

Failure Modes & Effects Analysis

System Name: SMART Data Collection and Display (HVAC)
 Major Function: To create awesome Energy use systems
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 Assumptions:

FMEA Number: 1
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Component/ Process	Function or Requirement	Potential Failure Modes	Potential Causes of Failure	Occurrence	Local Effects	End Effects on Product, User, Other Systems	Severity	RPN	Actions Recommended to Reduce RPN	Comments
Sensor and or Meter	Sense Physical Properties	No Data Output	Physical Failure	3	No Data Received	No Data Displayed	9	27	Verify Sensor Functionality through data collection and calibration using designed program.	
			Electrical Failure	3	No Data Received	No Data Displayed	9	27		
			Incorrect Installation	3	No Data Received	No Data Displayed	3	9		
		Incorrect Data output	Miscalibration	1	Incorrect Data Received	Data Displayed is Incorrect	3	3		
			Incorrect installation	1	Incorrect Data Received	Data Displayed is Incorrect	3	3		
	Transmit Sensed Properties									
			Network Protocol Error	1	No Data Processed	No Data Displayed	0	0		
Network	Data Storage									
		Doesn't Store Data	File Corruption (due to Corrupt File)	3	No Data Processed	No Data Displayed	9	27		Out of Scope
			Network Protocol Error	1	No Data Processed	No Data Displayed	9	9	Work with ITS Enterprise Web Applications group to mitigate	
		Server at Storage Capacity	1	No Data Processed	No Data Displayed	9	9	Thin Stored data and/or define needed storage space.		
	Data Erased	File Corruption (due to Corrupt File)	3	No Data Processed	No Data Displayed	9	27		Out of Scope	
		Programming error	1	No Data Processed	No Data Displayed	3	3	Debug program through EWDN Logic Builder Simulations		
		Sensor output misalignment	1	No Data Processed	No Data Displayed	3	3	Data Checks within Program to verify units		
	Data Transfer									
		Slowed Data transmission	File Corruption (due to Corrupt File)	3	No Data Processed	No Data Displayed	9	27	Limit size of data transmitted	Out of Scope
									Limit size of data transmitted	Out of Scope
Filter Data	Select Relevant Data									
		No Data received	Incorrect format selected in design	1	No Data Processed	No Data Displayed	9	9	Debug program code prior to release	
			Server Failure	3	No Data Processed	No Data Displayed	9	27		
	Process Filtered Data									
		Incorrect Data Calculation	Incorrect Algorithm	1	Data Processed is Incorrect	Data Displayed is Incorrect	9	9	Debug program code prior to release	
Analyze/Calculate	Check Data									
		Failure to Detect Error	No Baseline Data	1	Data Processed is Incorrect	Data Displayed is Incorrect	3	3	Incorporate Alarm functions which alert Admins to action	
			Skewed Data	3	Data Processed is Incorrect	Data Displayed is Incorrect	3	9		
Display Data	Medium for User Interface									
		Unreliable Data	Poor Layout (GUI)	1	Data Cannot be Understood	User cannot make informed Decisions	3	3	Consult GUI Experts before release, verify customer buy-in	
			Physical Failure	1	Data Cannot be Understood	User cannot make informed Decisions	3	3		
			Electrical Failure	1	Data Cannot be Understood	User cannot make informed Decisions	3	3		
		Website Goes down	Too much Web Traffic to site	3	Public Site cannot be accessed	No Data Displayed	9	27	Consult with ITS Contact (Ryan Steinmetz) to determine optimal settings	
		System calculation and refreshing capabilities exceeded	3	Public Site cannot be accessed	No Data Displayed	9	27	Consult with ITS Contact (Ryan Steinmetz) to determine optimal settings		