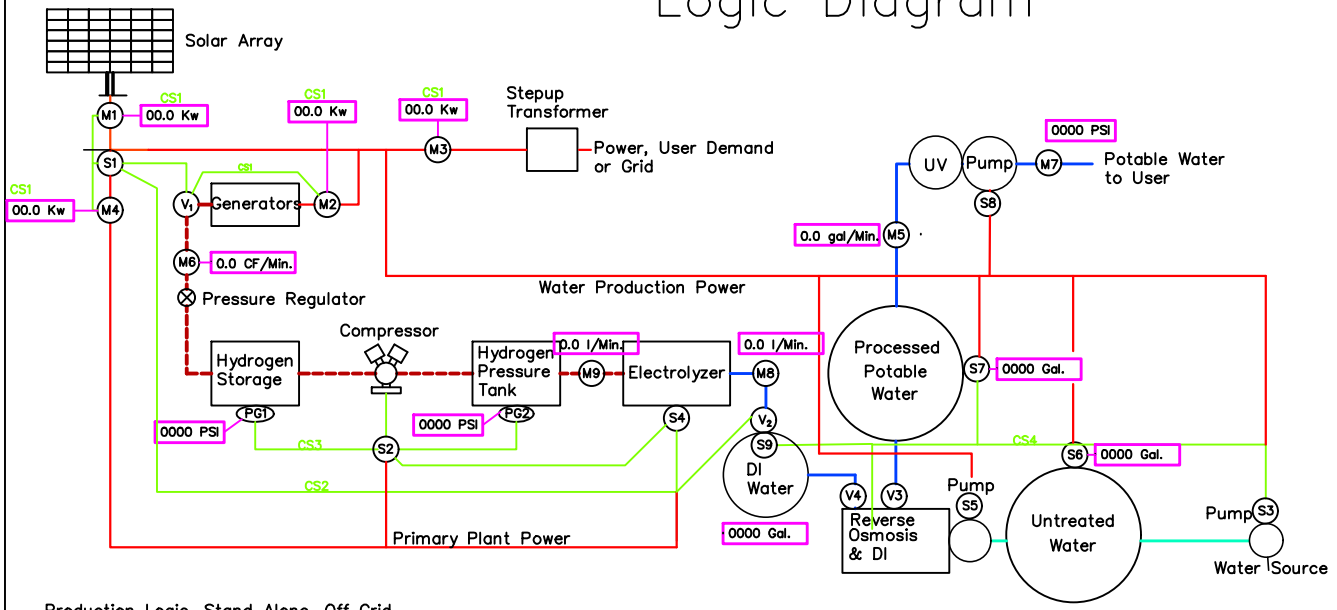
Plant Autimation Logic Diagram



Control Room Readout
AC Power
Hydrogen Gas
Potable Water
Untreated Water
Logic command

M1 Solar Output
M2 Fuel Cell Output
M3 Power Demand
M4 Plant Power Demand
M5 Potable Water Demand
M6 Hydrogen Flow Rate
M7 Pressure in potable water lines
M8 DI Water Flow Rate
M9 H2 Production Flow Rate
V1 Variable Flow Rate Solenoid Valve
V2 Solenoid Controlled Valve
V2 Solenoid Controlled Valve
V2 Solenoid Controlled Valve
PG1 Pressure Gauge & Switch
PG2 Pressure Gauge & Switch
S1 Relay Switch, open–close
S2 Relay Switch, open–close
S3 Relay Switch, open–close
S4 Relay Switch, open–close
S5 Relay Switch, close–open
S6 Float Switch, open–close
S7 Float Switch, open–close
S8 Relay Switch, closed–open
S9 Float Switch, open–close

CS1 Conditional Statement

Production Logic, Stand Alone, Off Grid

CS1 M1 is 10% › M4+M3, then S1 is open
M4+M3 ≥ 90% of M1, then S1 is closed
S1 is closed & M3 is 5% ≤ M1 , then V1 conditionally opens until M1+M2 is 105% > M3
V1 open, M1 › 110% of M3, close V1

CS2 S1 closed, then S2, S4, V2, are closed
S1 open, then S2, S4, V2, are open

CS3 S1 open, PG1 =0 or < 3000 psi, then V2, S2, S4, S5, S9 are open
S1 open, PG1 = 3000 psi, then S2, S4, S5, V2, S9 closed
PG2 = <50 psi, : S2 closed

CS4 M7> 120psi : S8 closed, M7< 120psi : S8 open
S7 closed : S5, V3 closed, S7 open : S5, S3, V3 open
S6 closed : S3 closed, S6 open : S3 open
S9 closed : S3, S5, V4 closed, S6 open : S3, S5, V4 open

Production Logic, Grid Connection

CS1 M1 is >25% of Max solar output, : S1 is open
M1 is <25% of Max solar output, : S1 is closed & V1 open
M1+M3 is >30% of Max solar output, : S1, V1 are open
M1 > 35% of›solar Max, close V1 close V1

CS2 S1 closed, then S2, S4, V2, are closed
S1 open, then S2, S4, V2, are open

CS3 S1 open, PG1 =0 or < 3000 psi, then V2, S2, S4, S5, S9 are open
S1 open, PG1 = 3000 psi, then S2, S4, S5, V2, S9 closed
PG2 = <50 psi, : S2 closed

CS4 M7> 120psi : S8 closed, M7< 120psi : S8 open
S7 closed : S5, V3 closed, S7 open : S5, S3, V3 open
S6 closed : S3 closed, S6 open : S3 open
S9 closed : S3, S5, V4 closed, S6 open : S3, S5, V4 open

Plant Automation Logic Diagram

C-1