

<http://www.cazri.res.in/annals/2013/ArchismanBandyopadhyayjune2013.pdf> flywheel and ratchet

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Performance Evaluation of Matching Gadgets for Camel Powered Rotary Transmission System

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Abstract: Camel is a major draught animal, which is widely used for agriculture and transportation purpose in arid and semi-arid regions of India. Still the major part of the animal power is unutilized. To enhance the utilization of draft animal power a rotary power transmission system is suitable method through which number of matching gadgets can easily be operated. A power transmission system was developed for the purpose. The system consisted of a set of crown, pinion and spur gears. The initial speed of rotation of animals was stepped up in the ratio of 1:1.25. A final drive shaft consisting of pulleys, fly wheel and a ratchet was provided to transmit power. The power was transmitted from gear box to this final drive shaft through an underground shaft encased in a pipe for operation of different matching gadgets. The system worked satisfactorily up to a draught of 125 kgf. Different matching machines namely maize dehusker, sheller, groundnut decorticator and air compressor were operated by the power transmission system and their performance and animal's fatigue level was evaluated. The draught requirement of the selected machines was well within the draught capacity of the animals.

Key words: Draught animal power, rotary transmission system, load, matching gadgets, fatigue level, draught.

Throughout the developing countries of the world, draught animals are still vitally important part of highly appropriate and effective system of food production and transportation. Further, because of the high capital and operating cost of machines, draught animals are likely to remain essential power sources for the developing countries. Draught animal power is not only based on renewable energy sources, but is also economically and socially appropriate in the communities in which they are used.

besides cultivation operations and transport. It is estimated that liquid fuel and natural gas would exhaust by 2050 and coal by 2250 at the present rate of use. These predictions and their consequences are applicable to India as well (Sukhatme, 1997). The annual use of draught animals varies greatly. It ranges from about 300 to 1500 hours annually. The annual utilization of draught animal power could be increased by developing animal powered agro processing machines. This type of activity may increase the annual utilization of animals by 1000-1500 hours (Sukhatme, 1997).

http://www.google.it/url?sa=t&rct=j&q=&esrc=s&source=web&cd=11&cad=rja&uact=8&ved=2ahUKewiH_uTUpcfcAhWN16QKHcW-DAg4ChAWMAB6BAGlEAI&url=http%3A%2F%2Fweb.iitd.ac.in%2F~vkvijay%2FEfficient%2520Utilisation%2520of%2520Animal%2520Power.ppt&usg=AOvVaw2Ta8P3ydt-CMt5lonbkPwz

An Overview of the Status of ADPM

- Alternative design of gear box and attachment of applications.
- Salient features of the work done by:
 - IIT Delhi
 - R. S. Singh, Varanasi
 - CIAE, Bhopal
 - Kanpur Gaushala Society, Kanpur
 - U. A. E., Raichur, and
 - Others



Rotary Animal Driven Prime Mover for RI Application



Salient Features:

- Rotational motion of animal is utilised.
- Clutch is used to control the speed.

Specifications:

- Type: Step up Gear Box having Helical Gears
- Input rpm: 2-3 rpm
- Output rpm: 250 rpm @ 1.5 h.p.
- Gear Ratio: 1: 85
- Cost: Rs. 26000



Site Demonstration

Bullock Drawn Generator Developed by Kanpur Goshala



http://www.greenenergysolutions.co.in/rural_portable_generator.html

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Products

GreenPower™ Rural portable Generator:

- ◊ Technology
- ◊ Resource
- ◊ FAQs

This product is designed to create localized electricity in villages in most simple & sustainable manner. It uses abundantly available local & natural Bio resources to create decentralized usable electricity in optimum quantity for the situation.

This energy can be utilized for

- Home lighting (CFL)
- Water lifting and pumping
- Battery charging for TV, Fan, Computer & internet centre.
- To bring in Telemedicine facilities
- Multimedia Education
- Empowering tiny Agro processing industries
- Replacing Kerosene usage in villages
- Entertainment & income generation
- Empowering Villages

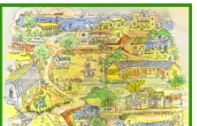
This technology has potential to trigger a Green Revolution of energy kind. It can catapult India towards energy self reliance. Up to 20000 MW of decentralized power can be created in villages through this device alone which is almost 25% of the available usable total power in India as on date.

After extensive research of more than 18 years, in developing foolproof adaptation methodologies & field trials, now various models of "MK Series" rural generators are being launched in India by Green Energy Solutions, a Bangalore (India) based start up venture.


Interested individuals, social entrepreneurs, NGOs & various rural development agencies can reach us for further details.

All information & important development announcements related to this product & technology shall be updated on website regularly

The Technology (In nut shell):
This innovation is a sustainable, green & an appropriate technology product. Draught animals used for Sugarcane juice & edible oil extraction by crushing is a traditional rural technology available with mankind since wheel was invented, for thousands of years. Approximately 100 years back, after industrial revolution, it was left to die its own natural death. This technology has been



<http://www.ijarets.org/publication/12/IJARETS%20V-2-7-6.pdf>



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Physiological Response of Non-descript Bullocks of Chhattisgarh in Rotary Unit during Electricity Generation

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ABSTRACT:
This paper is focused to study the physiological response of non-descript bullocks of Chhattisgarh during electricity generation by the use of rotary unit. To increase the annual utilization with good efficiency of draught animal by using suitable devices for electricity generation and battery charging, chaff cutting, winnowing and threshing need to be developed and tested accordingly physiological response of bullocks. Stationary type of work (i.e. chaff cutting, winnowing and threshing) can be performed by the animal power, using a suitable rotary gear system. Therefore a study, with a rotary unit and physiological response of a pair of non-descript breed of bullocks was carried out for electricity generation. Physiological responses of bullocks in terms of pulse rate, respiration rate and body temperature were recorded during the work increasing with advancing of working time. During seven hours of work the animal body temperature, respiration rate and pulse rate were increased by 44 °C, 51 blows/min and 68 bpm at load condition. It has been found that efficiency of bullocks are decreasing with the passing of time as the bullocks were not fatigue after 7 hours of work as they scored 19 points against the fatigue level score of 20 points. The power output developed by bullocks during electricity generation and battery charging was found to be 0.264 KW.

KEY WORDS: Bullocks, Rotary power, Physiological response, Draft, work load.

INTRODUCTION:
India has a large population of draught animals and bullocks which are main draft animals in the country followed by he-buffaloes. Generally draft animals are used for tillage, seeding, intercultural and transportation. With increased availability of other source of power like electricity, I.C. engine etc. utilized



Review Article

A Review on Draught Animal Research in India; Constraints and Future Thrust Areas

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Key Words: Draught animal, horse power, genetic improvement, physiological, haematological, biochemical

ABSTRACT

Even though mechanization in agriculture caused a declining trend in the population of draught animals, they continued to be the major renewable and sustainable power source for Indian agriculture. Various researches have been carried out in different fields for the improvement of work efficiency of draught animals. It includes mainly characterization of draught breeds and their genetic improvement by breeding as well as molecular genetic tools, and studies on physiological, haematological and biochemical parameters. Improvements were also made in the design of equipments for the effective utilization of draught animal power in production and processing of various agriculture products as well as for transportation. In addition to these, various instruments also have been devised for the proper measurement of draught power. The important constraints in draught animal research include lack of a systematic and proper breeding programme for improvement of draught breeds, intense crossbreeding for high milk production, feed and fodder constraints as well as economics of rearing. Future draught animal research should be focused on the improvement of draught animal as such or improvement of equipments.

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INTRODUCTION

Livestock have been used in agriculture for thousands of years supplying energy for crop production in terms of draught power and organic manure. But due to mechanization in agriculture, the role of animals in crop production became less relevant. But in a country like India where 78% of farmers have less than 2 ha of area for cultivation, the question whether the use of tractors and tillers are economical put forward the importance of draught animals in agriculture. The use of animal power is inevitable in some conditions like slushy and water logged, hilly and narrow terraced fields, where tractors and tillers are not suitable. Animal driven vehicle are suitable for rural areas under certain circumstances viz, uneven terrain, small loads for small distances where travel time is not important (Ramswamy, 1993). In spite of high urge for mechanization among farmers, the energy for ploughing two-thirds of the cultivated area and two-thirds of rural transport

pack animals, handling, dragging and stacking timber logs in forests and hauling sledges in snow-covered regions (Ramswamy, 1994).

Draught animal power is one of the 14 renewable sources of energy listed by United Nations Conference on New and Renewable sources of energy held in Nairobi in 1981, as it can be replaced by breeding and rearing in the required number. It is sustainable too, because the animals derive their energy for work from feed and fodder made available from agricultural products. Through mechanization helps to increase the agricultural production in an accelerated way, it is also associated with emission of greenhouse gases like carbon dioxide and other trace gases due to burning of fossil fuels. So on environmental view point, working animals saves natural resources, fossil fuels and prevents emission of greenhouse gases (Dikshit and Birlhal, 2000).

The aim of this review is to provide an overview of the past

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Experimental Study of Micro Industry of Animal Powered Mechanical Device for Battery Charging ☆

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Abstract

In this paper authors designed, fabricated, cost estimated and experimentally studied the animal powered mechanical device to establish micro industry for electric generation to charge the batteries for home lighting, cooking food and minor irrigation at rural areas where grid power is not available and population rely on kerosene, wood and diesel pump-set for light, cooking food and irrigation. Although animals have been using for domestic works since beginning of mankind, but the electricity generation by animal power is a novel technology. This invention provides animal powered mechanical device to charge the batteries. It has unique features of using animal power as prime mover for electric generator. Animal energy in the form of high-torque low-speed can be converted into low-torque high-speed through speed increaser to energize the electric generator. The electricity generated is stored in the batteries of different capacity and used for lighting, cooking and minor irrigation. This equipment is emission free, low cost and has long life. Also this equipment needs less maintenance and any person can run either skilled or unskilled.

Previous article in issue Next article in issue

Keywords

Animal power; micro industry; speed increaser; mechanical device; battery charging; electric generation.

Feedback

