

ENVIRONMENTAL STUDIES 73

Motors and Drives

HOMEWORK #1

Name: _____

Key Definitions:

- 1) What is a motor (short answer) ?

- 2) What is the difference between kW and kWh?

- 3) What is motor slip?

- 4) What is a fractional horsepower motor?

- 4) Compare the following:
 - 1) Standard efficiency motor

 - 2) Energy efficient motor

 - 3) Premium efficiency motor

- 5) What is the efficiency of a 20 hp “premium” efficiency motor (assume 4-pole, open drip proof)? Please list your reference source.

- 6) Use the equation from the class slides to calculate the following (please show your work):
What is approximate input kW for a 20 hp motor?
(Should the efficiency of the motor be included in this equation?)

How many kWh per year does this motor use if it is on....

Five days per week, 10 hours per day?

Seven days per week, 12 hours per day?

7) Finally, for a brief five minute presentation to the class on March 4th.

Find a motor in your home (or hardware store) where you can read the nameplate data.

(Please find something easily and safely accessible. Make sure the unit is off. Use common sense!)

- Write down all information found on the name plate then try to answer the following questions:
 - How is this motor used?
 - How many hours-per-year is this motor on?
 - How is this motor controlled?
 - How is it maintained?
 - Approximately how old is this motor?
 - Is there any other energy consuming equipment associated with this motor?
 - What is the approximate cost-per-year to operate (ballpark estimate)?
 - What is the approximate cost-to- replace?
 - Anything else about this motor interesting?

Submitting Assignments: [copy and attach the cover sheet on the last page of the syllabus]:

☐ Turn in your paper at the Distance Learning Center, room LCW-102. During regular hours drop them into the Homework Drop Box inside the office and sign in your name on the "Student Coursework Sign-In-Sheet" so there is a record of your paper being turned in there. After hours, drop them into the Homework Drop Box located by the Distance Learning Center back door (facing the California History Center).

☐ Mail your paper to: Julie Phillips/Scott Gould, De Anza College Distance Learning Center, 21250 Stevens Creek Blvd., Cupertino, CA 95014. Include a self-addressed, **postage paid** envelope.

☐ FAX your assignment to either of the two Distance Learning Center FAX machines: (408) 864-5546, or (408) 864-8245.

☐ FAX your assignment to Scott Gould's office directly (650) 723-3191