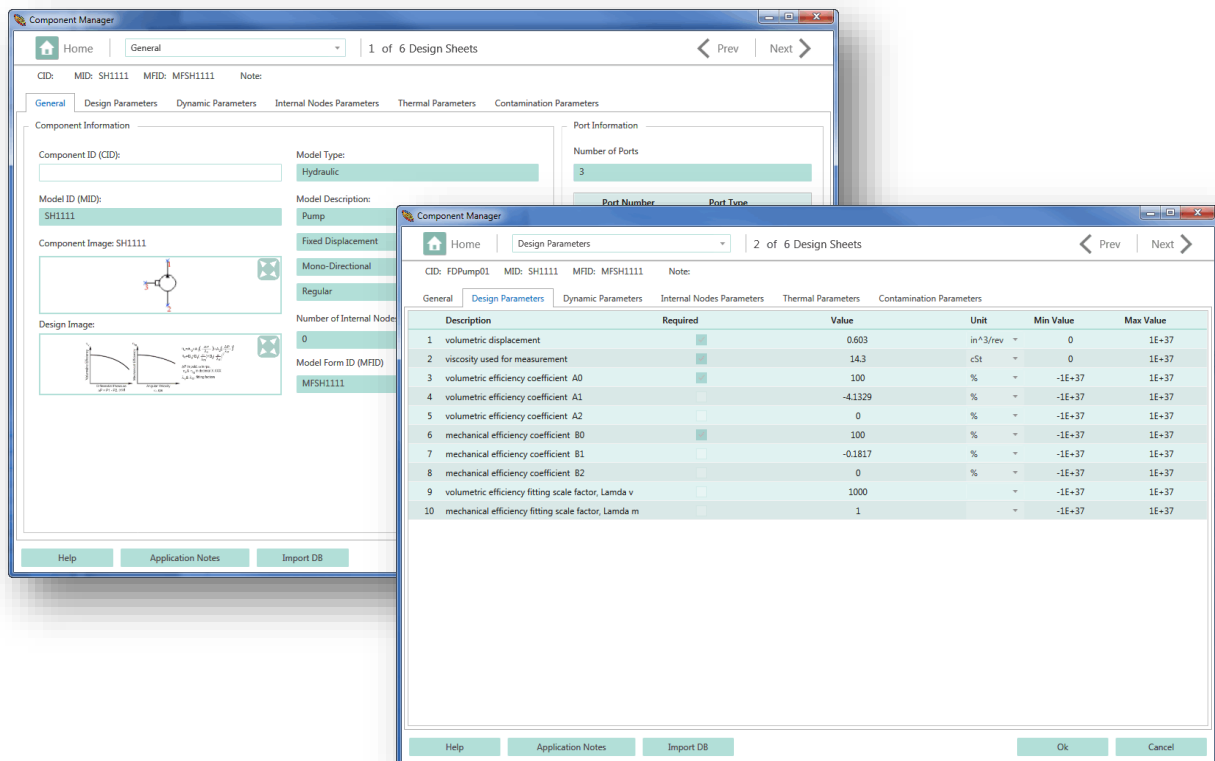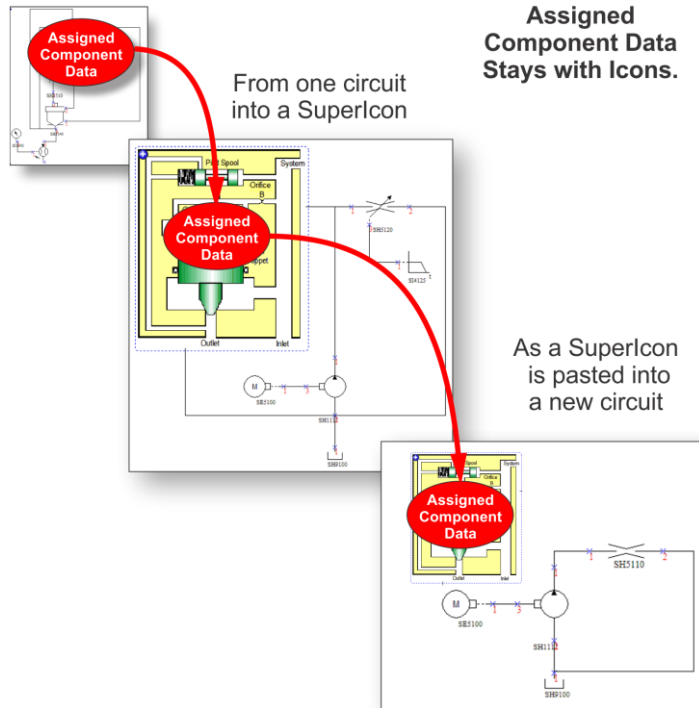# HyPneu V17M02 Release Notes

HyPneu

1. Introducing new interface screens to improve user experience while creating and editing circuits and component data.

2. The current update allows users to seamlessly load previously developed circuits, component data, and simulation results without worries of compatibility issues.

3. Streamlined network installation utilizes the latest web data communication technology and protocol settings for efficient data exchange between client and server computers.

Component Data Manager

1. New user-friendly interface when assigning data to circuit icons.

2. Global component database remains accessible for all circuits.

3. Once component data is assigned to the icons, it is imbedded with the icons of the circuit. This means the user can easily copy and paste icons, supericons, partial circuits or even complete circuits from one system to another without having to re-assign the component data. Furthermore, the pasted icon data as well as the circuit can be edited, modified and rearranged to seamlessly link with the current circuit to fit the needed application.

Assigned Component Data

From one circuit into a SuperIcon

Assigned Component Data Stays with Icons.

As a SuperIcon is pasted into a new circuit

Data Presentation Manager

The new Data Presentation Manager (DPM) uses a refreshing graphical presentation technology to provide the user increased flexibility and control. This allows highly productive data presentation and graphical analysis. Depending on user preferences, the DPM can use either a light or a dark theme.

1. **Real-time graph** –HyPneuPlotRT.

   Powerful upgraded user interface allows user to view simulation result in real time and immediate pinpointed analysis.

Pausing a Simulation Allows Immediate Pinpointed Analysis
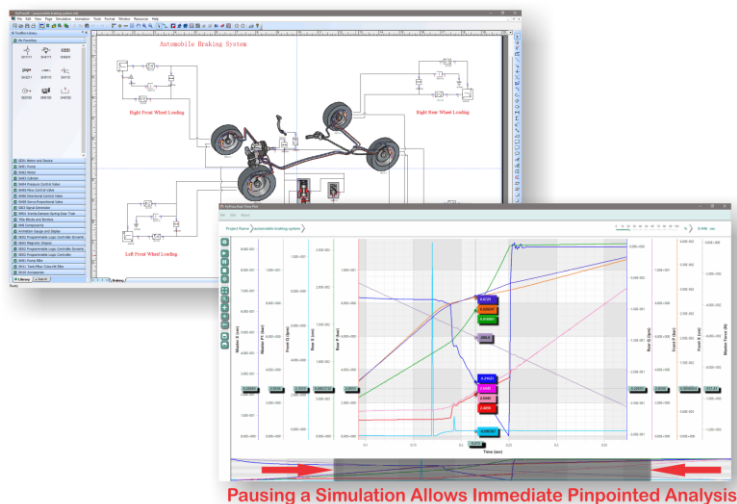
2. **Post-Data Presentation** - HyPneuDPM

Exciting upgraded user interface provides new level of versatility such as a light theme and a dark theme, interactive data labels that follow your cursor, full control over the appearance of each set of data.
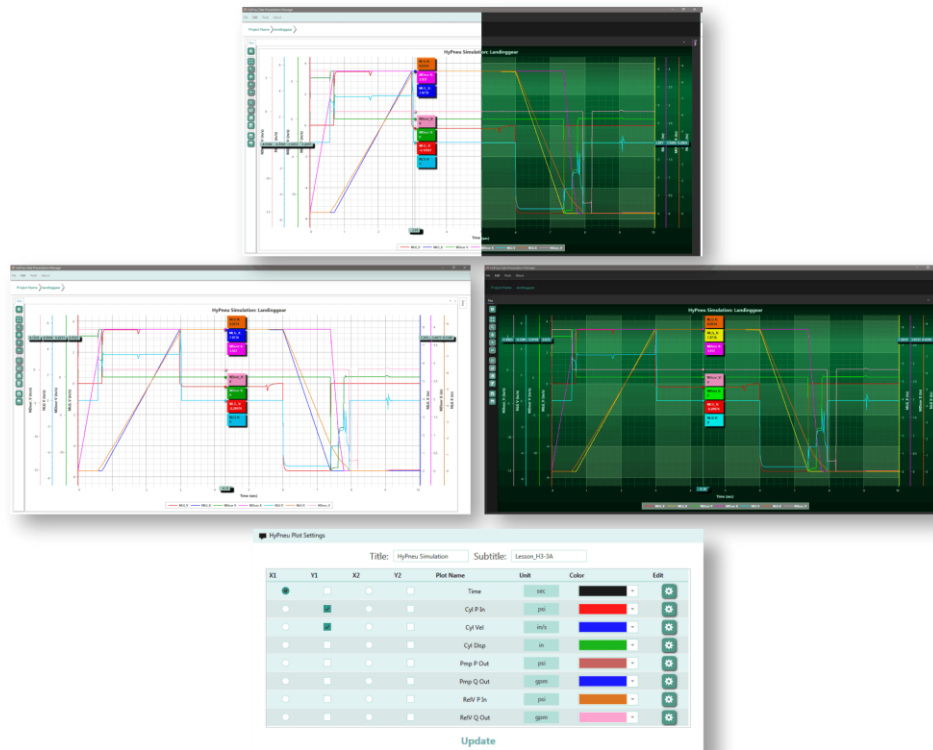
3. **Surface Area Contour (SAC)** -- HyPneuPlot3DSAC

View results in exciting 3D and contour presentation for a speedy overall parameter sensitivity analysis.
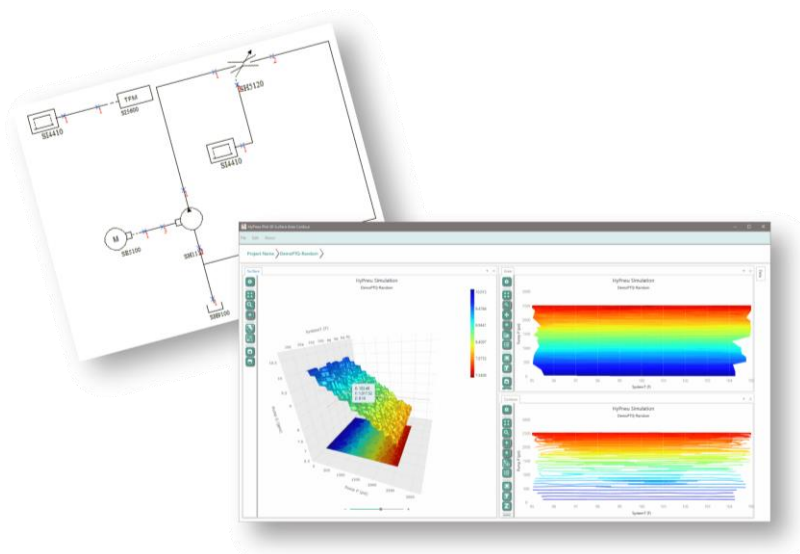
Steady-State Simulation

The upgraded steady-state simulation allows the user to analyze a specific event and produce a printable report.
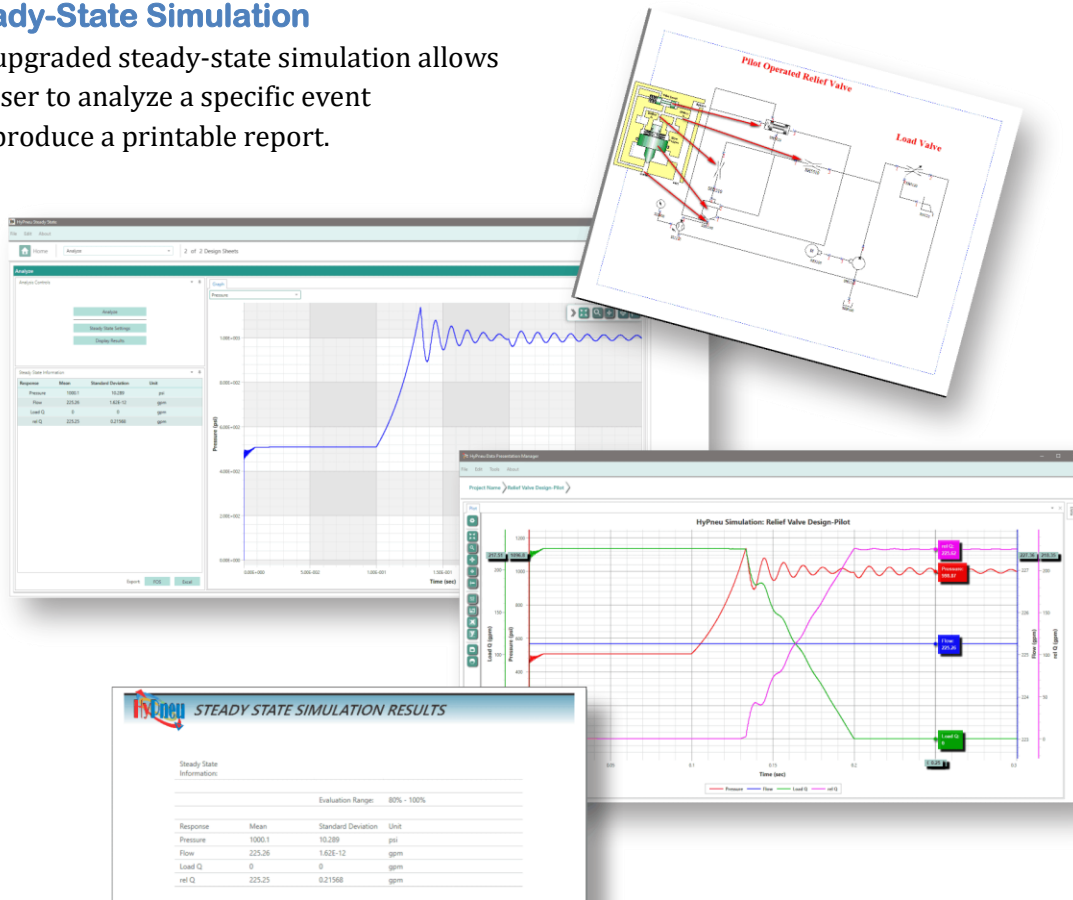
Unit Conversion

The HyPneu Unit converter provides a new interface and now saves all unit conversions performed to a log for quick access.
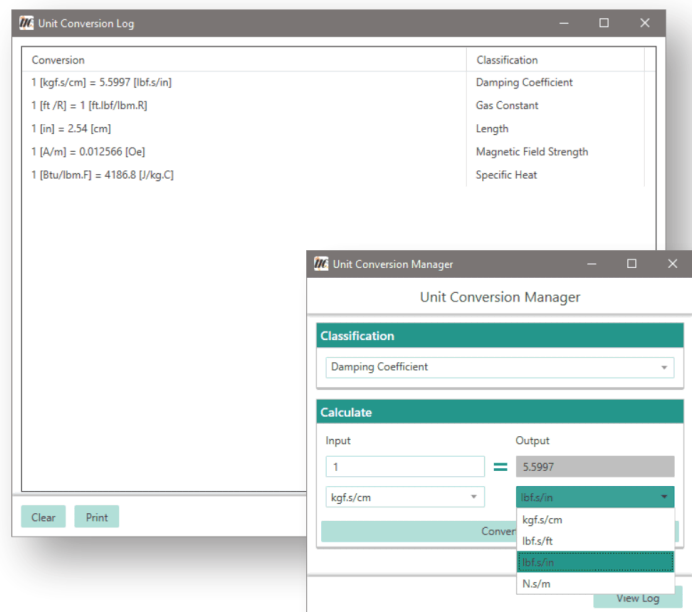
HyPneu Addons

HyPneu Optimizer now offers three powerful options

1. **HyPneu OPT – Dynamic** automates the dynamic performance design process to generate optimal solutions using HyPneu's exclusive embedded global optimization expertise. Utilizes feasible design tactics to fine-tune decision parameters to guarantee performance within a given tolerance zone.

2. **HyPneu Opt – Static** guides the user in determining the best physical characteristics for a product that fits design constraints as determined by various factors such as space geometry, material properties, and other design parameters that do not change over time.


```
10 # 5111 N Perkins Rd., Stillwater, OK 74075, USA
11 # www.BarDyne.com (405) 743-4337
12 # *************************************************
13
14 # alternate math function
15 PI=M.pi
16 #
17
18 # Service Requirements
19 Ps = 2.1e7 # pump working pressure, Pa
20 Qs = 100   # pump working flow rate, lpm
21 Ns = 1000  # driving shaft rotational velocity, RPM
22
23 rippleMax = 0.05  #maximum allowable ripple ratio, x.xx
24
25 # Material Properties
26 E=2.0e11 # material modulus of elasticity, Pa
27 nu=0.3 # material Poisson's Ratio
```

```
1 from math import *
2 from Common import *
3
4 # *************************************************
5 # Piston Pump Design
6 #
7 # Objective: 1. Minimize Cylinder Block Volume
8 #            2. Minimize Flow Ripple
9 #
10 # Copyright BarDyne, Inc.,
11 # 5111 N Perkins Rd., Stillwater, OK 74075, USA
12 # www.BarDyne.com (405) 743-4337
13 # *************************************************
14
15 def Constraint():
16
17     Z = round (z) # number of pistons
18     delta = GetDelta(dp, Z) # minimum wall thickness between piston holes, m
19     Dc = GetDc(dp,Z) # cylinder block outer diameter, m
20     Dp = GetDp(dp,Z,Dc) # piston distribution diameter, m
21     Lb0 = GetLb0(dp) # minimum bore cavity length, m
22     Lb = GetLb(dp,Z,Lr,Lb0) # piston bore length, m
23     Le = GetLe(dp) #  minimum block end section length, m
24
25     qcheck = GetQcheck(dp,Z,Dp)
26     ripple = GetRipple(Z)
27     voe = GetVel(dp,Z,doe) # calculate fluid velocity thru end cap orifice, m/s
```
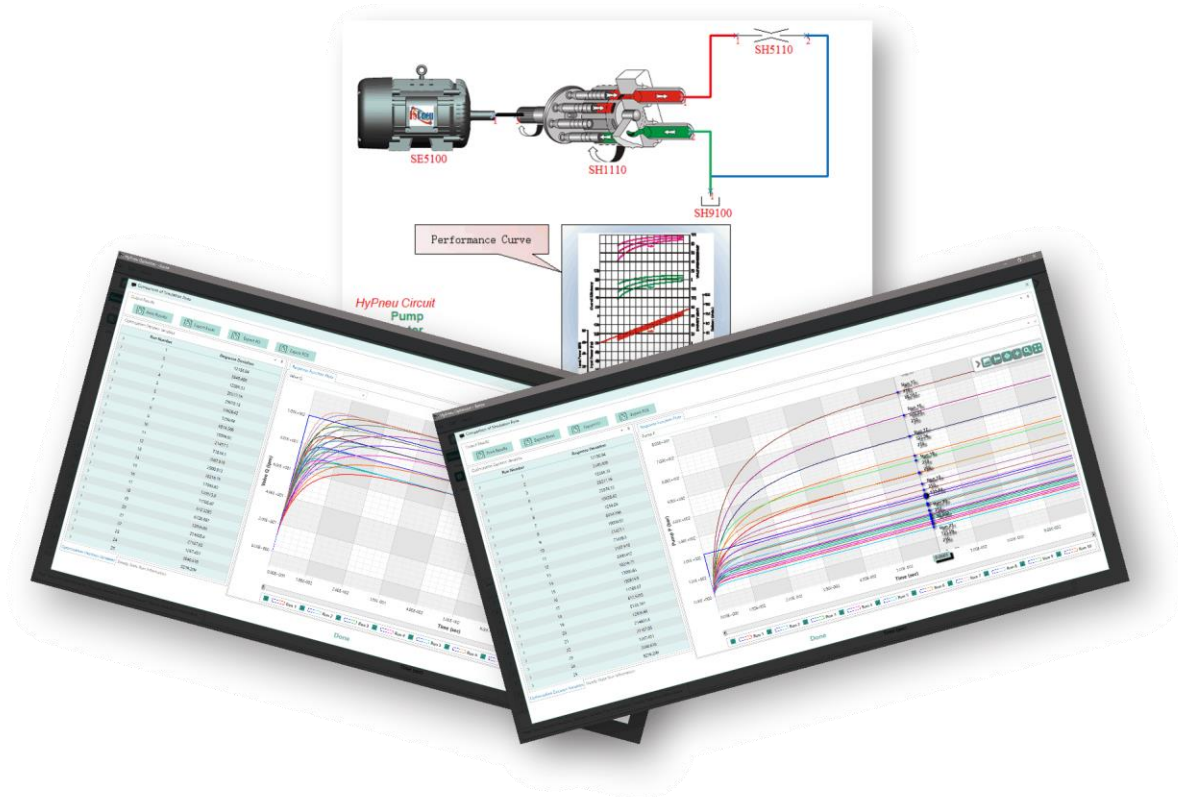
```
1 from math import *
2 from Common import *
3
4 # *************************************************
5 # Piston Pump Design
6 #
7 # Objective: 1. Minimize Cylinder Block Volume
8 #            2. Minimize Flow Ripple
9 #
10 # Copyright BarDyne, Inc.,
11 # 5111 N Perkins Rd., Stillwater, OK 74075, USA
12 # www.BarDyne.com (405) 743-4337
13 # *************************************************
14
15 def Objective():
16     Z = round (z)  # number of pistons
17     Lb0 = GetLb0(dp) # minimum bore cavity length, m
18     Lb = GetLb(dp,Z,Lr,Lb0) # piston bore length, m
19     Le = GetLe(dp) #  minimum block end section length, m
20     Dc = GetDc(dp,Z) # cylinder block outer diameter, m
21     Vct=0..25*pi*Dc**2*(Lb+Le) # cylinder block bulk volume, m^3
22     Vc=GetVc(dp,Z,Dc,Lb,Le,doe) # cylinder block net volume, m^3
23     return Vc
24
```

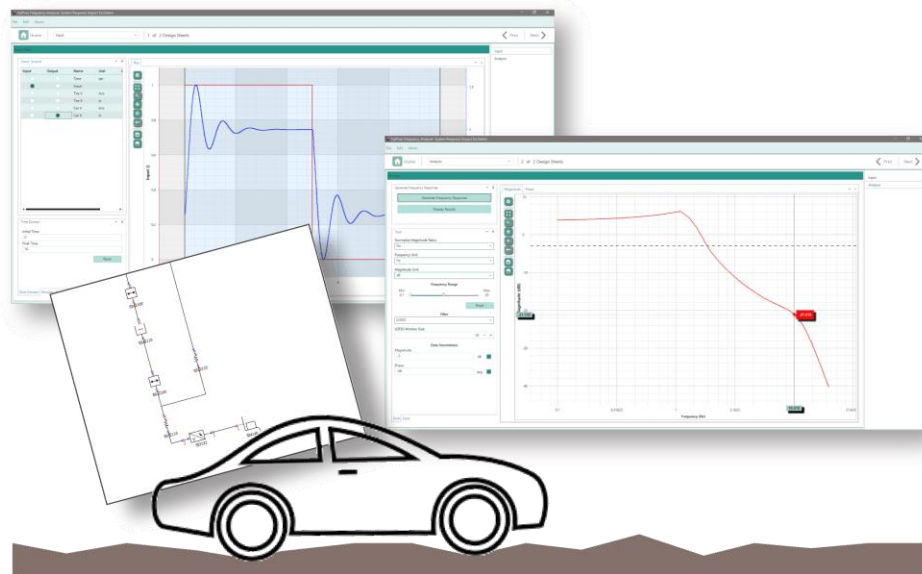| Local Variables		
name	Value	ValueType
Z	9	float
Lb0	0.0033738	float
Lb	0.053934	float
Le	0.0084346	float
Dc	0.053058	float
Vct	0.0001379	float
Vc	2.1673E-05	float

3. **HyPneu Opt – Sense** applies the practical sense of the user to guide the HyPneu simulation process to produce a decision-making data matrix set which has been generated by co-simulating with HyPneu. The Optimizer – Sense assists users to size components for optimal system dynamic performance.
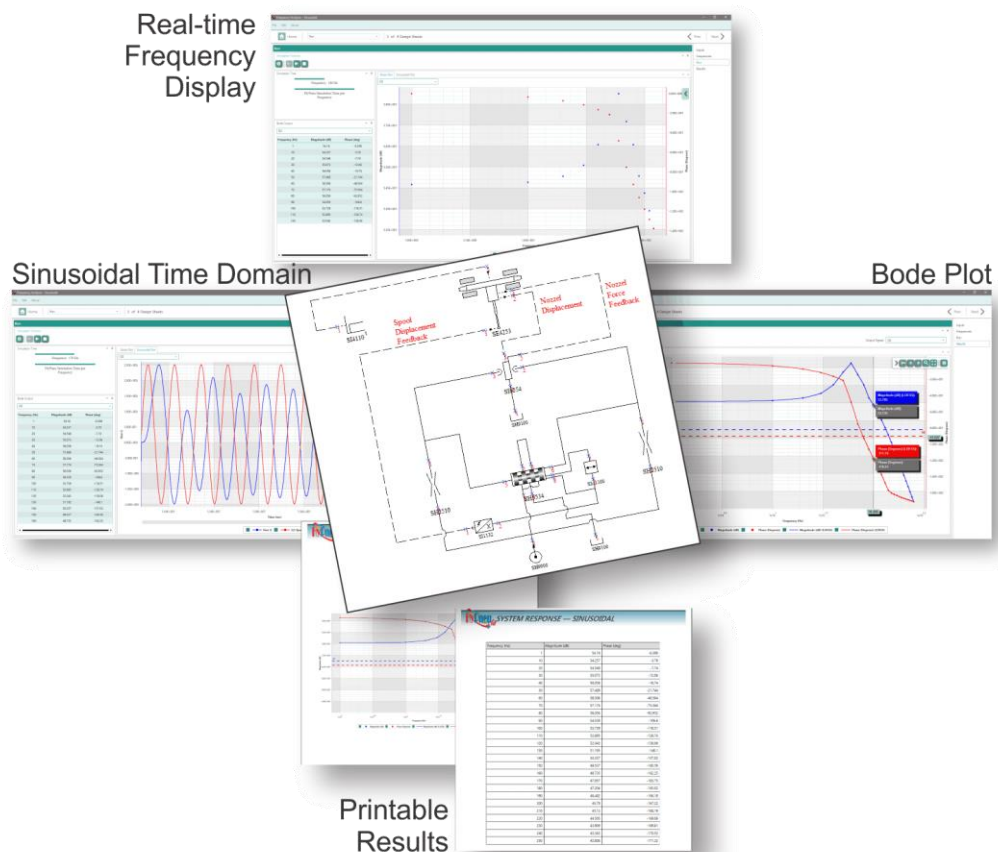
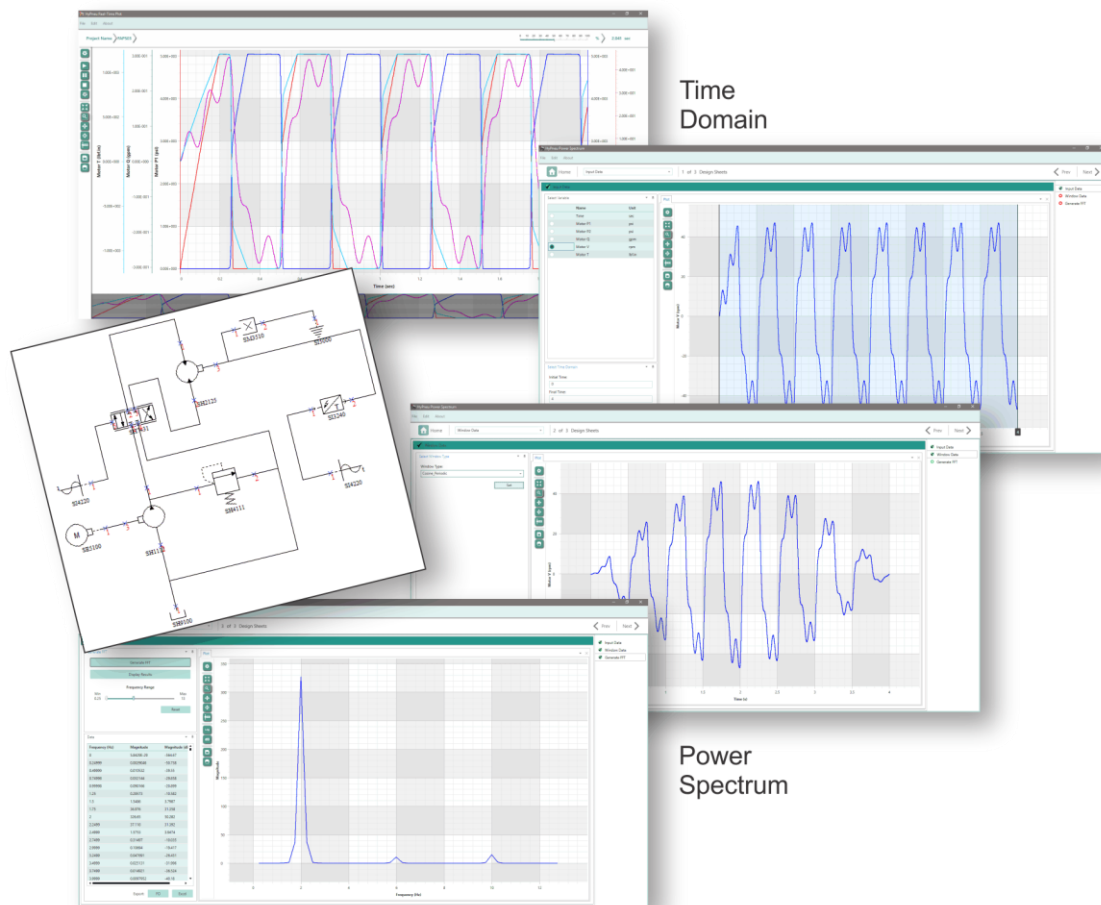## Frequency Analyzer has new interface and graphic presentation

1. **Frequency Analyzer System Response** - HyPneuFASR


2. **Frequency Analyzer Sinusoidal** -- HyPneuFASN

Real-time Frequency Display

Sinusoidal Time Domain

Bode Plot

Printable Results

3. **Frequency Analyzer Power Spectrum** -- HyPneuFASP

Time
Domain

Power
Spectrum

Contamination Control Simulator

Upgrade provides additional plotting capability to present dynamic particle size distribution at a designated point of interest in the circuit and its related ISO and SAE cleanliness codes.
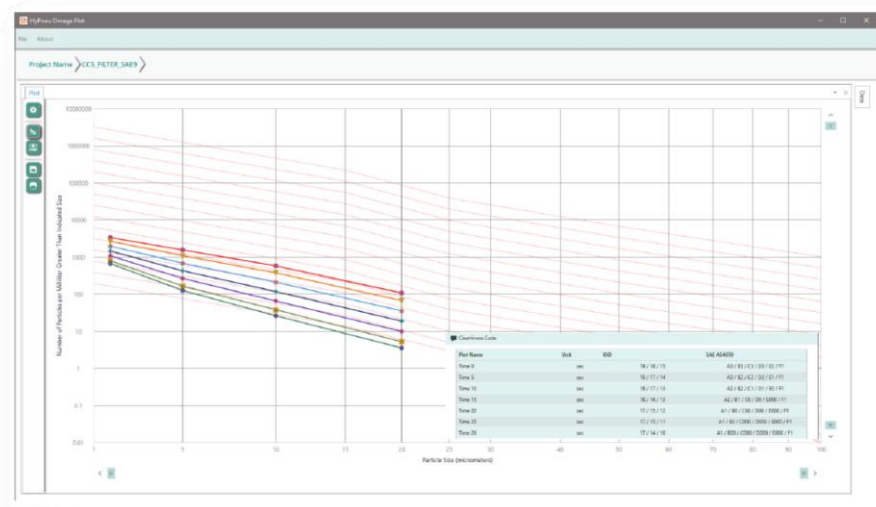
Service Reliability Assurance (SRA) Simulator

Upgrade provides additional plotting capability to characterize the Weibull parameters at any component of interest in the system at any simulated service-life moment.