

CLAIMS

1. A process for connecting two or more permanent magnet motors each having a rotor and a stator in series for an electrical submersible pump comprising:
making a phase identifying mark on each stator of the two motors to be connected;
making a pole identifying mark on each rotor of the two motors to be connected;
using the phase identifying marks to align the phases of the stators; and
using the pole identifying marks to align the poles of the rotors.
2. The process of claim 1, wherein the process further comprises starting a winding on each stator at the phase identifying mark.
3. The process of claim 1, wherein the phase identifying mark comprises a mark machined onto the stator.
4. The process of claim 1, wherein the phase identifying mark comprises a mark painted onto the stator.
5. The process of claim 1, wherein the phase identifying mark comprises a mark adhered onto the stator.
6. The process of claim 1, wherein the process further comprises installing each stator in a motor housing and indicating the location of each phase identifying mark on the exterior of the motor housing.
7. The process of claim 1, wherein the pole identifying mark comprises a mark machined onto the rotor.
8. The process of claim 1, wherein the pole identifying mark comprises a mark painted onto the rotor.
9. The process of claim 1, wherein the pole identifying mark comprises a mark adhered onto the rotor.
10. The process of claim 1, wherein the pole identifying mark comprises a notch on an end of the rotor shaft wherein the notch is configured to mate with a coupling alignment notch.
11. An electric motor for an electric submersible pump comprising:

a first permanent magnet electric motor comprising a first rotor with a first pole identifying mark and a first stator with a first phase identifying mark;

a second permanent magnet electric motor comprising a second rotor with a second pole identifying mark and a second stator with a second phase identifying mark;

wherein the phases of the first and second stators are substantially aligned and wherein the poles of the first and second rotor are substantially aligned.

12. The electric motor of claim 1,

wherein the first permanent magnet motor comprises threads on an inner diameter which turn in a first direction and wherein second permanent magnet motor comprises threads on an inner diameter which turn in a second direction,

the electric motor further comprising a single-piece housing coupling comprising a first end and a second end, the first end of the single-piece housing coupling comprising threads on an outer diameter which turn in a first direction, the second end of the single-piece housing coupling comprising threads on an outer diameter which turn in a second direction,

wherein the first permanent magnet motor is joined to the second permanent magnet electric motor using the threads on the single-piece housing coupling, the threads on the first permanent magnet motor, and the threads on the second permanent magnet motor.

13. The electric motor of claim 1, further comprising a motor housing wherein the exterior of the motor housing indicates the location of the first and second phase identifying mark.

14. The electric motor of claim 1, wherein the first and second permanent magnet electric motor are configured to be driven with a variable speed drive of less than 800 volts.

15. The electric motor of claim 1, wherein the motor comprises from 2-20 poles.

15. The electric motor of claim 1, wherein the pole identifying mark comprises a mark machined onto the rotor.

16. The electric motor of claim 1, wherein the pole identifying mark comprises a mark painted onto the rotor.

17. The electric motor of claim 1, wherein the pole identifying mark comprises a mark adhered onto the rotor.

18. The electric motor of claim 1, wherein the pole identifying mark comprises a notch on an end of the rotor shaft wherein the notch is configured to mate with a coupling alignment notch.
19. The electric motor of claim 1, wherein the rotor comprises a solid steel bar rotor.
20. An electric submersible pump comprising:
 - a power module comprising a first permanent magnet electric motor comprising a first rotor with a first pole identifying mark and a first stator with a first phase identifying mark and a second permanent magnet electric motor comprising a second rotor with a second pole identifying mark and a second stator with a second phase identifying mark, wherein the phases of the first and second stators are substantially aligned and wherein the poles of the first and second rotor are substantially aligned;
 - a head module; and
 - a base module.