

APPLICATION CHECKLIST

Use this checklist as a tool to ensure that you have all of the components of the application package. Please note, this checklist is for your use only and does not need to be included in the package.

<input type="checkbox"/>	Application
<input type="checkbox"/>	Transmittal Letter
<input type="checkbox"/>	Tax Liability Statement
<input type="checkbox"/>	Letters of Support (If Applicable)
<input type="checkbox"/>	Confidentiality Request
<input type="checkbox"/>	Business Plan (Appendix)
<input type="checkbox"/>	Historical Financial Statements (3 years) (Appendix)
<input type="checkbox"/>	Budgeted Projections (Appendix)
<input type="checkbox"/>	Loan/Loan Guarantee Application (if Applicable, Appendix)
<input type="checkbox"/>	Other Appendices (If Applicable)

When the package is completed, send an electronic version to sustainableenergy@nd.gov and 2 hard copies by mail to:

Clean Sustainable Energy Authority
North Dakota Industrial Commission
State Capitol – 14th Floor
600 East Boulevard Ave Dept 405
Bismarck, ND 58505-0840

For more information on the application process please visit:
<http://www.nd.gov/ndic/csea-infopage.htm>

Questions can be addressed to Al Anderson (701) 595-9668.

Clean Sustainable Energy Authority

North Dakota Industrial Commission

Application

Project Title: **Smart Well Hub**

Applicant: **SandPro LLC**

Date of Application: **5/17/23**

Amount of Request
Grant: **\$705,000**
Loan:

Total Amount of Proposed Project: **\$1.975M**

Duration of Project: **12 months to commercialization**

Point of Contact (POC): **Andrew Emmel**

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ABSTRACT

Objective:

With the SandPro team's experience in Oil and Gas surface wellhead systems, we have seen the industry grow both mechanically and technologically. However, the industry has yet to consolidate and utilize these improvements to their best advantages. The objective of the Smart Well Hub (SWH), is to provide consolidated solutions that improves safety for personnel and the environment, optimizes production and addresses labor challenges. The CSEA grant will allow us to finish development for elements of the solution that are partially complete.

Expected Results:

- 1) Increased safety for personnel and the environment**
 - 2) Optimized Production outcomes**
 - 3) Provide opportunity to address challenging labor shortages.**
- Remote well control: Operators will be able to control wells remotely, from a safe location. This will reduce the need for workers to be on the well site during hazardous operations.
 - Flow control: Operators will be able to remotely or manually control the flow of fluids from the well to optimize production.
 - Well containment: Wells can be manually, remotely or autonomously shut in if the well exceeds safe operating parameters, keeping personnel out of the danger zone, and containing spills to minimize any potential damage or environmental release.
 - Increased efficiency for operators: Operators will have a single, integrated platform for managing wells. This will reduce the time and effort required to operate wells and improve efficiency.
 - Elimination of biohazards: Sensors will be included that can detect spills and pipe erosion. This allows for preventative maintenance, instead of being reactionary when the inevitable spill occurs.
 - Mitigation of explosions: Sensors will be included that can detect pressure buildup. Alerts will then immediately be sent if a certain predetermined pressure is reached. This allows for quick action to be taken to prevent a blowout from occurring.
 - Reduced staffing requirements: Staffing is a current problem for almost every Oil and Gas company. Automation reduces the number of people required to operate a well

site. This will save Oil and Gas operators money on labor costs, as well as allow them to more accurately budget their projects.

Duration:

Time to prototype: 6-8 months.

Time to commercialization 10-12 months.

Total Project Cost:

The total cost to completion is estimated to be \$1,975,000

Participants:

The main “participant” will be SandPro LLC. That being said, we will continue working with our current partners that include:

Logical Controls, Minot, ND

Native Energy, Tioga, ND

Black pearl, Houston, TX

WSI, Hill City, KS

Objectives:

1. Increased safety. Both for workers, as well as environmental.
2. Operational efficiencies in the form of proactive maintenance, labor reduction, and vendor consolidation.
3. Production optimization by way of flow control, solids removal & quantification, and real-time data.
4. Streamline supply chain to allow for maximum serviceability.

Methodology:

At SandPro, we are fully immersed in many different segments of the Oil and Gas industry. Namely, for this project, production. We have seen the problems we are looking to solve with this project firsthand. We are not working with hypotheticals. We will take this knowledge that has been gained with real-world experience and apply that to the development of these solutions. This will be done in conjunction with our partners listed above.

Facilities:

The facilities that will be used to complete the project will be as follows. Primarily, development will be done in the SandPro automation division shop, which is located in Berthold, ND. Secondly work will be done at Logical Controls (our panel shop) located in Minot, ND.

Resources:

Drew Anderson (Director of Automation and Development) will work with a team of engineers and programmers, namely Logical Controls and Black Pearl.

Techniques to Be Used, Their Availability and Capability:

All the solution designs will be a continuation of what we have already done and found to be successful. Identifying the current problem, creating a working hypothesis for a solution, working with our team of industry experts to get their insight, then proceeding to work in conjunction with our engineering and programming partners to see the solution come to fruition.

Environmental and Economic Impacts while Project is Underway:

The SWH will have many benefits that contribute to the stated values of the CSEA. Two that we feel strongly about are spill protection, and methane gas detection. According to the Environmental Protection Agency (EPA), an average of 18 Oil and Gas spills occur per day in the United States. These spills can range in size from a few gallons to millions of gallons. Furthermore, most of these spills occur because of human error, which we will be mitigating through our solutions. Methane emissions are a known source of contention. Reducing methane emissions is key for the longevity of Oil and Gas production, both environmentally and politically.

Ultimate Technological and Economic Impacts:

The Smart Well Hub is a new technology that has the potential to revolutionize the Oil and Gas industry. It can help to improve safety, reduce costs, and protect the environment.

One of the most significant benefits of the SWH is that it can monitor the status of wellsites and help to reduce the number of people required for safe and efficient operations. This is because it can automate, or allow for remote control, of many tasks that are currently performed on site by humans. For example, the SWH can monitor the well site for fluid and gas leaks and other potential hazards and send alerts to operators if a problem is detected. This means that fewer people are needed on a daily basis to be physically present on the well site, which can help to improve safety and reduce costs.

The SWH can also help to address the current problem of finding enough skilled workers to hire in the Oil and Gas industry. The Oil and Gas industry is facing a shortage of skilled workers, and this is making it difficult to find qualified people to fill open positions. The SWH can help to address this problem by reducing the number of people required for well site operations. This can free up workers to be deployed to other areas where they are needed, and it can also help to reduce costs.

In addition to the benefits mentioned above, the SWH can also help to improve spill prevention and methane gas detection, both of which are giant concerns in the industry.

Overall, the Smart Well Hub is a promising new technology that has the potential to make a significant positive impact on the Oil and Gas industry. It will improve safety, reduce costs, protect the environment, and address the current hiring problem facing almost every Oil and Gas company today.

Why the Project is Needed:

The Oil and Gas industry is one of the most important industries in the world, but it is also one of the most dangerous. The industry still uses many antiquated technologies, which can lead to accidents and injuries. Automation can help to make well sites safer for humans and more friendly for the environment.

STANDARDS OF SUCCESS

The standards by which the success of the project is to be measured. This may include:

- **Emissions reduction & reduced environmental impacts** – *By way of methane gas detection, and spill prevention via tubing erosion monitors.*
- **Increased energy sustainability.** *This will be accomplished through complying with current ESG initiatives, ensuring domestic production will be allowed in the years to come.*
- **Value to North Dakota.** *North Dakota is a bastion of domestic energy. We intend to do our part to keep it that way. Again, by ensuring compliance with ESG initiatives and green movements, we can keep Oil and Gas as a main economic driver for the foreseeable future.*
- **The potential commercialization of the project's results.** *Our Smart Well Hub will greatly impact the bottom line for many of the giant operators that are currently working in the state. By reducing their payroll costs, as well as helping them budget for projects as our system will be turn-key and they will know exact costs per well.*
- **How the project will enhance the research, development and technologies that reduce environmental impacts and increase sustainability of energy production and delivery of North Dakota's energy resources.** *This is what the Smart Well Hub is all about. New technology streamlining well site processes. Allowing for real-time monitoring of crucial well site data, making it easy for the necessary people to make informed decisions on key issues. Ensuring the well site is as safe as possible by proactive control and maintenance of critical equipment on location.*

- ***How it will preserve existing jobs and create new ones.*** As evidenced by the current program bringing in migrant workers to fill positions, preservation of existing jobs really isn't a problem here. Quite the opposite in fact. This will ensure that all key positions can be filled, as well as creating and consolidating new ones.
- ***How it will otherwise satisfy the purposes established in the mission of the Program.*** Increased environmental awareness in the Oil and Gas industry is paramount to longevity for the industry in today's challenging environmental and political climates. The stated purpose of the CSEA is "to accelerate the transition towards a more environmentally friendly and economically viable energy sector. By providing grants and financial assistance, the CSEA aims to empower innovative projects and technologies that contribute to reducing carbon emissions, enhancing energy efficiency, and promoting renewable energy sources." The Oil and Gas industry is a bit slow when adopting new tech and SandPro has aimed to change that since its inception. Now that the CSEA is pushing toward the same goal, our interests could not be more aligned. The Smart Well Hub Checks every box on the list, and we hope that we will be selected to received grant funds to help us see the entire project come to fruition.

BACKGROUND/QUALIFICIATIONS

Please provide a summary of prior work related to the project conducted by the applicant and other participants as well as by other organizations. This should also include summary of the experience and qualifications pertinent to the project of the applicant, key personnel, and other participants in the project.

Jake Feil – CEO with 15 years of Oil and Gas business and operational experience.

Josh Blackaby – Vice President with extensive knowledge and a career in Health, Safety and Environment. (HSE) Josh is also an active board member with the NDPC and other Oil and Gas Committees throughout the Bakken.

Drew Anderson- Drew will be the project lead, as he has been on the development of these solutions thus far. Drew has 15 years industry experience, and he is also the owner of a security company that utilizes automation technologies like those that we have developed for the Oil and Gas industry.

Logical Controls- Logical Control Systems is a local UL Listed panel company with 10 years of experience. They have developed and deployed many innovative products all around the United States.

Native Energy – Native Energy is a local UL Listed panel company with 12 years of experience. They have developed and deployed many innovative products all around the United States.

Black Pearl- Black Pearl Technologies is a product development company for the electrical, mechanical, and software industries. The company was founded in 2018 and is headquartered in The Woodlands, Texas. Black Pearl Technologies has a team of experienced engineers and technicians who specialize in the design, development, and manufacturing of custom products for a variety of industries.

Here are some of the company's accomplishments:

- Developed a new type of LED panel that is more energy-efficient and durable than traditional LED panels.
- Developed a new type of battery that has a longer lifespan and is more environmentally friendly than traditional batteries.
- Developed a new type of software that can be used to control and monitor industrial equipment.
- Currently has technology on the International Space Station (ISS).

MANAGEMENT

*A description of **how** the applicant will manage and oversee the project to ensure it is being carried out on schedule and in a manner that best ensures its objectives will be met, **and a description of the evaluation points to be used** during the course of the project.*

As stated above, Drew Anderson will be the head of this project. Drew is a highly experienced engineer with a proven track record of success in the Oil and Gas industry. He has over 15 years of experience in the design, development, and implementation of automation and control systems for Oil and Gas production facilities. Drew is also an expert in the use of data analytics to improve operational efficiency and reduce costs.

Drew is the ideal leader for the Smart Well Hub project. He has the technical expertise, the leadership skills, and the experience to successfully deliver this complex project on time and within budget.

Drew's plan (which is already in motion) to accomplish the goal of the Smart Well Hub project in 12 months is to:

1. Utilize the team of experienced engineers and technicians with the skills and expertise to design, develop, and implement the Smart Well Hub system.
2. Develop a detailed project plan that outlines the scope of work, the timeline, and the budget for the project.
3. Work closely alongside the project team with weekly meetings to ensure that the project stays on track and within budget.
4. Test and validate the Smart Well Hub solution before it is deployed in the field.
5. Provide training and support to the operators of the Smart Well Hub system.

Drew will measure the success of the Smart Well Hub project by:

1. The reduction in operational costs with less daily personnel visits.
2. Optimized Production with reduced or eliminated inadvertent shut-ins.
3. Increased safety for personnel and the environment recognized by zero incidents and spills.

TIMETABLE

Please provide a project schedule setting forth the starting and completion dates, dates for completing major project tasks/activities, and proposed dates upon which the interim reports will be submitted.

6-8 months to fully developed prototype.

10-12 months to commercialization and deployment.

BUDGET

Please use the table below to provide an **itemized list** of the project's capital costs; direct operating costs, including salaries; and indirect costs; and an explanation of which of these costs will be supported by the financial assistance and in what amount. The budget should identify all other committed and prospective funding sources and the amount of funding from each source. **Please feel free to add columns and rows as needed.** Higher priority will be given to projects with a high degree of matching private industry investment.

SandPro LLC	Status of Project	Total Investment Capital needed	Invested by SandPro	Remaining amount to be funded
AutoBoP	50%	\$ 200,000	\$ 20,000	\$ (180,000)
Auto Stuffing Box	50%	\$ 200,000	\$ 75,000	\$ (125,000)
Auto Stuffing Box Spill Containment	75%	\$ 20,000	\$ 5,000	\$ (15,000)
Emergency Shutdown (ESD)	100%	\$ 300,000	\$ 300,000	\$ -
The Auto Choke	90%	\$ 135,000	\$ 100,000	\$ (35,000)
Valve position monitoring on all valves	30%	\$ 100,000	\$ 20,000	\$ (80,000)
Methane detection sensors	70%	\$ 20,000	\$ 5,000	\$ (15,000)
Rod rotation sensors	70%	\$ 30,000	\$ 5,000	\$ (25,000)
Flowline live wall thickness monitoring	75%	\$ 50,000	\$ 5,000	\$ (45,000)
Temperature sensors	90%	\$ 10,000	\$ 5,000	\$ (5,000)
Pressure sensors	90%	\$ 10,000	\$ 5,000	\$ (5,000)
Labor Investment		\$ 250,000	\$ 175,000	\$ (75,000)
Facility and Tooling		\$ 650,000	\$ 550,000	\$ (100,000)
		\$ 1,975,000	\$ 1,270,000	\$ (705,000)

It is important to note that the costing is not linear, meaning the percentage completed will not necessarily align with the amount still required.

