

COMPACT ENGINE FOR EMISSION FREE ELECTRIC POWER



TIH Presentation

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**SITADAL
TECHNOLOGIES**

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'Aarohan'- TIH-IoT Seed Support Program 2022



Project title

**Sitadal
Engine**

Name: SITADAL TECHNOLOGIES PRIVATE LIMITED

Email: scsicap@gmail.com

Phone Number: 9654483816

Affiliation: NONE

Location: NOIDA

Sitadal Technologies was formed in 2019, and has since been in stealth mode.

Sitadal designs and assembles power plants for mission-critical applications. These include air-independent and zero-emission applications.



**SITADAL
TECHNOLOGIES**

**The project proposed to
TIH involves the conversion
of heat into motive power
using a compact, closed-
loop, repurposed jet
engine.**



HEAT TO ELECTRICITY CONVERSION USE CASE SCENARIOS

Underwater & Space

applications -

require air-independent power- as oxygen may not be available to burn fuel.

Using heat - from waste gas, concentrated solar, natural gas or nuclear - as a motive energy source.



The proposed Sitadal generator is being **designed for 1.28 MW electric output.**

The target sales price of the generator without heat source is Rs 30 crores. It would fit under the hood of a truck.

In comparison, the Abrams military tank engine from USA costs Rs 200 crores. It is not air-independent and thus cannot be used in a submarine.





INNOVATION

The Sitadal Power System is being configured using 100% indigenous technologies & materials.

The objective of this project is to build a technical demonstrator for client approvals.



OPPORTUNITY



Background /
Problem/Objective

What are the top
problems you are trying to
solve for your customers?

In many locations, grid power is not available or not reliable.

Certain mission-critical applications such as data centres require backup power.

Many strategic applications - underwater and space - require oxygen/air independent operations as well as a compact form factor.

Diesel generators are being phased out because of pollution.

Several mobile applications such as electric vehicles also need onboard charging facilities to extend range of the vehicle.

So there are four broad categories of applications:

- **Primary source of power**
- **Back up power**
- **Air independent operations**
- **Electricity source for onboard charging of batteries.**

SOLUTION & NOVELTY

What is your solution?

List down top features of your solution that will address the problems you have listed.

Briefly mention about the current status and USP of your innovation.

The Sitadal project approach is to use a repurposed jet engine to convert heat into motive power.

This engine can be used as replacement for

- steam turbine
- diesel engine
- thermolyser
- TEG

Product demo - Share any pics, videos web links or actual demo of your product. Confidential details are not required.

Industrial Relevance/Social Relevance

Confidential

The proposed engine would be:

- more compact
- more efficient
- more cost effective



COMPETITION SCENARIO

There is tight competition in all aspects of the Electricity generation value chain.

Carbon-neutral options include hydrogen-based systems, steam turbines and **closed-loop zero-emission engines (a new paradigm).**

In all the options, the system has to work with a heat source. This has been done very efficiently for nuclear heat sources.

An emerging option for a heat source is a thorium-based heat generator, which uses a modified nuclear fission reaction which is very safe. This works on converting thorium into U233 within the reactor.

Sitadal is building the demonstrator to initially target this application.

CUSTOMER SEGMENT, MARKET SIZE & VALIDATION

Which is your first customer segment that you would like to target?

**Our focus is
the defence & space sector
in addition to smart city
mission critical power
applications.**

How big is that market?

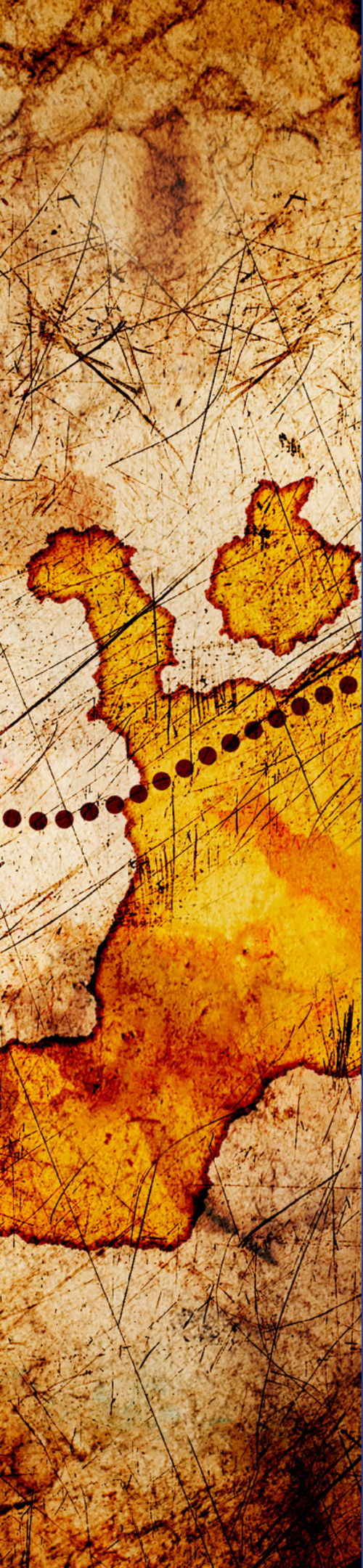
We believe the global market for high capacity and high power vehicles – on the ground, in the water, on the water and in the air is around USD 10 billion pa growing at 25% pa provided a cost-effective product can be delivered.



What have you done to validate your product with your potential customer?

The primary challenge is not marketing the product but first producing the product.

We are working in close contact with various customers including defence in India. The exact specifics are highly confidential and cannot be revealed.



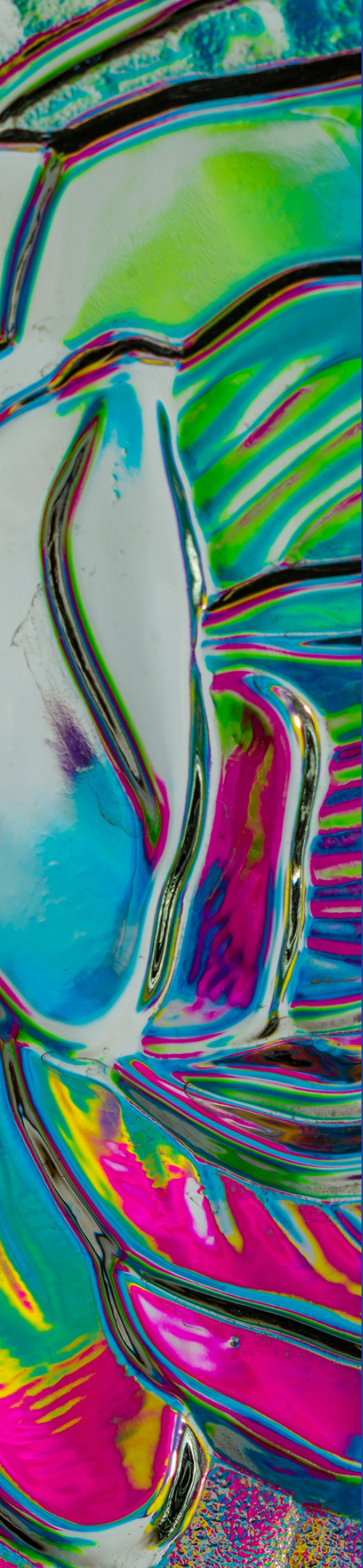
RESOURCES AND BUDGET [FUND USAGE]



Budget Details						
S.No	Head	Q1	Q2	Q3	Q4	Add column for each quarter..
1	Salaries	5	5	5	5	20
2	Rent	2	2	2	2	8
3	Raw material	24	12	12	12	60
4	Certifications & IPR	3	3	3	3	12
5	Travel and misc	1.5	1.5	1.5	1.5	6
		35.5	23.5	23.5	23.5	106

Milestone Based Fund Requirements

S.No	Milestone/Deliverable	Milestone Completion Timeline	Amount needed for Milestone Completion (INR)			
1	Project Beginning (Description)	Project Start Date(T0)	35.5			
2	Milestone 1	9 months	47			
3	Milestone 2	12	23.5			
	Add rows for milestones....					
	Total Duration	12 months	106 lacs			
	Total (INR)	Rs 106 lacs	/-			



LEAN



Problem

- Primary power in remote areas
- Back up power in urban areas
- Onboard power generation for electric vehicles.

Existing Alternatives

- diesel generators
- steam turbines
- fuel cells

Solution

Power generation for heat sources such as:

- Waste heat
- Solar thermal concentrated
- Fossil fuel like CNG
- Nuclear type heat sources

Key Metrics

This is an early stage company. Sales if any are beta sales.

Unique Value Proposition

Building a compact mobile generator is Not trivial. There is no Satisfactory product available in the market.

There is a very large market to convert heat into electricity. Especially if the System is energy efficient.

Unfair Advantage

As of now there is no moat around the castle. The system proposed is fairly simple and can be reverse engineered by any large Company with resources.

Channels

Direct to end user

Customer Segments

Our primary customer segment is defence and space with direct applications in smart city for mission critical clean power.

Cost Structure

Our focus is currently only product development. We do not have a marketing department as such. Our costs are all fixed by and large.

Revenue Streams

Our business model is to sell equipment. It is difficult at this stage to accurately estimate cost or sales price.

TEAM

The project will be
spearheaded by:

1. Cmde R Balasubramaniam | Project Lead
Marine Engineer | 40 yrs exp | Indian Navy
2. Dr Rohinton Dehmubed | Project Advisor
B.Tech IITBom, PhD Columbia | 35 yrs exp
3. Dr Rakesh Seth | Chemist
PhD IITKan | 35 yrs exp
4. Mr Manoj Agarwal | PMS expert
M Tech IITBom | 35 yrs exp
5. Mr Atul Kunwar | Former CTO, Tech Mahindra
BE . MBA | 38 yrs exp
6. Mr Satish Mehta | Chemical Engineer
B Tech IITBom | 35 yrs

Our mentor Vikesh Mehta

is a very eminent chartered accountant with 30 years of experience. He is the co-founder and partner of Grant Thornton India. He has been helping in raising funds for the company.



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