In order to prevent the pump and/or the control unit from being damaged, various security systems/protective equipment are used today, such as protective motor switches, fuses, etc., which are arranged to protect the equipment and be triggered before the equipment is damaged. Common to the detrimental operating conditions described above, i.e., if security systems are triggered and/or if the pump arrangement breaks, it is required that service staff makes an emergency turn-out and attends to the error/clogging. These turnouts are expensive *per se* and, moreover, an inoperative pump is expensive for the plant owner.

~~Brief Description of the Objects~~Summary of ~~the~~ Invention

Embodiments of ~~T~~the present invention ~~aims at~~seek to obviate~~ing~~ the above-mentioned disadvantages and failings of previously known cleaning methods and ~~at~~ to provide~~ing~~ an improved method for controlling a pump arrangement. ~~A primary object~~Embodiments of the invention ~~is~~ seek to provide an improved method for controlling a pump arrangement of the type defined by way of introduction, which analyses the load factor of the motor and acts differently depending on the instantaneous operating condition.

~~Another object~~Embodiments of the present invention ~~is~~ seek to provide a method for controlling a pump arrangement, which almost completely prevents the need of emergency turn-outs by service staff.

~~Brief Description of the Features of the Invention~~

~~According to the invention, at least the primary object is achieved by means of the method defined by way of introduction and having the features defined in the independent claims. Preferred embodiments of the present invention are furthermore defined in the depending claims.~~

According to a first aspect of the present invention, a method for controlling a pump arrangement comprising a pump and a control unit, the pump comprising a motor and the control unit being arranged to drive said motor, said motor,

at each individual instant of time, when the pump is in an active state and the motor is driven in a first direction, being associated with a load factor that corresponds to an operating condition of the pump arrangement , the pump arrangement furthermore comprising means for monitoring at least one operating parameter from which the load factor of the motor can be derived, ~~of the type defined by way of introduction is provided, which is characterized in that the same comprises~~ the method comprising the steps of:

- determining a real value of said at least one operating parameter, when the pump is in said active state,
- based on said real value of said at least one operating parameter, determining if an externally applied force is acting on the motor to such an extent that an operating condition detrimental to the pump arrangement is initiated, which is true when the load factor of the motor exceeds a level detrimental to the pump arrangement,
- effecting a state shift from the active state of the pump to an inactive state of the pump if an operating condition detrimental to the pump arrangement is initiated, said state shift comprising the step of the control unit, immediately after it is determined that an operating condition detrimental to the pump arrangement is initiated, abruptly breaking the driving of the motor in said first direction.

Thus, embodiments of the present invention ~~is~~ are based on the understanding that by carrying out different types of measures depending on the load factor of the motor, the pump arrangement is spared and the number of emergency service turn-outs can more or less be entirely eliminated.

According to a preferred embodiment of the present invention, the method also comprises the steps of:
- based on said real value of said at least one operating parameter, determining if an external force is acting on the motor to such an extent that an operating condition straining the pump arrangement is initiated, which is true when the load factor of the motor exceeds a level straining the pump arrangement, and
- effecting a state shift from the active state of the pump to a cleaning state of the pump if an operating condition straining the pump arrangement is initiated.

In this way, the pump arrangement will be differently controlled depending on if the character of clogging corresponds to a detrimental operating condition and a strained operating condition, respectively.

According to a preferred embodiment of the present invention, the method also comprises the step of: