What is claimed is:

[Claim 1] A multi-fuel engine system, comprising:

a diesel engine having a diesel tank fluidly connected to a combustion chamber by a first supply line;

a natural gas tank fluidly connected to the combustion chamber by a second supply line;

a mixing chamber disposed in-line with the first and second supply lines, wherein the mixing chamber mixes diesel fuel from the diesel tank and natural gas from the natural gas tank to form a multi-fuel mixture before the combustion chamber; ~~and~~

a microcontroller coupled to a sensor monitoring an operational characteristic of the diesel engine, wherein the mixing chamber is responsive to the microcontroller for selectively modulating formation of the multi-fuel mixture.; and

a blow-by gas system including a PCV value disposed in-line with a recirculating line extending from a crankcase of the diesel engine to the mixing chamber.

[Claim 2] The multi-fuel engine system of claim 1, wherein the mixing chamber processes the multi-fuel mixture by expanding, aerating, pressurizing, heating, and/or cooling.

[Claim 3] The multi-fuel engine system of claim 2, wherein the mixing chamber is responsive to the microcontroller for processing the multi-fuel mixture.

[Claim 4] The multi-fuel engine system of claim 1, wherein the mixing chamber mixes the diesel fuel and the natural gas in a range from pure diesel to a 1:1 ratio, in response to a signal from the microcontroller.

[Claim 5] The multi-fuel engine system of claim 1, wherein the natural gas tank comprises a puncture resistant material or carbon fiber.

[Claim 6] The multi-fuel engine system of claim 1, wherein the natural gas tank and the second supply line are pressurized.

[Claim 7] The multi-fuel engine system of claim 1, wherein the operational characteristic monitored by the sensor comprises engine temperature, battery charge, engine RPMs, rate of acceleration, exhaust features, and/or PCV valve position.

~~[Claim 8] The multi-fuel engine system of any of claims 1-7, further comprising a blow-by gas system including a PCV valve disposed in-line with a recirculating line extending from a crankcase of the diesel engine to the mixing chamber.~~

[Claim 98] The multi-fuel engine system of claim 8 1, wherein the recirculating line of the blow-by gas system further comprises an oil filter between the crankcase and the PCV valve.

[Claim ~~10~~9] The multi-fuel engine system of any of claims 1-7 or 8, further comprising a fuel injector rail on the diesel engine and a fuel injector extending from the fuel injector rail to the combustion chamber, wherein the fuel injector is responsive to the microcontroller.

[Claim ~~11~~10] A multi-fuel engine system, comprising:

a diesel engine having a diesel tank fluidly connected to a combustion chamber by a first supply line;

a natural gas tank fluidly connected to the combustion chamber by a second supply line;

a mixing chamber disposed in-line with the first and second supply lines, wherein the mixing chamber mixes diesel fuel from the diesel tank and natural gas from the natural gas tank to form a multi-fuel mixture before the combustion chamber, wherein the diesel fuel and the natural gas are mixed in a range from pure diesel to a 1:1 ratio, and wherein the mixing chamber processes the multi-fuel mixture by expanding, aerating, pressurizing, heating, and/or cooling; ~~and~~

a blow-by gas system comprising a PCV valve disposed in-line with a recirculating line extending from a crankcase of the diesel engine to the mixing chamber; and

a microcontroller coupled to a sensor monitoring an operational characteristic of the diesel engine, wherein the mixing chamber is responsive to the microcontroller for selectively modulating mixture of the diesel fuel and the natural gas to form the multi-fuel mixture, and

wherein the mixing chamber is responsive to the microcontroller for processing the multi-fuel mixture.

[Claim ~~12~~11] The multi-fuel engine system of claim ~~11~~ 10, wherein the natural gas tank comprises a puncture resistant material or carbon fiber.

[Claim ~~13~~12] The multi-fuel engine system of claim ~~11~~ 10, wherein the natural gas tank and the second supply line are pressurized.

[Claim ~~14~~ 13] The multi-fuel engine system of claim ~~11~~ 10, wherein the operational characteristic monitored by the sensor comprises engine temperature, battery charge, engine RPMs, rate of acceleration, exhaust features, and/or PCV valve position.

~~[Claim 15] The multi-fuel engine system of any of claims 11-14, further comprising a blow-by gas system comprising a PCV valve disposed in-line with a recirculating line extending from a crankcase of the diesel engine to the mixing chamber.~~

[Claim ~~16~~ 14] The multi-fuel engine system of claim ~~15~~ 10, wherein the recirculating line of the blow-by gas system further comprises an oil filter between the crankcase and the PCV valve.

[Claim ~~17~~ 15] The multi-fuel engine system of any of claims ~~11-14~~ 10-13 or 14, further comprising a fuel injector rail on the diesel engine and a fuel injector extending from the fuel injector rail to the combustion chamber, wherein the fuel injector is responsive to the microcontroller.

[Claim ~~18~~ 16] A multi-fuel engine system, comprising:

a diesel engine having a fuel injector rail, a fuel injector extending from the fuel injector rail into a combustion chamber, and a diesel tank fluidly connected to the combustion chamber by a first supply line through the fuel injector rail and fuel injector;

a natural gas tank fluidly connected to the combustion chamber by a second supply line;

a mixing chamber disposed in-line with the first and second supply lines, wherein the mixing chamber mixes diesel fuel from the diesel tank and natural gas from the natural gas tank to form a multi-fuel mixture before the combustion chamber;

a microcontroller coupled to a sensor monitoring an operational characteristic of the diesel engine, wherein the mixing chamber is responsive to the microcontroller for selectively modulating formation of the multi-fuel mixture, and the fuel injector is responsive to the microcontroller for adding the multi-fuel mixture to the combustion chamber; and

a blow-by gas system comprising an oil filter and a PCV valve disposed in-line with a recirculating line extending from a crankcase of the diesel engine to the mixing chamber.

[Claim ~~19~~17] The multi-fuel engine system of claim ~~18~~ 16, wherein the mixing chamber is responsive to the microcontroller for processing the multi-fuel mixture by expanding, aerating, pressurizing, heating, and/or cooling.

[Claim ~~20~~18] The multi-fuel engine system of claim ~~18~~ 16, wherein the mixing chamber mixes the diesel fuel and the natural gas in a range from pure diesel to a 1:1 ratio, in response to a signal from the microcontroller.

[Claim ~~21~~19] The multi-fuel engine system of claim ~~18~~ 16, wherein the natural gas tank comprises a puncture resistant material or carbon fiber, and the natural gas tank and the second supply line are pressurized.

[Claim ~~22~~20] The multi-fuel engine system of claim ~~18~~ 16, wherein the operational characteristic monitored by the sensor comprises engine temperature, battery charge, engine RPMs, rate of acceleration, exhaust features, and/or PCV valve position.