Claims.

1. Controller unit for controlling the speed of a motor (3) for driving an oil injected compressor (1), said controller unit (9) comprising:

   - a data connection (12, 13, 14) configured to connect the controller unit (9) with measuring means (10, 11);

   - a first module (17) configured to receive data through said data connection (12, 13, 14), wherein said data comprises: a measurement of a working pressure (p_w) of said compressor (1), a working speed (rpm) of the motor (3), and a working temperature (t_w) of said compressor (1);

   - said first module (17) further being configured to receive a measured or retrieved ambient temperature ($T_{ambient}$) value,

   characterised in that the controller unit (9) further comprises

   - a processing unit (18a) provided with an algorithm for determining a minimum working speed (rpm_{min})of the motor (3) on the basis of the measured working pressure (p_w), the ambient temperature ($T_{ambient}$) and a dew point temperature ($T_{dew\ point}$),
     whereby said algorithm is configured to determine the dew point temperature ($T_{dew\ point}$) on the basis of

the measured working pressure (p_w) and the working temperature (t_w);

- a comparator unit (19a) configured to compare the determined minimum working speed (rpm_{min}) with the retrieved working speed (rpm) of the motor (3);
- said processing unit (18a) further comprising a signal generating unit (20a) configured to send a signal to said motor (3) for increasing the working speed (rpm) of the motor (3) to at least the determined minimum working speed (rpm_{min}), if said retrieved working speed (rpm) is lower than the determined minimum working speed (rpm_{min}).

2. Controller unit according to claim 1, characterised in that the data connection (12, 13, 14) is through a wireless connection.

3. Controller unit according to any of the previous claims, characterised in that the controller unit (9) is part of the oil injected compressor (1) or is placed in the vicinity of said oil injected compressor (1).

4. Controller unit according to any of the previous claims, characterised in that the measuring means (10, 11) comprise a pressure sensor (10) and a temperature sensor (11) positioned at a compressed air outlet (5) of a compressor element (2) part of said oil injected compressor (1), for retrieving said measured working pressure (p_w) and working temperature (t_w).

5. Controller unit according to any of the previous claims, characterised in that it comprises a data connection (12) with the motor (3) driving said oil injected compressor (1) for retrieving said working speed (rpm) of the motor (3).

6. Controller unit according to any of the previous claims, characterised in that said first module (17) comprise a wired or wireless data connection (15) to a temperature sensor (16) positioned in the vicinity of the oil injected compressor (1) or to an internet network providing the ambient temperature ($T_{ambient}$) measurement in the geographical area where the oil injected compressor (1) is located.

7. Controller unit according to any of the previous claims, characterised in that the controller unit is configured to receive said measurement of the working pressure (p_w), working temperature (t_w) and the working speed (rpm) of the motor (3) in real time.

8. Controller unit according to any of the previous claims, characterererised in that said algorithm is further configured to compare the working temperature (t_w) with the determined dew point temperature ($T_{dew\ point}$).

9. A method of controlling the speed of a motor (3) driving an oil injected compressor (1), the method comprising at least the following steps:

- measuring a working pressure (p_w) of the oil injected compressor (1) and sending the measured value to a first module (17) of a controller unit (9);
- sending the speed (rpm) of the motor (3) and a measured or retrieved ambient temperature ($T_{ambient}$) to said first module (17);

characterised in that the method further comprises the steps of:

- determining a minimum working speed (rpm_{min}) of the motor (3) on the basis of the measured working pressure (p_w), ambient temperature ($T_{ambient}$) and a dew point temperature ($T_{dew\ point}$);
- comparing the determined minimum working speed (rpm_{min}) with the retrieved working speed (rpm) of the motor (3) and, if said retrieved working speed (rpm) is lower than the determined minimum working speed (rpm_{min}), increasing the working speed (rpm) of said motor (3) to at least the determined minimum working speed (rpm_{min}); and
- measuring a working temperature (t_w) of the oil injected compressor (1), sending the measured value to said first module (17), and determining said dew point temperature ($T_{dew\ point}$) on the basis of the measured working pressure (p_w) and working temperature (t_w).

10. Method according to claim 9, characterised in that it further comprises the step of determining the

minimum working speed (rpm_{min}) on the basis of measured working temperature (t_w), a temperature of the oil (T_{oil}) injected in said oil injected compressor (1) and a retrieved or determined relative humidity (RH).

11. Method according to claim 9 or 10, characterised in that it further comprises the step of increasing the working speed (rpm) of the motor (3) if the working temperature (t_w) is lower than the dew point temperature ($T_{dew\ point}$) to which a tolerance is added.

12. Method according to claim 10, characterised in that it further comprises the step of calculating the temperature of the oil (T_{oil}) on the basis of: the working temperature (t_w), power (P) of the oil injected compressor (1) and oil mass flow ($\dot{m}$).

13. Method according to claim 12, characterised in that the power (P) of the oil injected compressor (1) is calculated as a function of the working speed (rpm) of the motor (3) and the working pressure (p_w).

14. Method according to claim 12, characterised in that the oil mass flow ($\dot{m}$) is calculated as a function of the working pressure (p_w).

15. Method according to any of the claims 9 to 14, characterised in that the method applies a sampling rate of 25 Hertz for retrieving the measured working pressure (p_w) and/or the working temperature (t_w), and/or the speed (rpm) of the motor (3).