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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
62/743,360	10/09/2018		280	047158.100047		

CONFIRMATION NO. 1519

FILING RECEIPT

132858
Hogan Lovells US LLP
609 Main Street
Suite 4200
Houston, TX 77002



Date Mailed: 10/16/2018

Receipt is acknowledged of this provisional patent application. It will not be examined for patentability and will become abandoned not later than twelve months after its filing date. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Jared Oehring, Houston, TX;
Brandon N. Hinderliter, Houston, TX;
Lon Robinson, Houston, TX;

Applicant(s)

U.S. Well Services, LLC, Houston, TX

Power of Attorney:

Taylor Evans--60506

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 10/15/2018

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 62/743,360**

Projected Publication Date: None, application is not eligible for pre-grant publication

Non-Publication Request: No

Early Publication Request: No

Title

ELECTRIC POWERED HYDRAULIC FRACTURING PUMP SYSTEM WITH SINGLE ELECTRIC
QUINTUPLEX FRACTURING TRAILERS

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER

Title 35, United States Code, Section 184

Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as

set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit <http://www.SelectUSA.gov> or call +1-202-482-6800.

SCORE Placeholder Sheet for IFW Content

Application Number: 62743360

Document Date: 10/09/2018

The presence of this form in the IFW record indicates that the following document type was received in electronic format on the date identified above. This content is stored in the SCORE database.

Since this was an electronic submission, there is no physical artifact folder, no artifact folder is recorded in PALM, and no paper documents or physical media exist. The TIFF images in the IFW record were created from the original documents that are stored in SCORE.

- Drawing

At the time of document entry (noted above):

- USPTO employees may access SCORE content via eDAN using the Supplemental Content tab, or via the SCORE web page.
- External customers may access SCORE content via PAIR using the Supplemental Content tab.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	047158.100047
		Application Number	
Title of Invention	ELECTRIC POWERED HYDRAULIC FRACTURING PUMP SYSTEM WITH SINGLE ELECTRIC QUINTUPLEX FRACTURING TRAILERS		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

Secrecy Order 37 CFR 5.2:

☐	Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)
--------------------------	---

Inventor Information:

Inventor	1				Remove
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Jared		Oehring		
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service					
City	Houston	State/Province	TX	Country of Residence	US

Mailing Address of Inventor:

Address 1	c/o U.S. Well Services, LLC				
Address 2	770 South Post Oak Lane, Suite 405				
City	Houston	State/Province	TX		
Postal Code	77056	Country	US		

Inventor	2				Remove
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Brandon	N.	Hinderliter		
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service					
City	Houston	State/Province	TX	Country of Residence	US

Mailing Address of Inventor:

Address 1	c/o U.S. Well Services, LLC				
Address 2	770 South Post Oak Lane, Suite 405				
City	Houston	State/Province	TX		
Postal Code	77056	Country	US		

Inventor	3				Remove
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	on		Robinson		
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service					

Application Data Sheet 37 CFR 1.76		Attorney Docket Number		047158.100047	
		Application Number			
Title of Invention	ELECTRIC POWERED HYDRAULIC FRACTURING PUMP SYSTEM WITH SINGLE ELECTRIC QUINTUPLEX FRACTURING TRAILERS				
City	Houston	State/Province	TX	Country of Residence	US
Mailing Address of Inventor:					
Address 1	c/o U.S. Well Services, LLC				
Address 2	770 South Post Oak Lane, Suite 405				
City	Houston	State/Province	TX		
Postal Code	77056	Country	US		
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.					Add

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).			
☐ An Address is being provided for the correspondence information of this application.			
Customer Number	132858		
Email Address	hlusdocketing@hoganlovells.com	Add Email	Remove Email

Application Information:

Title of the Invention	ELECTRIC POWERED HYDRAULIC FRACTURING PUMP SYSTEM WITH SINGLE ELECTRIC QUINTUPLEX FRACTURING TRAILERS		
Attorney Docket Number	047158.100047	Small Entity Status Claimed	☐
Application Type	Provisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	11	Suggested Figure for Publication (if any)	

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)
☐ Request Not to Publish. I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application has not and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	047158.100047
		Application Number	
Title of Invention	ELECTRIC POWERED HYDRAULIC FRACTURING PUMP SYSTEM WITH SINGLE ELECTRIC QUINTUPLEX FRACTURING TRAILERS		

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	☒ Customer Number	☐ US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)
Customer Number	132858		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status			Remove
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.			Add

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)ⁱ the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Remove
			Access Code ⁱ (if applicable)
Additional Foreign Priority Data may be generated within this form by selecting the Add button.			Add

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	047158.100047
		Application Number	
Title of Invention	ELECTRIC POWERED HYDRAULIC FRACTURING PUMP SYSTEM WITH SINGLE ELECTRIC QUINTUPLEX FRACTURING TRAILERS		

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013. ☐ NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.	
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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	047158.100047
		Application Number	
Title of Invention	ELECTRIC POWERED HYDRAULIC FRACTURING PUMP SYSTEM WITH SINGLE ELECTRIC QUINTUPLEX FRACTURING TRAILERS		

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

☐ A. Applicant **DOES NOT** authorize the USPTO to permit a participating foreign IP office access to the instant application-as-filed. If this box is checked, the USPTO will not be providing a participating foreign IP office with any documents and information identified in subsection 1A above.

☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

NOTE: Once the application has published or is otherwise publicly available, the USPTO may provide access to the application in accordance with 37 CFR 1.14.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	047158.100047
		Application Number	
Title of Invention	ELECTRIC POWERED HYDRAULIC FRACTURING PUMP SYSTEM WITH SINGLE ELECTRIC QUINTUPLEX FRACTURING TRAILERS		

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Applicant	1	Remove
If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section. Clear		
Assignee	Legal Representative under 35 U.S.C. 117	Joint Inventor
☐ Person to whom the inventor is obligated to assign.		☐ Person who shows sufficient proprietary interest
If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:		
Name of the Deceased or Legally Incapacitated Inventor:		
If the Applicant is an Organization check here. ☒		
Organization Name	U.S. Well Services, LLC	
Mailing Address Information For Applicant:		
Address 1	770 South Post Oak Lane	
Address 2	Suite 405	
City	Houston	State/Province TX
Country	US	Postal Code 77056
Phone Number		Fax Number
Email Address		
Additional Applicant Data may be generated within this form by selecting the Add button. Add		

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	047158.100047
		Application Number	
Title of Invention	ELECTRIC POWERED HYDRAULIC FRACTURING PUMP SYSTEM WITH SINGLE ELECTRIC QUINTUPLEX FRACTURING TRAILERS		

Assignee	1		
Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.			
			Remove
If the Assignee or Non-Applicant Assignee is an Organization check here.			☒
Organization Name	U.S. Well Services, LLC		
Mailing Address Information For Assignee including Non-Applicant Assignee:			
Address 1	770 South Post Oak Lane		
Address 2	Suite 405		
City	Houston	State/Province	TX
Country ⁱ	US	Postal Code	77056
Phone Number		Fax Number	
Email Address			
Additional Assignee or Non-Applicant Assignee Data may be generated within this form by selecting the Add button.			Add

Signature:

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). However, if this Application Data Sheet is submitted with the **INITIAL** filing of the application and either box A or B is **not** checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/Taylor P. Evans/		Date (YYYY-MM-DD)	2018-10-09	
First Name	Taylor P.	Last Name	Evans	Registration Number	60506
Additional Signature may be generated within this form by selecting the Add button.				Add	

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	047158.100047
		Application Number	
Title of Invention	ELECTRIC POWERED HYDRAULIC FRACTURING PUMP SYSTEM WITH SINGLE ELECTRIC QUINTUPLEX FRACTURING TRAILERS		

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Provisional Application for Patent Cover Sheet					
This is a request for filing a PROVISIONAL APPLICATION FOR PATENT under 37 CFR 1.53(c)					
Inventor(s)					
Inventor 1					Remove
Given Name	Middle Name	Family Name	City	State	Country ;
Jared		Oehring	Houston	TX	US
Inventor 2					Remove
Given Name	Middle Name	Family Name	City	State	Country ;
Brandon	N.	Hinderliter	Houston	TX	US
Inventor 3					Remove
Given Name	Middle Name	Family Name	City	State	Country ;
Lon		Robinson	Houston	TX	US
All Inventors Must Be Listed – Additional Inventor Information blocks may be generated within this form by selecting the Add button.					Add
Title of Invention		ELECTRIC POWERED HYDRAULIC FRACTURING PUMP SYSTEM WITH SINGLE ELECTRIC QUINTUPLEX FRACTURING TRAILERS			
Attorney Docket Number (if applicable)		047158.100047			
Correspondence Address					
Direct all correspondence to (select one):					
☒ The address corresponding to Customer Number			☐ Firm or Individual Name		
Customer Number			132858		

The invention was made by an agency of the United States Government or under a contract with an agency of the United States Government.	
☒ No.	
Yes, the invention was made by an agency of the United States Government. The U.S. Government agency name is:	
Yes, the invention was under a contract with an agency of the United States Government. The name of the U.S. Government agency and Government contract number are:	

Entity Status

Applicant asserts small entity status under 37 CFR 1.27 or applicant certifies micro entity status under 37 CFR 1.29

- ☐ Applicant asserts small entity status under 37 CFR 1.27
- ☐ Applicant certifies micro entity status under 37 CFR 1.29. Applicant must attach form PTO/SB/15A or B or equivalent.
- ☒ No

Warning

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Signature

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Signature	Taylor P. Evans/			Date (YYYY-MM-DD)	2018-10-09
First Name	Taylor P.	Last Name	Evans	Registration Number (If appropriate)	60506

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PROVISIONAL PATENT APPLICATION

Attorney Docket No.: 047158.100047

Inventors: Jared Oehring
Brandon Hinderliter
Lon Robinson

**Electric Powered Hydraulic Fracturing Pump System with Single Electric Quintuplex
Fracturing Trailers**

Description of the Invention

[0001] Hydraulic Fracturing is a technique used to stimulate production from some hydrocarbon producing wells. The technique usually involves injecting fluid into a wellbore at a pressure sufficient to generate fissures in the formation surrounding the wellbore. Typically, the pressurized fluid is injected into a portion of the wellbore that is pressure isolated from the remaining length of the wellbore so that fracturing is limited to a designated portion of the formation. The fracturing fluid slurry, whose primary component is usually water, includes proppant (such as sand or ceramic) that migrate into the fractures with the fracturing fluid slurry and remain to prop open the fractures after pressure is no longer applied to the wellbore.

[0002] In order to fracture a formation, the hydraulic fracturing fluid must be pumped into the formation at very high pressures. This is typically accomplished using powerful pumps, known as hydraulic fracturing pumps. In the past, such pumps have been powered have been powered by large, dirty, engines, such as diesel engines. According to the present technology, however, Applicants have developed a system whereby the hydraulic fracturing pumps and other equipment necessary or useful to the operation can be powered by electric motors.

[0003] Because of the pressures required in hydraulic fracturing operations, the motors that power the pumps must be powerful, and appropriate safety and other considerations must be accounted for through the use of certain equipment such as variable frequency drives, and transformers. Certain embodiments of the present technology contemplate that such equipment can be contained together, on a single trailer, or consolidated into a few trailers.

[0004] The present technology provides numerous advantages over known, and in particular non-electric, hydraulic fracturing systems. For example, the technology provides the following features:

- Improved mobility by placing transformers on the pump trailer. In other words, the transformer can sit on the same platform (e.g., trailer, skid, body load) as the variable frequency drive (VFD), motor control center, and frac pump. This allows a single high voltage cable, 13.8kV to run from the switchgear to the pumping unit;
- Liquid cooling for a variable frequency drive (VFD) system;
- Ladders and handrails on the gooseneck of the trailer platform so that electricians can safely connect components directly to transformers;
- A roller system on the gooseneck of the trailer to allow electricians to smoothly pull cables onto the gooseneck without damaging the cables;
- A VFD liquid cooling system on the gooseneck of the electric pump trailer;
- A motor control center on the gooseneck of the trailer with ladders and handrails to allow easy maintenance;
- A VFD installed on the trailer;
- A VFD and human machine interface (HMI) screen on the same service platform to allow for maintenance to work on the VFD and oversee pump controls from the same physical location;
- A rain guard to protect equipment and personnel conducting VFD and HMI maintenance.

[0005] Referring to the drawings, there is shown an electric fracturing trailer that is capable of pumping inhibited acid and other proppant laden stimulation fluids into a well, and that is remotely operated from a control unit. The electric motor is capable of delivering up to 3,000 brake horsepower (BHP) or approximately 2500 hydraulic horsepower (HHP) based on efficiency losses, pump limitations, and varying conditions at the time of operations.

[0006] According to some embodiments, while delivering full horsepower without exceeding the pump ratings, there are no components that will vibrate with excessive amplitudes in resonance with the forcing vibrations of the electric motor or pump. Also, due to transmitted torque and the flexibility of the trailer and mounting systems, there are excessive rotational vibrations of the electric motor or pump are reduced or eliminated.

[0007] In some embodiments, the unit can be capable of operating during prolonged pumping operations. In addition, the unit can typically be capable of operating in temperature ranges of about minus forty degrees Celcius (-40C) to about fifty five degrees Celcius (55C).

[0008] The trailer system can be a heavy-duty single drop trailer with the following features:

- Heavy-duty twin beam construction;
- 52" king pin setting;
- Landing legs rated for 160,000 lbs.;
- Air ride suspension;
- Heavy-duty tri or quad axle configuration;
- Anti-lock brake system (ABS) brakes, air type;
- 11.00 R 22.5 Radial tires;
- 2" SAE king pin with rub plate;
- Light mounted stop/turn clearance;
- Mud flaps;
- Rear bumper with tow hook;
- Running lights for highway use;
- Front and rear fenders

[0009] There can also be installed on the unit a horizontal alternating current (AC) cage induction motor. The motor can have the following performance characteristics and features:

- Up to 3000 horsepower (HP) or more;
- A voltage of up to 690 volts (V) or more;
- 3 phase motor;

- Insulation class H;
- Form wound;
- Single shaft;
- New oilfield hub installed;
- Anti-condensation strip heater installed;
- 100 ohm platinum resistance temperature detectors (RTDs) installed on windings (2 per phase);
- Two cooling blower rated 15 HP, 3600 revolutions per minute (rpm), 460 V.

[0010] The coupling utilized for connecting the electric motor to the pump may not exceed the manufacturer's recommended maximum angle under normal operation condition. The coupling can include a guard with an access panel to enable the pump to be turned without guard removal.

[0011] The unit's main pump can be a quintuplex pump with the following features:

- Stainless steel fluid end;
- Main discharge connection;
- Bleed connection;
- Center gauge connection;
- Zoomie suction manifold

[0012] The 6" zoomie suction manifold can extend to the edge of the unit. The manifold can terminate with two 6" winged union connections, and can include two butterfly valves. A removable pulsation dampener can be installed in the inlet side.

[0013] The pump's rear discharge port can be connected to the discharge manifold via 3" sub-connections. A 2" connection can be installed on the pump center gauge opening, and is utilized for the unit pressure transducer.

[0014] The rear discharge manifold can consist of 3" lines and a 3" check valve. The rear discharge manifold can extend to the back of the trailer.

[0015] An electronically-powered grease pump system with pumping elements can be installed to provide lubricant to the plungers. This system can be equipped with a pump speed input to adjust lubrication timing based on speed.

[0016] The Power end of the pumps can be lubricated by a hydraulic pump driven by an auxiliary electric motor. The power end lubrication system can include all components, such as relief valve, filters, instrumentation, plumbing, and lube oil reservoir.

[0017] The transformer system can comprised of a 3,000 kVA step down transformer and associated electrical components mounted on the trailer. In addition, the transformer enclosure structure can be constructed and braced for portable movement and has the following features:

- Heavy-duty construction;
- Copper ground bus;
- NEMA 3R (outdoor ventilated);
- Enclosure is primed with ANSI 61 paint finish.

[0018] The 3,000 kVA step down transformer can have the following features:

- 3-phase 60 hertz, 80/80 degree C rise, AA/FFA;

- 7.0 percent impedance with +/- ANSI standard tolerance;
- Phase relation Dyn1;
- The high voltage 13800 delta with the following features:
 - 95 KV BIL;
 - Taps;
 - Copper conductor;
- The low voltage 600Y/346 can have the following features:
 - 30 DV BIL;
 - Taps;
 - Copper conduction;
- Application, rectifier duty, 6 pulse;
- Core/coil with HV to LV electrostatic shield and K-factor rating;
- Monitoring with control power and temperature monitor;
- Interconnect cables from the switchgear to VFD with 545 DLO cables installed to connect the transformer system to the VFD.

[0019] The VFD system is designed to meet the electrical AC drive requirements for electric frac trailers that utilize a 3 phase, 60 hertz, 690 volt electrical power source. The system can be built in accordance with NEMA, ANSI, and NFPA regulations. The system meets the harsh environmental conditions typically found in oilfields.

[0020] The VFD can have the following ratings and specifications:

- 650 V motor voltage;
- Drive current of 2429 A;
- Overload rating of 110% for 60 sec;

- Supply voltage of 690 V, 6 pulse;
- Supply frequency of 60 hz;
- Inverter modules;
- Cooling system with water/glycol.

[0021] Each drive can include the following:

- 2500A circuit breaker with UVR trip coil;
- Input line reactors;
- Semiconductor fuses with blown-fuse switches;
- Control components;
- Liquid cooled rectifiers;
- 3 inverter IGBT modules;
- 3 SMPS modules;
- Shielded ribbon cables;
- Digital controller with parameter based operations and I/O board;
- Door mounted HMI for setup, monitoring, and diagnostics;
- MV 3000 I/O panel;
- Control power transformer;
- 24 V power supply;
- Relays, indicating lights, and emergency stop push button

[0022] The VFD can include welded stainless steel piping coolant headers with hose connections to the modules. In certain embodiments, stainless steel piping can be used for VFD module headers. Each module can connected to the supply and return headers with a ¾” hose and isolation valve.

[0023] The VFD enclosure can be an IP66 enclosure and can have the following features:

- Two internal heat exchangers are supplied for removing heat from the air inside of the drive enclosure.
- Four frames are supplied in the enclosure for power cabling, control cables, and piping.
- The VFD enclosure is covered by a rain shield which extends out over the service platform to protect the components from rain while being serviced.

[0024] The unit can have a dry type 3 phase, 60 hz, power distribution transformer with a 690 volt primary, and a 240/120 V secondary with taps.

[0025] The Power control enclosure can be an outdoor weather-proof enclosure. The structure can be constructed and braced for portable movement, and can have some or all of the following features:

- Access panels;
- All external off unit connections wired to plug-in connectors accessible from outside;
- Primed and finished painted inside and out;
- LED external lighting;
- Cooling provided via liquid cooled radiator;
- Frac pump motor can be hard wired on the unit.

[0026] The 690V power Distribution Panel/Motor Control Center can be fed by a circuit breaker independent from the VFD circuits. It can have the following features:

- One MCC;
- Seismic zone 4;
- 400 amp main bus;
- Rating: 42,000 AIC;

- 600 V;
- 60 hz;
- 3 phase, 3 wire

[0027] There can be four size 1 full voltage non-reversing starters of 10 HP with a hands off auto switch. Alternatively, there can be two size 2 full voltage non-reversing starters of 25 HP with a hands off auto switch. Furthermore, there can be one lighting panel, 150 A, with circuit breakers as required.

[0028] Supplied and installed on each of the pump discharge units can be a 0-15,000 psi pressure transducer with a hammer union connection. The transducers can be installed with a protective guard. In addition, there is a single touchscreen display for local pump control.

[0029] The unit can come installed with either Ethernet communications or RS-485 serial. It may also be equipped with wireless communications to sensors in lieu of cabled communication and sensor connections.

[0030] In some embodiments, the unit can also has the following miscellaneous features:

- An access hatch on the coupling guard;
- Cable gland protection;
- Check valve bracket support;
- Spools for the frac cables;
- Step grip tape on the handrails and ladder;
- Grounding for the trailer;
- Ladder/stair access with handrails;

- Land gear crank;
- Oil radiator bracket;
- Power end tank temp sensor;
- Fire extinguisher;
- Slide out work platform to work on the pump, motor, and motor cooling blowers;
- Slide out work platform has a safety hinged door to prevent falls;
- The VFD can have over pressure trip wiring and wireless capabilities;
- Vic Clamps;
- Transformer louver design large metal mesh filter to prevent dust/dirt intrusion;
- Load shedding (via intelligent pump control throttle control and other load responses).

[0031] Alternate embodiments provide motors that can be powered by, for example:

- one or more turbine generators;
- one or more diesel generators;
- one or more natural gas generators ;
- grid power;
- any other electrical source;
- a combination of the above.

[0032] In addition, alternate embodiments can provide pump units:

- Mounted on a trailer, skid, bodyload, or any other platform;
- Having multiple frac pump units;
- Having diesel pumps as well as electric pumps (hybrid fleet);
- Having an intensifier pump connected hydraulically to the pumps;

- Wherein the pump can be used to pump down a tool into the well instead of doing pressure pumping;
- Having different voltages.

[0033] Moreover, the components described herein can be separated and put on separate platforms that may themselves be on a trailer, skid, body load, or other platform.

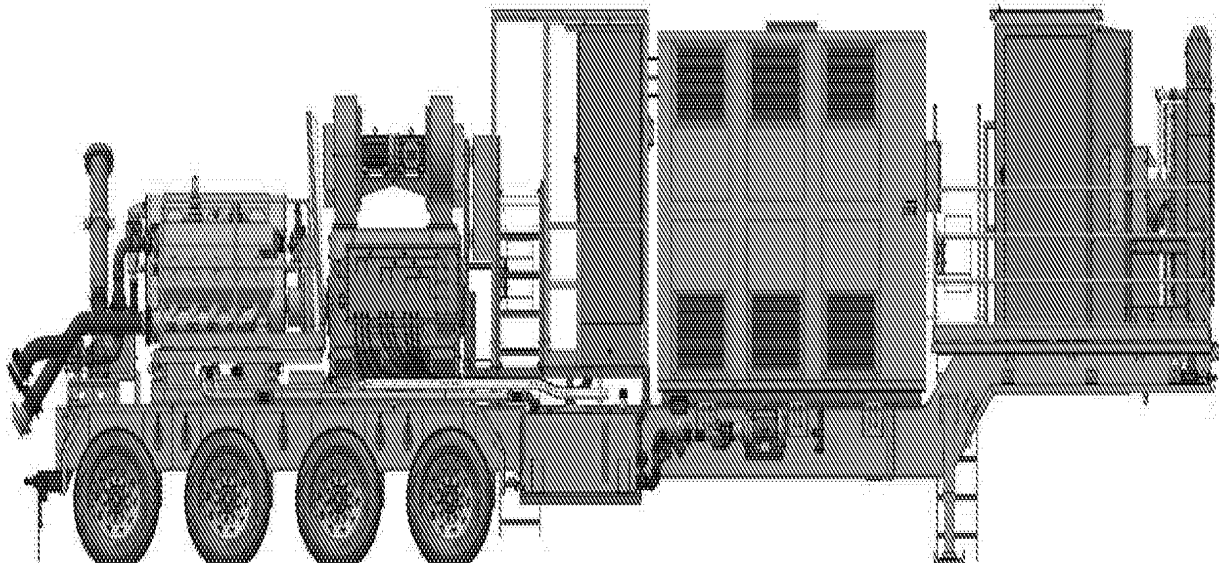


Figure 1: Side view of unit with pump, slide out platform for service of pump-motor-motor blowers, motor, coupling, HMI, HMI-VFD platform with rain cover, VFD, transformer, service platform for transformer, MCC, cooling, and rollers on gooseneck for cables.

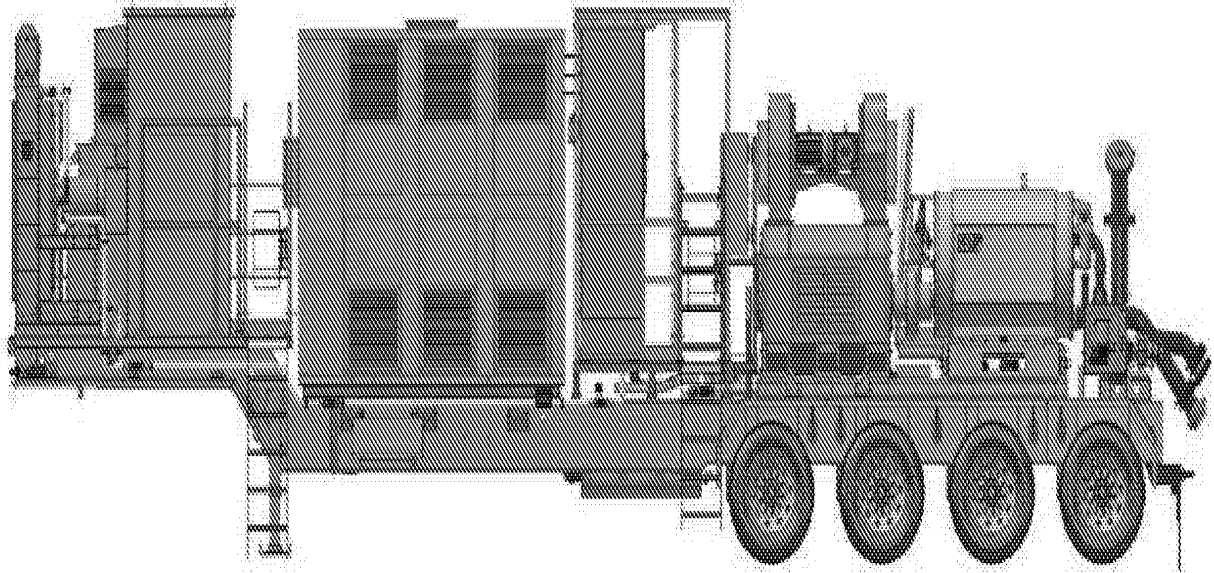


Figure 2: Side view of unit with pump, motor, coupling, HMI, HMI-VFD platform with rain cover, VFD, transformer, service platform for transformer, MCC, cooling, and rollers on gooseneck for cables.

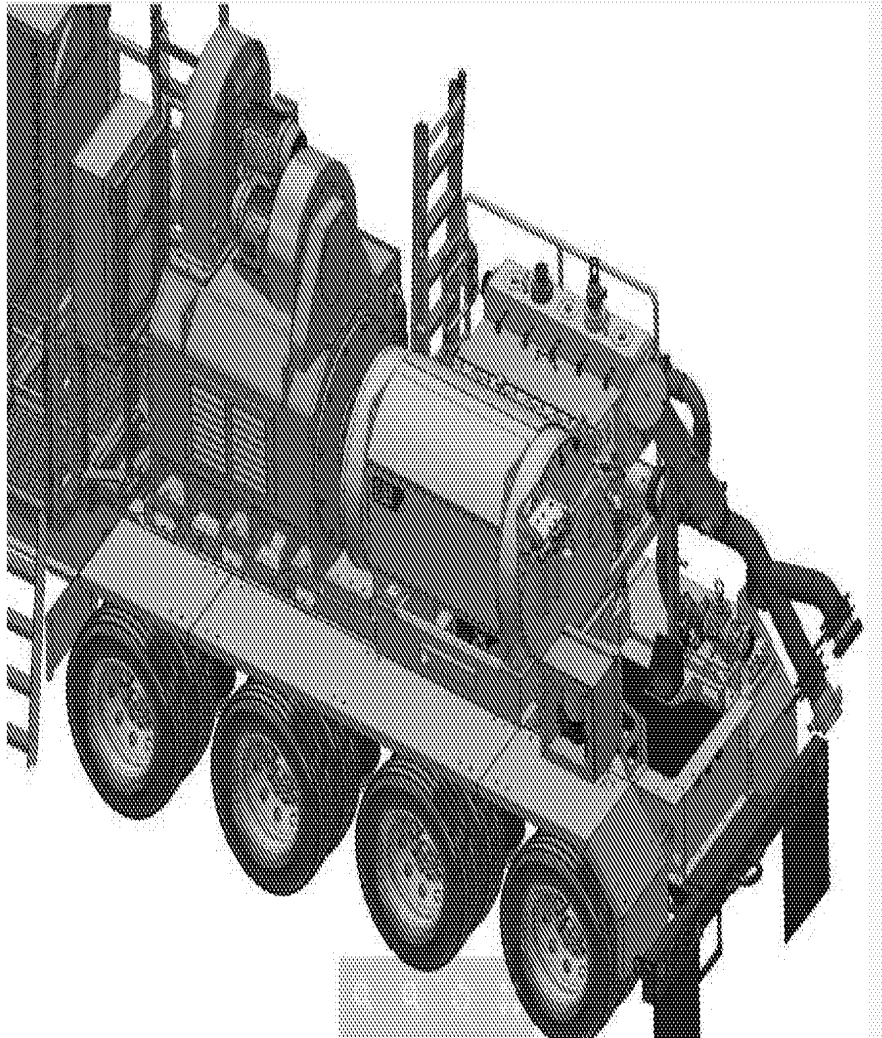


Figure 3: Isometric image of service platform with ladder for HMI and VFD, motor, motor blowers with aux motors, frac pump with power end and fluid end, slide out platform handrail, suction iron, discharge iron, suction dampener, and greasing unit.

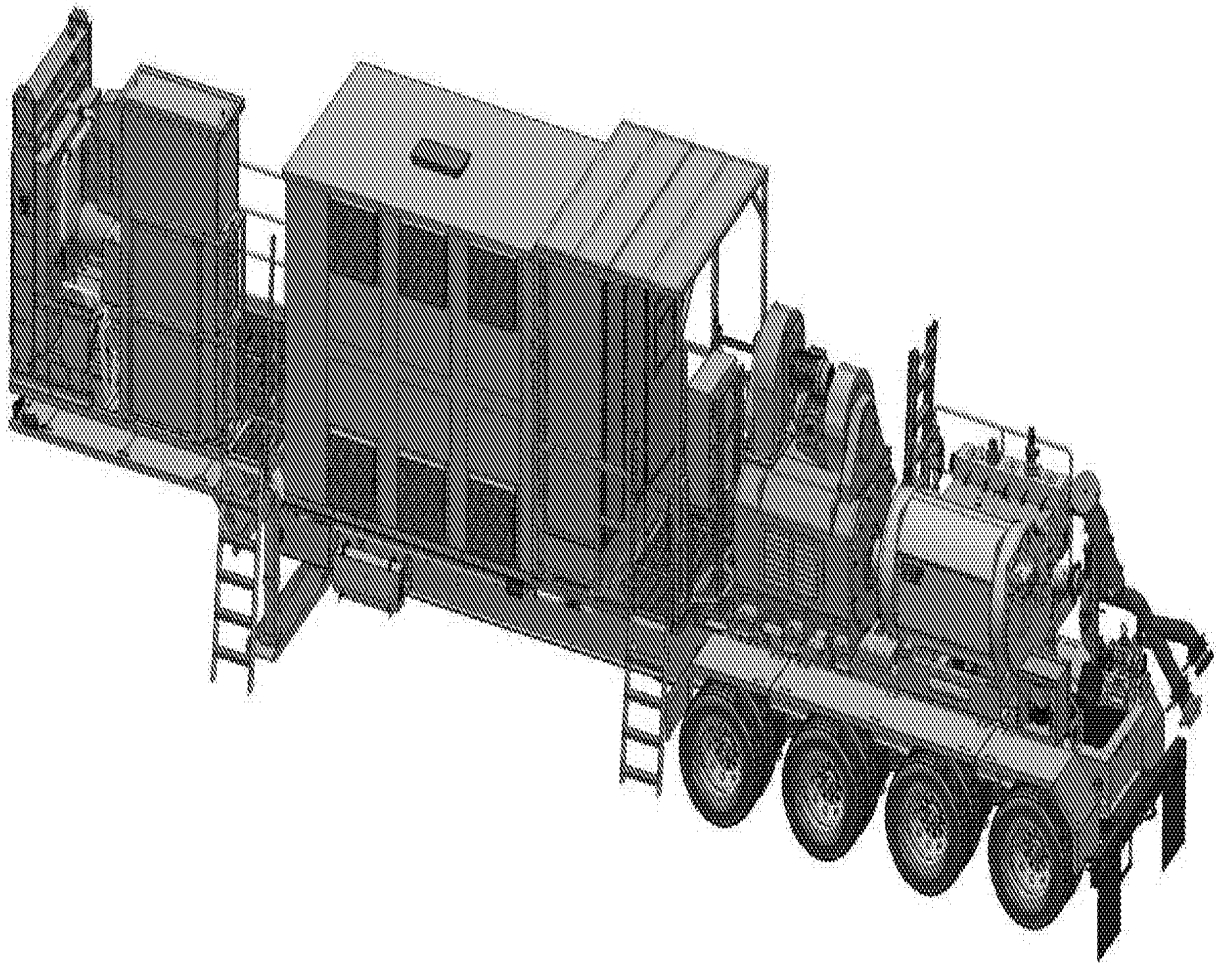


Figure 4: Isometric view of unit, cooling for VFD on gooseneck, motor control center, ladder handrails and platform for service on the gooseneck, transformer, VFD, VFD-HMI service platform with rain cover, electric motor, blowers, frac pump, suction iron, discharge iron.

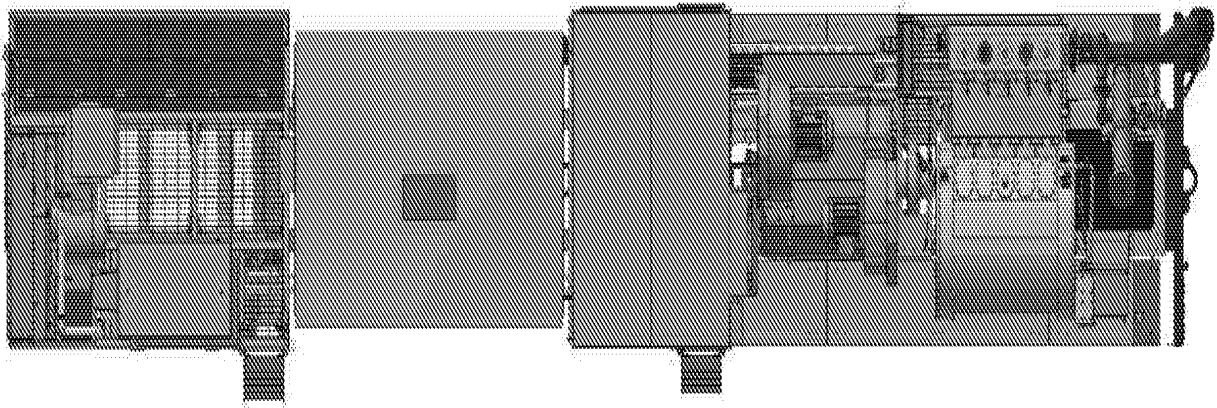


Figure 5: Top View, cooling, MCC, gooseneck platform, rollers for cable on platform with hinged cable tray to close over so that cables are covered, transformer, roof of VFD and rain protection, electric motor, pump.

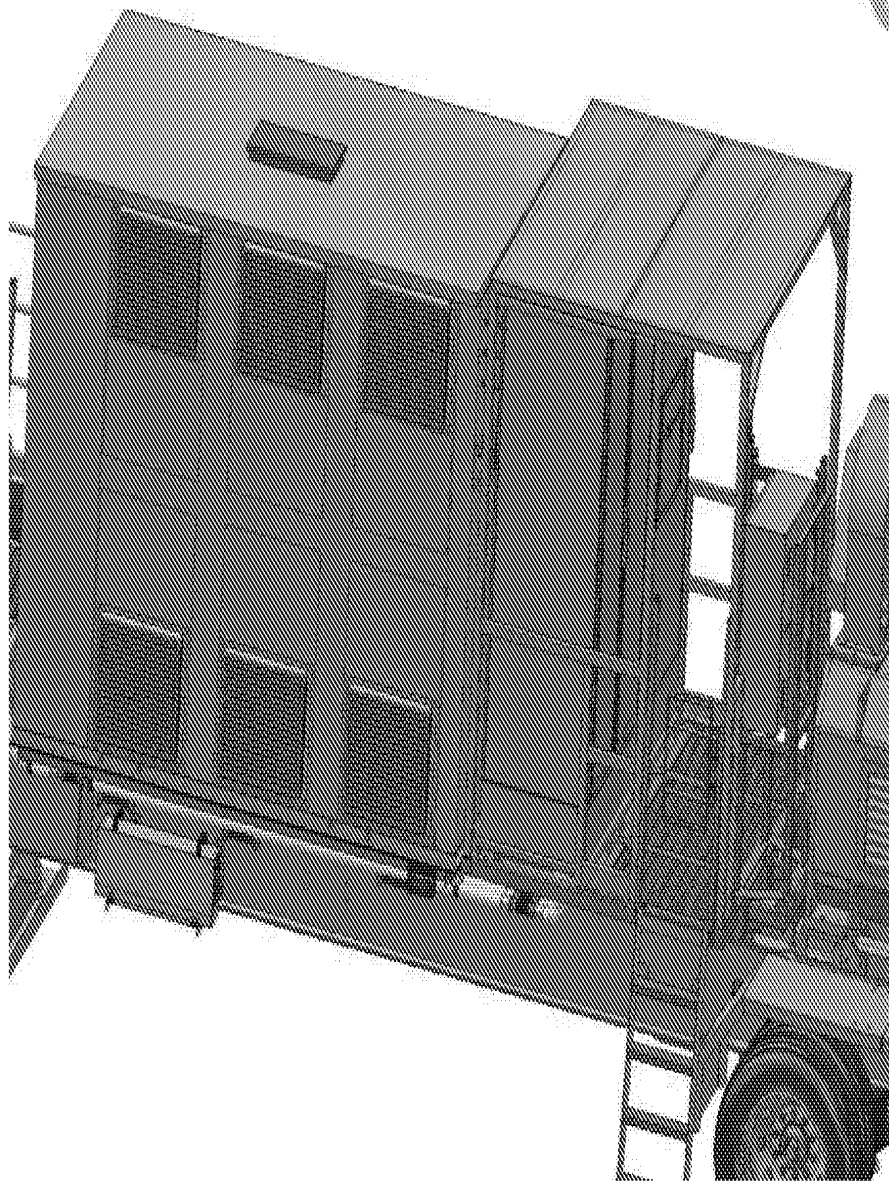


Figure 6: Transformer, VFD, platform with ladder and HMI.

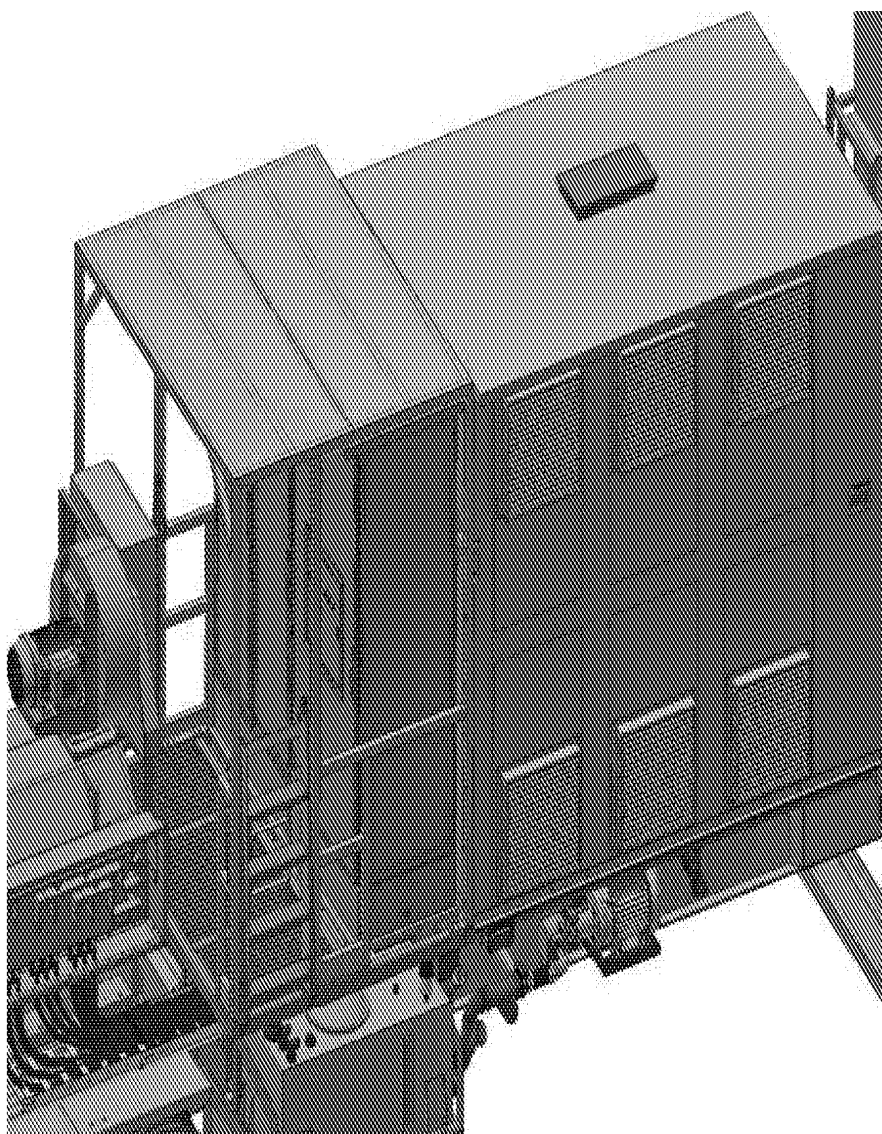


Figure 7: Transformer, VFD, Platform, HMI, and electric motor, auxiliary motor/pump and tank shown at bottom.

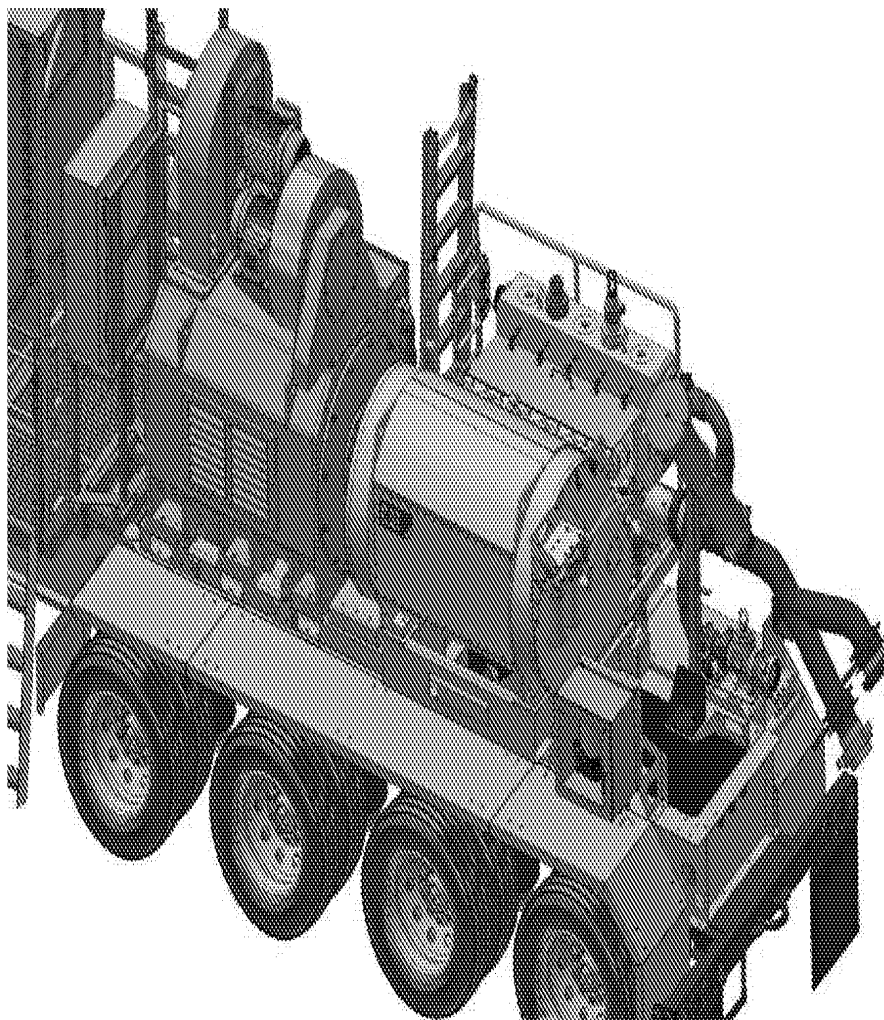


Figure 8: Pump and motor close up.

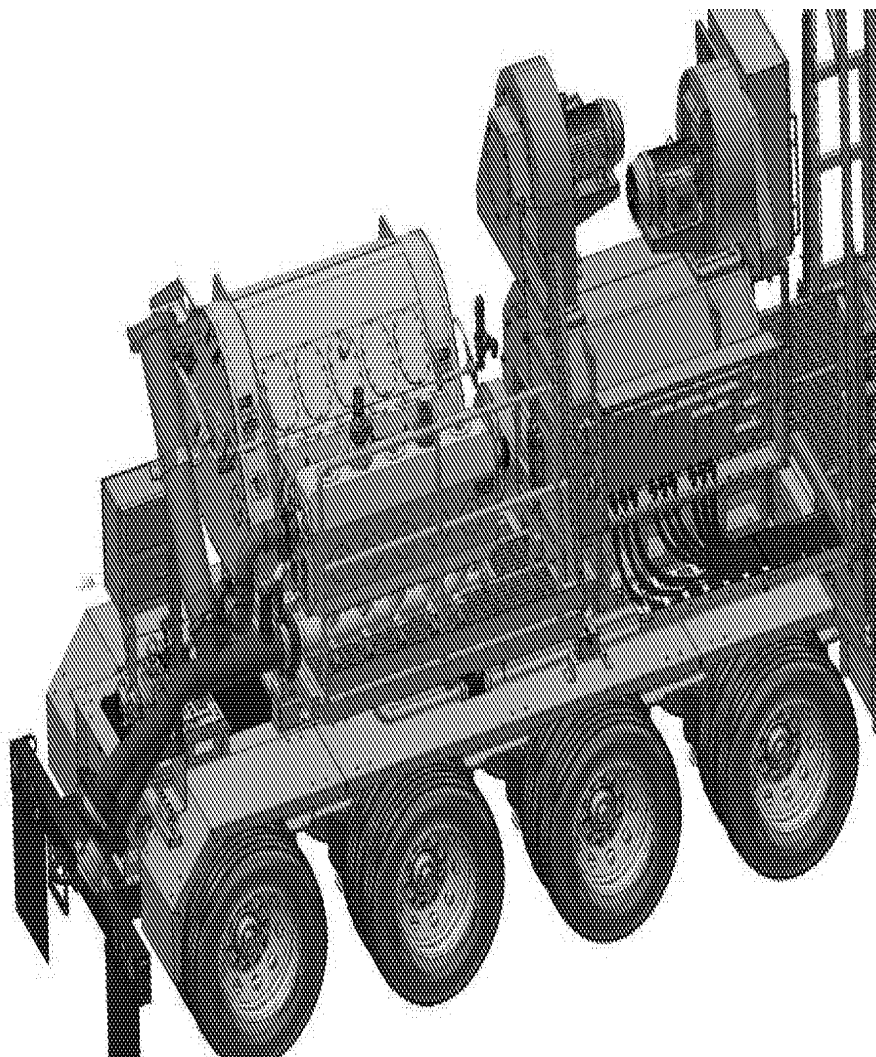


Figure 9: Pump and motor close up.

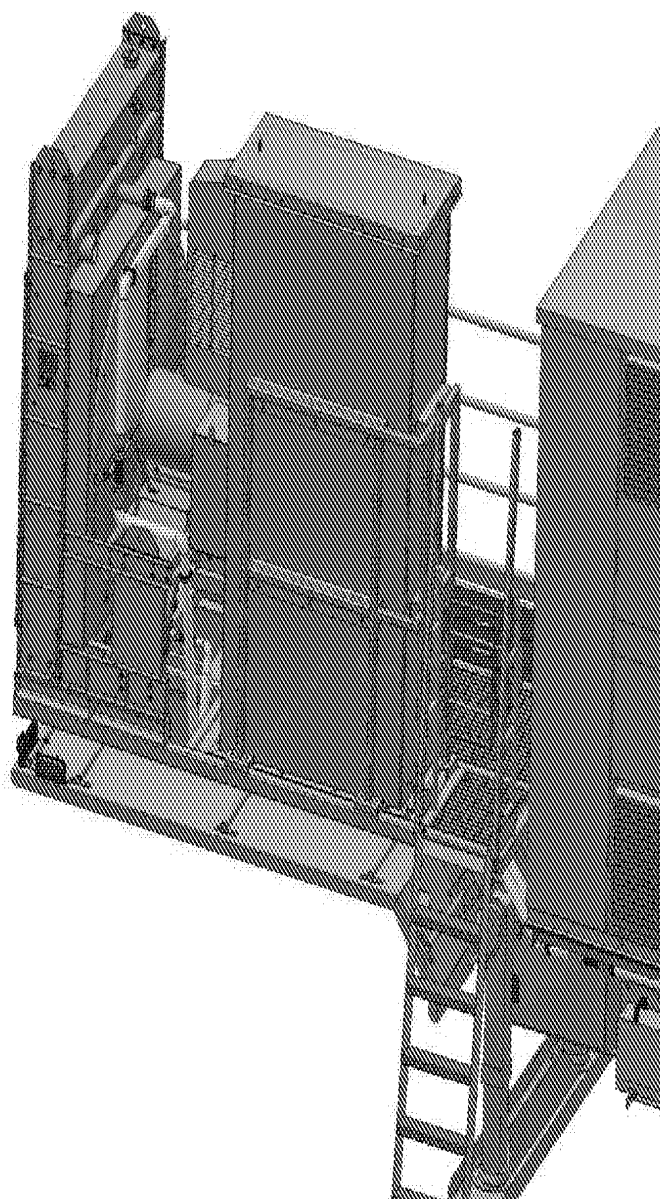


Figure 10: Gooseneck platform close up.

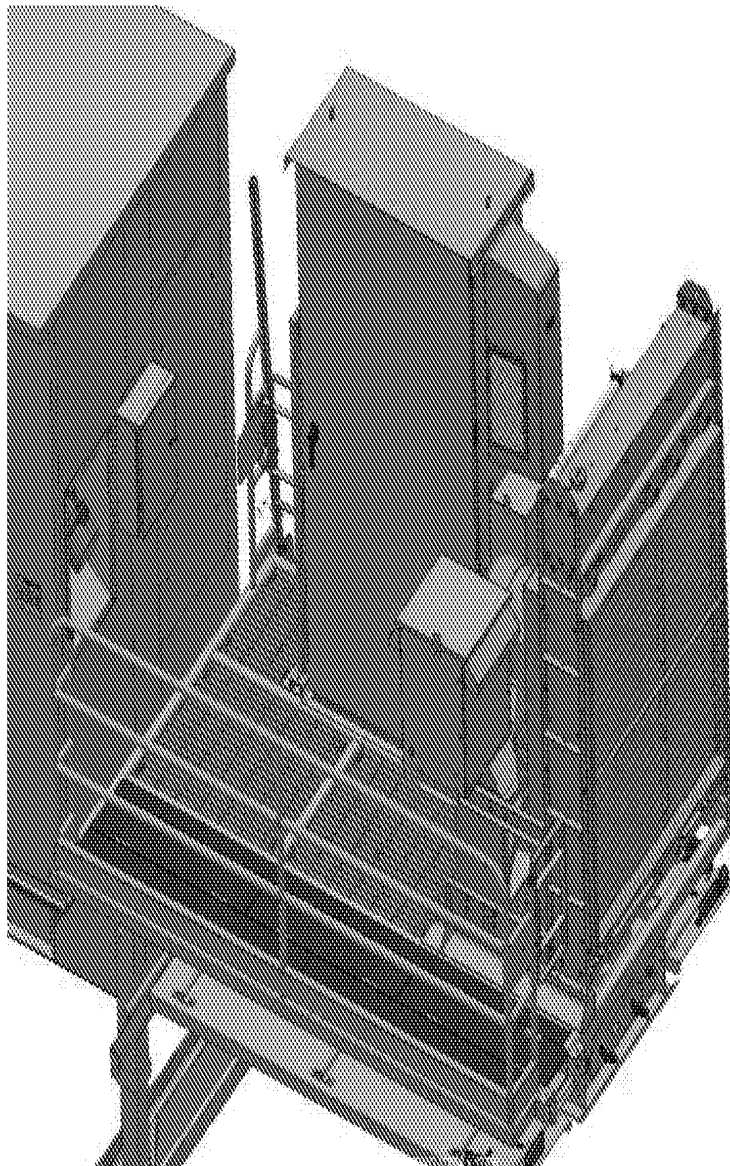


Figure 11: Gooseneck platform closeup, 13.8kV cable receptacle on transformer, MCC, cooling, cable trays with hinges closed so rollers are not shown

Electronic Patent Application Fee Transmittal

Application Number:				
Filing Date:				
Title of Invention:	ELECTRIC POWERED HYDRAULIC FRACTURING PUMP SYSTEM WITH SINGLE ELECTRIC QUINTUPLEX FRACTURING TRAILERS			
First Named Inventor/Applicant Name:	Jared Oehring			
Filer:	Taylor P. Evans/Stephanie McDonough			
Attorney Docket Number:	047158.100047			
Filed as Large Entity				
Filing Fees for Provisional				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
PROVISIONAL APPLICATION FILING	1005	1	280	280
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				280

Electronic Acknowledgement Receipt

EFS ID:	33960041
Application Number:	62743360
International Application Number:	
Confirmation Number:	1519
Title of Invention:	ELECTRIC POWERED HYDRAULIC FRACTURING PUMP SYSTEM WITH SINGLE ELECTRIC QUINTUPLEX FRACTURING TRAILERS
First Named Inventor/Applicant Name:	Jared Oehring
Customer Number:	132858
Filer:	Taylor P. Evans/Stephanie McDonough
Filer Authorized By:	Taylor P. Evans
Attorney Docket Number:	047158.100047
Receipt Date:	09-OCT-2018
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Time Stamp:	17:24:23
Application Type:	Provisional

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Payment Type	DA
Payment was successfully received in RAM	\$280
RAM confirmation Number	101018INTEFSW00004947501349
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			4c9101f57755a6dbd74580368fd7d1faf507f6e0		
Warnings:					
Information:					
2	Provisional Cover Sheet (SB16)	047158-100047_Cover_Sheet.pdf	2032485	no	3
			55d958ce215fec4369b38eb45901755c538326b5		
Warnings:					
Information:					
3	Specification	047158-100047_Specification.pdf	37269	no	12
			5400c2f5b16ac9753711c5731afd4624c3e4d801		
Warnings:					
Information:					
4	Drawings-other than black and white line drawings	047158-100047_Figures.pdf	2330215	no	11
			4760e05ff05ad924043fe11a2fc808fc5d97d59a		
Warnings:					
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5	Fee Worksheet (SB06)	fee-info.pdf	30169	no	2
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