

U.S. Patent No. 11,009,162 Claim Listing

No.	Limitation
1[p]	1. A hydraulic fracturing system for fracturing a subterranean formation, comprising:
1[a]	an electric powered, multi-plunger hydraulic fracturing pump having an inlet and an outlet, the outlet coupled to a well associated with the subterranean formation and powered by at least one electric motor;
1[b]	a fluid source, coupled to the inlet of the electric powered pump, the fluid source providing a slurry for injection into the subterranean formation;
1[c]	a hose extending between the fluid source and the electric powered pump, the hose being flexible and having a first diameter;
1[d]	a fitting between the hose and the electric powered pump, the fitting having a first end for receiving the hose at the first diameter and a second end for coupling to the electric powered pump at a second diameter, the second diameter being larger than the first diameter; and
1[e]	a distribution system, positioned between the wellbore and the electric powered pump, the distribution system collecting the slurry from electric powered pumps for injection into the subterranean formation.
2	2. The system of claim 1, wherein the first diameter is approximately 5 inches and the second diameter is approximately 6 inches.
3[a]	3. The system of claim 1, wherein the fitting further comprises: a union at the second end, the union configured to couple to a mating fitting;
3[b]	a shank end at the first end, the shank end receiving at least a portion of the hose, the shank end being crimped over at least the portion of the hose; and
3[c]	a reducer between the union and the shank end, at least a portion of the reducer extending into a groove formed in the union, the union extending farther laterally than the reducer
4	4. The system of claim 3, wherein the fitting is formed as an integral piece with at least one rigid coupling between at least one of the union, the shank end, and the reducer.

5	5. The system of claim 1, wherein the first diameter is particularly selected based at least in part on a threshold, the threshold corresponding to a drop out rate for the slurry.
6	6. The system of claim 1, wherein the first diameter is particularly selected based at least in part on a pressure drop rate, a damage accumulation rate, or a suggested flow rate.
7	7. The system of claim 1, wherein the first diameter is associated with a second threshold, corresponding to a maximum suggested flow rate, an operating window for the electric powered pump exceeding the maximum suggested flow rate.
8[a]	8. The system of claim 1, further comprising: a plurality of electric powered, multi-plunger pumps, each pump receiving fluid from the fluid source;
8[b]	a plurality of hoses having the first diameter; and
8[c]	a plurality of fittings between respective hoses of the plurality of the hoses and respective pumps of the plurality of pumps, each of the pumps having a connection having the second diameter.
9[p]	9. A hydraulic fracturing system for fracturing a subterranean formation, comprising:
9[a]	an electric powered, multi-plunger hydraulic fracturing pump having an inlet and an outlet, the outlet coupled to a well associated with the subterranean formation and powered by at least one electric motor;
9[b]	a fluid source, coupled to the inlet of the electric powered pump, the fluid source providing a slurry for injection into the subterranean formation;
9[c]	a hose extending between the fluid source and the electric powered pump, the hose being flexible and having a first diameter;
9[d]	a fitting between the hose and the electric powered pump, the fitting comprising:
9[e]	a union arranged at a first end, the union having a second diameter, larger than the first diameter, and being configured to couple to the pump;
9[f]	a shank end configured to receive at least a portion of the hose, the shank end being securable to at least the portion of the hose, the shank end including an opening to receive the shank end; and

9[g]	a reducer positioned between the union and the shank end, the reducer being welded to the respective union and shank end at each end, the reducer having an increasing diameter along its axial length, the reducer extending at least partially into the union; and
9[h]	a distribution system, positioned between the wellbore and the electric powered pump, the distribution system collecting the slurry from electric powered pumps for injection into the subterranean formation.
10	10. The system of claim 9, wherein the first diameter is approximately 5 inches and the second diameter is approximately 6 inches.
11	11. The system of claim 9, wherein the first diameter is particularly selected based at least in part on a threshold, the threshold corresponding to a drop out rate for the slurry.
12	12. The system of claim 9, wherein the first diameter is particularly selected based at least in part on a pressure drop rate, a damage accumulation rate, or a suggested flow rate.
13	13. The system of claim 9, wherein the first diameter is associated with a second threshold, corresponding to a maximum suggested flow rate, an operating window for the electric powered pump exceeding the maximum suggested flow rate.
14[a]	14. The system of claim 9, further comprising: a plurality of electric powered, multi-plunger pumps, each pump receiving fluid from the fluid source;
14[b]	plurality of hoses having the first diameter; and
14[c]	a plurality of fittings between respective hoses of the plurality of the hoses and respective pumps of the plurality of pumps, each of the pumps having a connection having the second diameter.