

P-Diagram

Document Number: #####
 Title: DC Bus Sub-System, Stack
 Program: Program EFG
 Owner: Rob Wingrove

- NOISE FACTORS**
Piece-to-Piece Variation
- 1 Geometric variability
 - 2 Contact pressure
 - 3 Multiple suppliers
 - 4 Burrs
 - 5 Bends
 - 6
 - 7
 - 8
 - 9
 - 10

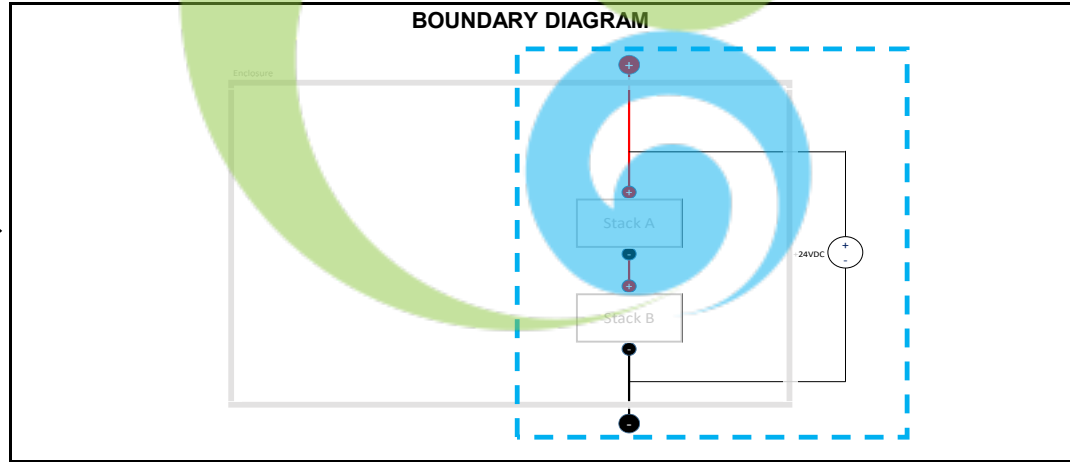
- NOISE FACTORS**
Environment
- 1 Ambient temperature
 - 2 Precipitation
 - 3 Air quality
 - 4 Elevation
 - 5 Fuel quality
 - 6 Dust/mud
 - 7 Humidity
 - 8 Acid gas
 - 9 Condensation
 - 10

- NOISE FACTORS**
Changes over Time
- 1 Fuel cell degradation
 - 2 Contact resistance
 - 3 Electrical connector wear
 - 4 Cable fatigue
 - 5 Wear at interface to CS
 - 6
 - 7
 - 8
 - 9
 - 10

- NOISE FACTORS**
Customer Usage and Duty Cycle
- 1 On/off cycling
 - 2 Amount of regional DC
 - 3 Amount of high speed DC
 - 4 Fuel volume
 - 5 Degree of use
 - 6 Shock and vibration
 - 7 Frozen water at interface
 - 8
 - 9
 - 10

- NOISE FACTORS**
Integration with Other Units
- 1 Cable load
 - 2 P2P Compression System
 - 3 Contact resistance with cell block
 - 4 Cable stay friction
 - 5
 - 6
 - 7
 - 8
 - 9
 - 10

- INPUTS**
- 1 Electrical current (A)
 - 2 Stack voltage (V)
 - 3 Compressive load (P)
 - 4 Heat flow in JJJJ W/m²
 - 5 Heat flow out KKKK W/m²
 - 6 Cable load (L)
 - 7
 - 8
 - 9
 - 10



- IDEAL FUNCTIONS**
- 1 Voltage loss
 - 2 Zero Emissions
 - 3 <=15% perf loss at EOL cond
 - 4 IP67, IPx2
 - 5 Max op temp
 - 6
 - 7
 - 8
 - 9
 - 10

- CONTROL FACTORS**
- 1 Material spec
 - 2 Coating spec/process
 - 3 Lead routing
 - 4 Burr pocket
 - 5 Choice of connectors
 - 6 Material thickness
 - 7
 - 8
 - 9
 - 10

- ERROR STATES**
- 1 Power reduction
 - 2 H2 emissions
 - 3 External leak
 - 4 15% performance loss
 - 5 Over-temperature
 - 6 Coolant leak
 - 7 Failure to start
 - 8
 - 9
 - 10

CLEAN AIR