CLAIMS

1. A method of monitoring the performance of a cryopump, said method comprising:

following completion of a regeneration cycle controlling said cryopump to perform a predetermined test routine for testing a performance of said cryopump under predetermined conditions;

monitoring said cryopump during said predetermined test routine to collect data indicative of said performance of said cryopump;

storing said data indicative of said performance collected during said monitoring

wherein said step of controlling said cryopump to perform a predetermined test routine comprises:

controlling a variable speed motor controlling a flow of refrigerant through a refrigerating system of said cryopump to operate at a predetermined speed;

setting a first predetermined temperature for a first stage of a refrigerator and a second predetermined temperature for a second stage of said refrigerator; and

controlling heaters associated with said first and second stages of said refrigerator such that said first and second predetermined temperatures are maintained; and

said step of determining the performance of said cryopump comprises determining power applied to said heaters maintaining said first and second predetermined temperatures.

2. A method according to claim 1, said method controlling said cryopump to perform said predetermined test routine periodically after at least a subset of said regeneration cycles.

3. A method according to claim 1 or 2, comprising a further step of determining said performance of said pump from said collected data.

4. A method according to claim 3, wherein said step of determining said performance of said pump comprises comparing data obtained from a current test routine with data obtained from previous test routines.

5. A method according to any preceding claim, said method comprising a further step of outputting data indicative of said pump performance.

6. A method according to claim 5, wherein said step of outputting said data comprises receiving a request for said data and outputting said data in response to said request.

7. A method according to any preceding claim, wherein said predetermined test routine comprises determining a level of cooling provided by said cryopump at a predetermined motor speed.

8. A computer program comprising computer readable instructions which when executed by a processor control said processor to perform steps in a method according to any preceding claim.

9. Control and diagnostic circuitry for a cryopump,

said control circuitry being configured to determine when a regeneration cycle has completed and to control said cryopump following completion of said regeneration cycle to perform a predetermined test routine for testing a performance of said cryopump under predetermined conditions; and

said diagnostic circuitry is configured to:

monitor said performance of said cryopump during said predetermined test routine; and

store data indicative of said performance obtained from said monitoring wherein said control circuitry is configured to control said cryopump to perform said predetermined test routine by:

controlling a variable speed motor controlling a flow of refrigerant through a refrigerating system of said cryopump to operate at a predetermined speed;

setting a first predetermined temperature for a first stage of a refrigerator and a second predetermined temperature for a second stage of said refrigerator; and

controlling heaters associated with said first and second stages of said refrigerators such that said first and second predetermined temperatures are maintained; and

said diagnostic circuitry is configured to determine a power applied to said heaters maintaining said first and second predetermined temperatures.

10. Control and diagnostic circuitry according to claim 9, said control circuitry being configured to control said cryopump to perform said predetermined test routine periodically after at least a subset of said regeneration cycles.

11. Control and diagnostic circuitry according to claim 9 or 10, said diagnostic circuitry being configured to determine said performance of said pump from said collected data.

12. Control and diagnostic circuitry according to claim 11, wherein said diagnostic circuitry is configured to determine said performance of said pump by comparing data obtained from a current test routine with data obtained from previous test routines.

13. Control and diagnostic circuitry according to any one of claims 9 to 12, said diagnostic circuitry being configured to output data indicative of said pump performance.

14. Control and diagnostic circuitry according to claim 13, said diagnostic circuitry being configured to output said data in response to receiving a request for said data.

15. Control and diagnostic circuitry according to any one of claims 9 to 14, wherein said predetermined test routine comprises determining a level of cooling provided by said cryopump at a predetermined motor speed.

16. A cryopump comprising:

a refrigerator unit;

a variable speed motor for controlling a flow of refrigerant through a cooling system of said cryopump; and

control and diagnostic circuitry according to any one of claims 9 to 15.

17. A cryopump according to claim 16,

wherein said refrigerator unit comprises a two stage refrigerator; and said cryopump further comprises:

a temperature sensor for monitoring a temperature of a first stage of said refrigerator and a temperature sensor for monitoring a temperature of a second stage of said refrigerator; and

a heater for supplying heat to said first stage and a heater for supplying heat to said second stage refrigerator.