How Many Times Over A Short Timespan Can You Start and Stop An Electric Motor?

Heat is a KILLER for the life and long term survival of electric motors. If we want our electric motors that drive our machines,that make us money to keep on keeping on,then we must consider heat as a major enemy of the long life promised by electric motors.

Repeated starts and stops of electric motors is a bad offender in this matter. The failures can be treacherous in that you may not feel the outside of the motor to be hotter than usual but the motor fails. What we may not realize is that the heat from repeated starts and stops is late to arrive at the surface of the motor. Each start and stop with its associated inrush current is like filling up a thermal bucket and when the bucket is full the motor is out of thermal capacity to dissipate more heat , so it fails.

Depending on the motor, the results can be expensive, very expensive or over the top expensive. Whenever you have to start and stop a motor….THINK….HEAT…KILLS .Sometimes all it takes to be aware of entering a danger zone is an intuitive sense that we may be entering one. Listen to your senses. The more you develop them the more you can depend on them to protect and serve you.

Here is a chart below,offered by Baker, the motor testing equipment manufacturer. It is a sober reminder to stay vigilant.

The table displays the maximum number of starts and stops for line-operated motors as a function of their rating and speed. This illustrates that limiting the frequency of startup, the most stressful portion of motor operation, is highly important. The key is to closely monitor the number of starts, hourly for small or medium motors, and daily for larger motors.

HP	2-Pole A	2-Pole C	4-Pole A	4-Pole C	6-Pole A	6-Pole C
1	15	75	30	38	34	33
5	8.1	83	16.3	42	18.4	37
10	6.2	92	12.5	46	14.2	41
15	5.4	100	10.7	46	12.1	44
20	4.8	100	9.6	55	10.9	48
50	3.4	145	6.8	72	7.7	64
75	2.9	180	5.8	90	6.6	79
100	2.6	220	5.2	110	5.9	97
200	2	600	4	300	4.8	268
250	1.8	1000	3.7	500	4.2	440

A= Maximum Number of Starts per Hour
C= Minimum rest or off time in seconds between starts

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