Bucked-Log Transporter: Electric Driven, Remotely Controlled.

A Capstone 45X project sponsored by Rob d'Estrubé

Introduction

Trees are blown down yearly across trails and paths. Crews come to clear these obstructions and most often leave the cut rounds of logs at the sides of the trails indefinitely to rot. Trees come down or are necessarily felled yearly in treed acreages anywhere on private lands. All of these situations become opportunities to retrieve large amounts of firewood if only there were to be a convenient way to get the bucked logs out of the woods to a collection point. This project provides just such a way with minimal disturbance to the environment. Once known to be available to land and park owners at a reasonable price I imagine a viable commercial market for finished product. I only require a good working prototype and happily release all interest for commercial development to the project team members. The project will require access to a small fabrication shop and the ability of the team to buy off -the-shelf components to combine into a finished product. Testing can be done on any number of local trails using wood rounds to be found almost anywhere.

Brief Product Description

The project is to design and build an electric powered conveyance to transport small cut log pieces up to about 1 meter long (or longer if feasible) of various girths up or down primitive trails to a collection point. I envision an all-wheel drive steerable wagon-like unit that can be controlled through a tether or wirelessly. It needs to be light so that it can be put into the back of an SUV and flexible so as to be able to negotiate uneven trails with roots and protruding small obstacles. Since ease of use and transport to and from the collection site will be paramount to make it attractive to own and use, weight and size are important. To that end it may be deemed preferable for the unit to be transported in pieces provided their re-assembly is really easy and remain so after some use and abuse. For instance, the batteries could be separate units to be easily inserted. Batteries may be a big consideration for endurance on the jobsite but also due to the specs. below.

Required/Desired Specifications and Capabilities

***Hard costs not to exceed $2,000 for this prototype**
*** Electric powered.**
*** Power enough to make multiple return trips to collection site.**
*** Power enough to additionally drive a standard 120V electric chainsaw through an installed inverter and plug outlet should trimming a log to length be necessary.**
*** Low battery warning so that it doesn't get stuck out in the woods.**
*** Ideally, depending on batteries used, it should charge with a standard automotive 6/12V smart charger available anywhere.**
*** Remotely controlled but at a very close distance to unit, such as walking with it**
*** The controls need to be "soft" in the sense that they cannot make actuations happen too quickly so that the unit over-reacts and becomes misguided before the operator can correct the developing situation.**
*** Ability to transport (arbitrarily) 100 Kg or more, if feasible, up hills on trails.**
*** Ability to negotiate narrow and primitive trails without tipping over due to uneven surfaces.**
*** Light enough to be lifted into the back of an SUV. In pieces if necessary.**
*** If it is designed as a bunk on wheels and the bunk has sidewalls, these sidewalls could fold down to become ramps for logs to roll up and into the bunk.**
*** Capacity to take at least a meter of log pieces. Each piece being at least 36 cm, it would be ideal, if feasible and practical, all things considered, to have capacity for 3 such pieces; so perhaps 1.2 meters. Many crew-cut pieces are left that size as single pieces.**

The above are my "should-haves" and "could-haves" and "must-haves" collectively. If the sum of my desires is not possible under the budget I am open to discussions and modifications to my demands. I am as much doing this to give you a good exercise as for my own needs; let's hope there are no conflicts imposed by reality.

Sponsor Support and input

As your sponsor who is no longer in business and lives out of town, I can offer financial support of $2000 for a finished prototype. I can also offer feedback from the perspective of having conjured the concept but also putting myself in the place of any potential buyer and helping to keep us focused on making our design attractive for the marketplace and your possible successes down the road. My own needs are very pragmatic as seen above. Aesthetic is not important for my needs but might need to be considered for the marketplace. I doubt that we will need a lot of personal interaction as the challenge is rather generic and your instructor/advisors are undoubtedly better informed than I as to usefully available options. All of this project's paradigms can be subject to scrutiny and therefore change upon agreement. There is no real time-line for completion other than

your own curricular requirements. In the end I would like to receive, first and foremost, a tested and working product. A poor alternative would be a set of drawings that illustrate a product that could assuredly be built on-budget by a local shop that would not necessarily have the time and expertise to source exotic components. The additional downside to just supplying drawings is that there is no assurance that the product works as expected so drawings are not a preferred option at all. If drawings are the only supplied results you can produce, then the budget must be severely reduced so that the prototype can sstill actually be built within budget.

Thank-you for your consideration; I look forward to talking with you further.

Cheers,

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