CLAIMS

1. A vacuum exhaust system for evacuating a plurality of chambers located within a clean room, said vacuum exhaust system comprising:

a plurality of branch process gas channels each configured to connect to a corresponding chamber;

a shared process channel formed from a confluence of said branch channels and configured to provide a shared fluid communication path for process gas from each of said chambers to flow from said clean room to a process channel outside of said clean room;

a plurality of branch pumpdown channels each configured to connect to a corresponding chamber;

a shared pumpdown channel formed from a confluence of said branch pumpdown channels and configured to provide a fluid communication path for fluid to flow from said clean room to a pumpdown channel outside of said clean room during pumpdown of at least one of said vacuum chambers;

a control module, said control module comprising pressure control circuitry configured to generate control signals for controlling a pressure in said shared process channel; and

a pressure control circuitry being configured to receive signals indicative of a future activity within at least one of said chambers, said pressure control circuitry being configured to generate at least one of said control signals in response to said received signals indicative of said future activity.

2. A vacuum exhaust system according to claim 1, said vacuum exhaust system further comprising a plurality of vacuum pumps for evacuating said plurality of chambers, said plurality of vacuum pumps being configured to connect to said corresponding plurality of vacuum chambers, said plurality of branch process gas channels being connected to a corresponding exhaust of said plurality of vacuum pumps.

3. A vacuum exhaust system according to claim 2, wherein said plurality of vacuum pumps comprise a plurality of high vacuum vacuum pumps configured to operate in the molecular flow region of the gas being evacuated.

4. A vacuum exhaust system according to any preceding claim, said vacuum exhaust system further comprising a lower vacuum vacuum pump configured to operate in a viscous flow region of said gas, said lower vacuum vacuum pump being connected to said process channel located outside of said clean room; and

a pumpdown vacuum pump configured to operate in a viscous flow region of said gas, said pumpdown vacuum pump being connected to said pumpdown channel located outside of said clean room.

5. A vacuum exhaust system according to any preceding claim, wherein said plurality of branch process gas channels are configured such that the effective conductance of each branch channel is substantially the same, the effective conductance varying by less than 20%, preferably less than 10% between each of said branch channels.

6. A vacuum exhaust system according to any preceding claim, said vacuum exhaust system further comprising:

a control module, said control module comprising pressure control circuitry configured to generate control signals for controlling a pressure in said shared process channel.

7. A vacuum exhaust system according to claim 6, said vacuum exhaust system further comprising:

a pressure sensor for monitoring a pressure within said shared process channel;

said pressure control circuitry being configured to receive signals from said pressure sensor and to generate at least one of said control signals in response to at least one of said received signals in order to reduce fluctuations in said monitored pressure.

8. A vacuum exhaust system according to claim 6 or 7, said pressure control circuitry being configured to receive signals indicative of activity within at least one of said chambers, said pressure control circuitry being configured to generate at least one of said control signals in response to at least one of said received signals indicative of said activity.

9. A vacuum exhaust system according to any one of claims 6 to 8, said pressure control circuitry being configured to receive signals indicative of a future activity within at least one of said chambers, said pressure control circuitry being configured to generate at least one of said control signals in response to said received signals indicative of said future activity.

10. A vacuum exhaust system according to any one of claims 6 to 9, said vacuum exhaust system further comprising at least one of:

a plurality of vacuum pumps for evacuating said plurality of chambers, said plurality of vacuum pumps being configured to connect to said corresponding plurality of vacuum chambers, said plurality of branch process gas channels being connected to a corresponding exhaust of said plurality of vacuum pump; and

a process lower vacuum vacuum pump configured to operate in a viscous flow region of said gas, said process lower vacuum vacuum pump being connected to said process channel located outside of said clean room;

wherein at least one of said control signals generated by said pressure control circuitry is a control signal for controlling a pumping speed of at least one of said vacuum pumps.

11. A vacuum exhaust system according to any one of claims 6 to 10, said vacuum exhaust system further comprising:

a purge gas inlet for providing a controlled flow of purge gas to said shared process channel;

at least one of said control signals generated by said pressure control circuitry being a control signal for controlling said flow of purge gas.

12. A vacuum exhaust system according to any preceding claim, said vacuum exhaust system comprising a plurality of valves, said plurality of valves comprising:

a plurality of process valves for isolating or connecting said plurality of chambers to said corresponding plurality of branch process channels; and

a plurality of pumpdown valves for isolating or connecting said plurality of chambers to said corresponding plurality of branch pumpdown channels.

13. A vacuum exhaust system according to claim 12 when dependent on claim 12, wherein at least one of said control signals generated by said pressure control circuitry is a control signal for controlling at least one of said plurality of valves.

14. A vacuum exhaust system according to any one of claims 6 to 13, wherein said control module further comprises pump monitoring circuitry for monitoring signals received from sensors associated with said pumps, wherein said signals received from said sensors comprise at least one of an indication of a current supplied to a motor for driving said pumps, and a signal from a vibration sensor indicative of vibrations generated by said pump.

15. A vacuum exhaust system according to any one of claims 6 to 14, wherein said system further comprises a process vacuum pump configured to operate in a viscous flow region of said gas, said process vacuum pump being connected to said process channel located outside of said clean room and an abatement module configured to receive a flow of gas from said process vacuum pump, said control module being configured to transmit signals to said abatement module indicative of an amount of abatement gas to supply to said abatement module.

16. A vacuum system comprising a plurality of chambers connected to the vacuum exhaust system of any preceding claim.

17. A method of evacuating a plurality of vacuum chambers within a clean room, said method comprising:

connecting a process gas exhaust manifold to a plurality of vacuum chambers such that a plurality of process gas branch channels connect said plurality of vacuum chambers to a shared process channel within a clean room;

connecting a pumpdown gas exhaust manifold to a plurality of vacuum chambers such that a plurality of pumpdown branch channels connect said plurality of vacuum chambers to a shared pumpdown channel within said clean room;

evacuating said plurality of vacuum chambers through said process channels using a vacuum pump located outside of said clean room and connected to said shared process channel;

monitoring a pressure in said shared process channel;

generating control signals for controlling a pressure in said shared process channel to reduce fluctuations in said monitored pressure;

receiving signals indicative of a future activity within at least one of said chambers; and

generating at last one control signal for controlling a pressure in said shared process channel in response to at least one of said received signals in order to reduce fluctuations in said monitored pressure predicted to arise due to said future activity.

18. A method according to claim 17, said method further comprising:

receiving signals indicative of activity within at least one of said vacuum chambers; and

generating at least one control signal for controlling a pressure in said shared process channel in response to at least one of said received signals in

order to reduce fluctuations in said monitored pressure arising due to said activity.

19. A method according to claim 17 or 18, said method further comprising:

receiving signals indicative of a future activity within at least one of said chambers; and

generating at last one control signal for controlling a pressure in said shared process channel in response to at least one of said received signals in order to reduce fluctuations in said monitored pressure predicted to arise due to said future activity.

20. A method according to any one of claims 17 to 19, wherein said control signals comprise signals for controlling a flow of purge gas into said shared process channel; and said method comprises controlling said flow of purge gas in response to said control signals.