Search for service job by date, customer.  - Print invoice of service job.  - Modifiable in future evo cycle. | Function | 7 |
| 14 | ***Invoice management***  - Create invoice of a job.  - Able to select kind of invoice: details or combine with pre-defined template.  - Search for invoice by date, customer, job number. | Function | 7 |
| 15 | ***Printing and reporting***  - Order Confirmation (OC)  - Delivery Order (DC)  - Quotation  - Invoice  - Purchase order for cylinder steel base  - Job sheet  - Engraving protocol (Laser Etching Protocol, Laser engraving, Mechanical Engraving)  - Cylinder card  - Job progress  - Production schedule  - Cylinder certificate  - Remake report  - Export invoice with GST details (daily, weekly, monthly) to excel template. The excel template should follow the requirement from SAP for uploading into FI module.  - Report of steel base order  - Report of sales statistics | Function | 19 |
| 16 | ***System notification***  - In-app notification.  - Mailing notification. | Function | 5 |
| 17 | ***Reference data tables:***  - Types of object in the system  - Departments  - Steel base suppliers  - Currency rate exchange  - Taxes.  - …adding during development period. | System | 7 |
| 18 | ***System history/logging***:  - Save user actions on the system.  - Access list of logging by time, type of action, user.  - Support cleanup function. | System | 5 |
| **III. Documentation, installation and supporting** | | | |
| 19 | System documentation | System | 8 |
| 20 | On-site installation and training for IT manager - one time | System | 1 |
| 21 | On-site support for check and take over in 07 days max. | System | 7 |
| **Total of working days** | | | **177** |