**Appendix 6: Detailed requirements 1**

**Use case 1**

SFR1: UC1, Step 1

Description: The system shall allow operator/team leader to activate downtime.

Fit criterion: The downtime management page shall be displayed.

SFR2: UC1, Step 1

Description: The system shall obtain stoppage time from the user.

Fit criterion: The valid time shall be accepted.

SFR2.a.1: UC1, Step 1.a.1

Description: *The downtime activated in a real time.* The system shall obtain current time.

Fit criterion: The current time shall be accepted as a valid stoppage start time.

SFR2.a.2: UC1, Step 1.b.1

Description: *The downtime activated with delay.* The system shall obtain stoppage time from the user.

Fit criterion: The valid time shall be accepted.

SFR3: UC1, Step 1

Description: The system shall obtain area index from the user.

Fit criterion: Selection of area index shall be possible.

SFR4: UC1, Step 1

Description: The system shall obtain fault description from the user.

Fit criterion: Textual fault description shall be accepted.

SFR4.a: UC1, Step 1.c.1

Description: *Fault description has been previously registered in the system*. The system shall provide a hint for description.

Fit criterion: Selection of the fault description shall be possible.

SFR5: UC1, Step 2

Description: The system shall allow the user to activate downtime.

Fit criterion: The downtime shall be activated.

SFR5.a: UC1, Step 2.a.1

Description: *There is an active downtime for the selected area.* The system shall alert the user that stoppage for the selected area is active and exit the use case.

Fit criterion: Downtime won’t be activated.

SFR6: UC1, Step 3

Description: The system shall activate timer to calculate duration of the stoppage.

Fit criterion: The timer shall be activated.

SFR6.a.1: UC1, Step 3.a.1

Description: *The downtime activated in a real time.* The system shall calculate downtime starting from 0.

Fit criterion: The timer shall start from 0.

SFR6.a.2: UC1, Step 3.b.1

Description: *The downtime activated with delay.* The system shall calculate downtime starting from time provided by the user.

Fit criterion: The timer shall start from time provided by manual input.

SFR7: UC1, Step 4

Description: The system shall display downtime status.

Fit criterion: The correct status shall be displayed.

SFR8: UC1, Step 5

Description: The system shall display solution for reoccurring stoppage if available.

Fit criterion: The solution shall be displayed.

**Use case 2**

SFR9: UC2, Step 1

Description: The system shall allow sending notification about downtime to team leader.

Fit criterion: Team leader receives notification containing fault description and stoppage time.

SFR9.a: UC2, Step 1.a.1

Description: *The downtime exceeded 15 minutes, no notification requested by operator.* The system shall automatically send notification.

Fit criterion: Team leader receives notification containing fault description and stoppage time.

SFR10: UC2, Step 2

Description: The system shall display notification status.

Fit criterion: The notification status shall be displayed.

SFR11: UC2, Step 3

Description: The system shall allow team leader to confirm that notification has been received.

Fit criterion: The confirmation function shall be available.

**Use case 3**

SFR12: UC3, Step 1

Description: The system shall allow operator/team leader to request engineering support.

Fit criterion: Engineering support request shall be available.

SFR13: UC3, Step 2

Description: The system shall notify engineering team leader with fault description and area index.

Fit criterion: Engineering team leader shall receive request with fault details.

SFR14: UC3, Step 3

Description: The system shall allow ETL to accept the request and confirm that engineer or electrician have been allocated for the repair.

Fit criterion: The request shall be accepted and the repair status shall change.

SFR14.a.1: UC3, Step 3.a.1

Description: *No engineer/electrician available, the line is at low priority*. The system shall indicate that line’s priority is low.

Fit criterion: The ETL shall be able to ignore the request providing the reason for rejection.

SFR14.a.2: UC3, Step 3.b.1

Description: *No engineer/electrician available, the line is at high priority*. The system shall indicate that line’s priority is high.

Fit criterion: The ETL shall be able to suspend lower priority repair and accept the request.

SFR15: UC3, Step 4

Description: The system shall display repair status.

Fit criterion: Valid repair status shall be displayed.

**Use case 4**

SFR16: UC4, Step 1

Description: The system shall provide an option to contact shift manager if duration of the downtime exceeds 30 and there is no engineer/electrician allocated to perform repair.

Fit criterion: Contact manager option shall be displayed.

SFR17: UC4, Step 2

Description: The system shall have the ability to confirm manager’s support request.

Fit criterion: Confirmation shall be possible.

SFR18: UC4, Step 3

Description: The system shall have an option to request immediate engineering support by manager.

Fit criterion: The immediate action option shall be available.

SFR19: UC4, Step 4

Description: The system shall provide facility to confirm that immediate action requests was received by ETL.

Fit criterion: The confirmation option shall be available.

SFR19.a: UC4, Step 4.a.1

Description: *Engineer/electrician unavailable*. The system shall allow manager to reprioritise repairs.

Fit criterion: Immediate repair option shall be available.

**Use case 5**

SFR20: UC5, Step 1

Description: The system shall have facility to deactivate downtime.

Fit criterion: Deactivate downtime option shall be available.

SFR20.a.1: UC5, Step 1.a.1

Description: *Operator/team leader provides the solution*. The system shall have facility to input textual description of solution for the downtime being deactivated.

Fit criterion: Area for textual description of solution shall be available.

SFR20.a.2: UC5, Step 1.a.2

Description: *The stoppage is reoccurring the solution requires an update.* The system shall have facility to update the existing solution.

Fit criterion: The solution update/edit option shall be available.

SFR21: UC5, Step 2

Description: When downtime is deactivated the system shall stop the timer and calculate stoppage time.

Fit criterion: Stoppage duration shall be calculated.

SFR22: UC5, Step 3

Description: The system shall save stoppage duration in the database.

Fit criterion: The databases records shall be updated.

SFR23: UC5, Step 3

Description: The system shall save stoppage description in the database.

Fit criterion: The database records shall be updated.

SFR23.a.1: UC5, Step 3.a.1

Description: *The reason for stoppage is unrecognised.* The system shall accept new description and assign the new stoppage ID to deactivated stoppage. The number of occurrences shall be set to 1.

Fit criterion: The new stoppage ID shall be assigned and the number of occurrences shall be updated.

SFR23.a.2: UC5, Step 3.b.1

Description: *The stoppage is reoccurring.* The system shall use existing stoppage ID if stoppage is reoccurring. The system shall update the number of occurrences.

Fit criterion: Existing stoppage ID shall be used and the number of occurrences shall be updated.

SFR24: UC5, Step 3

Description: The system shall save area index of deactivated stoppage in the database.

Fit criterion: The database records shall be updated.

SFR25: UC5, Step 3

Description: The system shall save solution in the database.

Fit criterion: The database records shall be updated.

SFR26: UC5, Step 3

Description: The system shall assign the current date to deactivated stoppage.

Fit criterion: Valid date shall be assigned to the stoppage and database records shall be updated.

SFR27: UC5, Step 4

Description: The system shall update line’s status.

Fit criterion: Line status shall change.

**Use case 6**

SFR28: UC6, Step 1

Description: The system shall allow user to input hourly scores.

Fit criterion: Correct hourly scores shall be accepted.

SFR28.a: UC6, Step 1.a.1

Description: *No hourly score provided*. The system shall set hourly score to 0 if no score was provided by the user.

Fit criterion: Hourly score shall be correctly set.

SFR29: UC6, Step 2

Description: The system shall calculate performance based on target and hourly scores.

Fit criterion: The hourly and shift performance shall be correctly calculated.

SFR30: UC6, Step 3

Description: The system shall display performance data.

Fit criterion: Performance data shall be correctly displayed.

SFR30.a: UC6, Step 3.a.1

Description: *Performance lower than target, no downtime registered.* The system shall alert the user that target is not achieved while no downtime is registered.

Fit criterion: The alert message shall be displayed.

SFR31: UC6, Step 4

Description: The system shall calculate equipment efficiency based on uptime to downtime ratio.

Fit criterion: Equipment efficiency shall be calculated.

SFR32: UC6, Step 5

Description: The system shall display efficiency data.

Fit criterion: Efficiency data shall be correctly displayed.

SFR33: UC6, Step 6

Description: The system shall display the top three issues affecting efficiency.

Fit criterion: Stoppages with the longest duration shall be displayed.

**Use case 7**

SFR34: UC7, Step 1

Description: The system shall allow user to review the summary of daily performance and efficiency.

Fit criterion: The summary shall be displayed.

SFR34.a: UC7, Step 1.a.1

Description: *Shift has ended*. The system shall produce daily report without user being involved.

Fit criterion: The daily report shall be produced, and database records shall be updated.

SFR35: UC7, Step 2

Description: The system shall allow user to confirm the correctness of report.

Fit criterion: The confirmation option shall be available.

SFR35.a: UC7, Step 2.a.1

Description: *The performance data requires modification.* The system shall allow user to modify performance data if mistakes has been made during the shift and recalculate performance accordingly.

Fit criterion: The summary with amended performance data shall be displayed.

SFR36: UC7, Step 3

Description: The system shall allow user to confirm and produce the report.

Fit criterion: The report shall be successfully finalised.

SFR37: UC7, Step 4

Description: The system shall save performance data in a database.

Fit criterion: Database records shall be updated.

SFR38: UC7, Step 4

Description: The system shall save efficiency data in a database.

Fit criterion: Database records shall be updated.

SFR39: UC7, Step 5

Description: The system shall allow user to print out the daily report.

Fit criterion: Print out facility shall be available.

Use case 8

SFR40: UC8, Step 1

Description: The system shall allow user to request new profile.

Fit criterion: New profile facility shall be available.

SFR41: UC8, Step 2

Description: The system shall allow user to input credentials and confirm request.

Fit criterion: Input space and confirmation option shall be available.

SFR42: UC8, Step 3

Description: The system shall allow administrator to confirm request.

Fit criterion: Request confirmation shall be displayed.

SFR43: UC8, Step 4

Description: The system shall allocate user ID to the new profile.

Fit criterion: The user ID shall be allocated.

SFR43.a.1: UC8, Step 4.a.1

Description: *User’s name already exists.* The system shall alert administrator that profile with the given name already exists.

Fit criterion: Alert message shall be displayed.

SFR43.a.2: UC8, Step 4.b.1

Description: *The new user has the same name as existing user.* The system shall allow administrator to create profile with the same name.

Fit criterion: New user ID shall be allocated to the new profile.

SFR43.a.3: UC8, Step 4.c.1

Description: *The user has been previously registered.* The system shall allow cancelation of the new profile.

Fit criterion: No user shall be added.

SFR44: UC8, Step 5

Description: The system shall set user ID as a password.

Fit criterion: The password shall be set.

SFR45: UC8, Step 6

Description: The system shall allocate access permissions.

Fit criterion: The permissions shall be set accordingly to the role.

SFR45.a: UC8, Step 6.a.1

Description: The system shall allow administrator to unlock additional permissions.

Fit criterion: Permissions shall be unlocked.

SFR46: UC8, Step 7

Description: The new user shall be able to use the system.

Fit criterion: The user shall be able to input name and password to log in and use the system.

**Use case 9**

SFR47: UC9, Step 1

Description: The system shall allow team leader to request profile removal.

Fit criterion: Removal request shall be displayed.

SFR48: UC9, Step 2

Description: The system shall allow team leader to input credentials of the user.

Fit criterion: The input for name and ID shall be available.

SFR49: UC9, Step 3

Description: The system shall allow administrator to search for the user with given credentials.

Fit criterion: Localising users shall be possible.

SFR50: UC9, Step 4

Description: The system shall allow removal of selected profile.

Fit criterion: Remove profile facility shall be available.

SFR51: UC9, Step 5

Description: The system shall not allow removed user to log in.

Fit criterion: Attempts to log in shall be refused.

**Use case 10**

SFR52: UC10, Step 1

Description: The system shall allow user to select production line.

Fit criterion: Selection shall be available.

SFR53: UC10, Step 2

Description: The system shall allow user to select the date.

Fit criterion: Date selection shall be available.

SFR54: UC10, Step 3

Description: The system shall allow user to confirm the selection.

Fit criterion: Confirmation shall be possible.

SFR55: UC10, Step 4

Description: The system shall be able to display historical performance and efficiency data for selected line and date.

Fit criterion: Performance and efficiency summary shall be displayed.

SFR55.a: UC10, Step 4.a.1

Description: *No data for the given date.* The system shall inform user that there is no data for selected line and date.

Fit criterion: No performance and efficiency data shall be displayed.

SFR56: UC10, Step 5

Description: The system shall allow user to finish the review.

Fit criterion: No summary shall be displayed.