IRP: ACS Access Control System (ACS)

# Brief

*3.4. Safety and Access Control System – ACS Access Control System (ACS) controls movement of the personnel in the space. First, it authorises entry/exit from the Facility by the use of access cards and biometric information, the latter being only an option. Also, all personnel and visitors are issued a carry-on badge that enables identification and location of the personnel by using RF-based localisation system. Different access rights are assigned for Office section and Manufacturing section. Presence of personnel in the Manufacturing section is strictly controlled. Also, presence of personnel in the zones that directly associated with the manufacturing (ABS and around ABS) is detected and bottling process suspended as there must be no humans in the vicinity of the machines and the bottling process. Virtual boundaries, implemented using laser beams, are enforced around the ABS.*

# Clock Domains

## Facility Access Domain

**Input Signals**

* onOff (pure signal) – While signal high, operates.
* facReq (Integer) – Facility Request. When high, shows access has been requested, ID of request must be passed into domain

**Variables**

* FacAccessList : array of Integer – Will hold all the possible ID values that are approved to access facilities through the front door

**Output Signals**

* facApprov(pure signal) – High when access has been allowed. While sustained facility door is unlocked

**Operation**

1. While onOff signal low, no operation. When high operation enabled
2. Wait for request to be passed in with ID value
3. ID value is referenced in data structure holding eligible IDs
4. If match found among eligible IDs, output signal sent to unlock door. Door is left unlock for a few moments and then locked again. If no match no action
5. Loop back to 1.

## Main Office Access Domain

**Input Signals**

* onOff (pure signal) – While signal high, operates.
* officeReq (Integer) – Main Office Request. When high, shows access has bee requested, ID of request must be passed into domain

**Variables**

* OfficeAccessList : array of Integer – Will hold all the possible ID values that are approved to access facilities through the front door

**Output Signals**

* officeApprov(pure signal) – High when access has been allowed. While sustained facility door is unlocked

**Operation**

1. While onOff signal low, no operation. When high operation enabled
2. Wait for request to be passed in with ID value
3. ID value is referenced in data structure holding eligible IDs
4. If match found among eligible IDs, output signal sent to unlock door. Door is left unlock for a few moments and then locked again. If no match no action
5. Loop back to 1.

## Manufacturing Access Domain ABS

**Input Signals**

* onOff (pure signal) – While signal high, operates.
* manReq (Integer) – Manufacturing Zone Request. When high, shows access has been requested, ID of request must be passed into domain

**Variables**

* ManAccessList : array of Integer – Will hold all the possible ID values that are approved to access facilities through the front door

**Output Signals**

* manApprov(pure signal) – High when access has been allowed. While sustained facility door is unlocked

**Operation**

1. While onOff signal low, no operation. When high operation enabled
2. Wait for request to be passed in with ID value
3. ID value is referenced in data structure holding eligible IDs
4. If match found among eligible IDs, output signal sent to unlock door. Door is left unlock for a few moments and then locked again. If no match no action
5. Loop back to 1.

## Restriction Domain

**Input Signals**

* onOff(pure signal) – While signal high, operates.
* boundDetect(pure signal) – High while laser is undisturbed. Someone crossing the laser will drive signal low

**Output Signals**

* suspend(pure signal) - Will be outputted so that it can be sent to ABS to pause.

**Operation**

1. While onOff signal low, no operation. Otherwise operate whilst signal is high
2. Await for boundDetect to go low, this will signal that someone has entered the restricted area.
3. While boundDetect low, sustain the suspend signal so no ABS is notified to not operate
4. Once boundDetect high again, halt emitting suspend signal.

## Localization Domain

**Input Signals**

* onOff(pure signal)
* ping(valued signal, Integer)

**Variables**

* PersonList : array of Integer – Will hold all theID values (and thus people) who are currently within facilities and are detected.

**Output Signals**

* trackingList (valued signal, array of Integer) - Will output the current PersonList

**Operation**



# Link Details