

Claims:

1. A portable tong system, comprising:
 - a power tong;
 - a backup tong; and
 - an adapter comprising:
 - a main frame having a base for mounting the backup tong;
 - a mount for mounting the main frame to a positioning system;
 - a leveling frame for torsional connection to the power tong;
 - a suspension mounted to the leveling frame for supporting the power tong;
 - a linear actuator for raising and lowering the leveling frame relative to the main frame; and
 - a torsional arrestor torsionally connecting the leveling frame to the main frame.
2. The system of claim 1, wherein:
 - the torsional arrestor comprises a pair of rails extending upwardly from the base, and
 - the main frame further has a girder connected to the rails and disposed between the leveling frame and the base.
3. The system of claim 2, wherein:
 - the mount comprises a pair of bodies, a pair of upper hangers, and a pair of lower plates,
 - the mount bodies are attached to the rails and the base, and
 - the lower plates have holes for receiving fasteners.
4. The system of claim 2, wherein a stroke length of the linear actuator corresponds to a makeup length of casing joints.
5. The system of claim 4, wherein:
 - the linear actuator comprises a pair of piston and cylinder assemblies disposed in the rails, and

upper ends of the piston and cylinder assemblies are pivotally connected to the rails, and

lower ends of the piston and cylinder assemblies are pivotally connected to the leveling frame.

6. The system of claim 2, wherein:

the torsional arrestor further comprises a linear bearing disposed in each rail, and

each linear bearing is fastened to the leveling frame.

7. The system of claim 6, wherein each linear bearing comprises:

a body;

an outer roller disposed around the body and free to rotate relative thereto about a first horizontal axis; and

an inner roller disposed in the body and free to rotate relative thereto about a second horizontal axis perpendicular to the first horizontal axis.

8. The system of claim 1, wherein the suspension comprises:

two or more sliding pillars mounted to the leveling frame; and

a receptacle for each sliding pillar mounted to the power tong.

9. The system of claim 8, wherein each sliding pillar comprises:

a cylindrical housing having a flange for mounting to the leveling frame;

a mandrel disposed in the housing;

a compression spring disposed between the mandrel and the leveling frame;

and

a ball stud disposed in the mandrel.

10. The system of claim 9, wherein each receptacle comprises:

a cylindrical shroud having an inner diameter greater than an outer diameter of the respective housings, thereby forming an outer clearance therebetween; and

a ball socket disposed in the shroud and having a seat diameter greater than a ball diameter of the ball stud, thereby forming an inner clearance therebetween.

11. The system of claim 1, wherein a travel range of the suspension in each of the vertical and horizontal directions is greater than or equal to ten millimeters.
12. The system of claim 1, further comprising:
a torsion tube extending underneath a body of the power tong and having arms attached to ends thereof,
wherein:
each arm is pivotally connected to a respective side of the power tong body, and
the leveling frame has lugs connectable to the arms.
13. The system of claim 1, further comprising:
a control system mounted to the power tong,
wherein the leveling frame further has a bracket for receiving an electrical power cable for connecting the control system to an electrical power source.
14. The system of claim 1, further comprising the positioning system for horizontally moving the tongs and the adapter over a rig floor.
15. The system of claim 14, further comprising:
a skid; and
a counterweight mounted on the skid,
wherein the positioning system is movable along the skid.
16. A method of using the system of claim 14, comprising:
supporting a string of tubular joints from a floor of a drilling rig;
stabbing a tubular joint into the string;
operating the positioning system to move the tongs adjacent to the string;
engaging the power tong with the tubular joint and engaging the backup tong with the string; and
operating the power tong to screw the tubular joint into the string while operating the linear actuator to maintain the tubular joint in a neutral condition.