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Folding Electrical Cycle

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ABSTRACT

As an engineer we need to solve the problems facing the present society. One among them is pollution it is very serious problem. One of the major cause for the pollution releasing of methane gas to the environment from the vehicle. To reduce this folding electrical cycle is a small effort which helps to reduce the pollution and provide more comforts to the rider. In this cycle we are arranging lithium battery to reduce the mechanical work done by the rider & folding experiences the rider more reliable, comfortable & portable to the rider.

Introduction

Folding bicycle is a bicycle designed to fold into a compact form, facilitating transport and storage. When folded, the bikes can be more easily carried into buildings and workplaces or on public transportation (facilitating mixed mode community and bicycle community) and more easily stored in compact living quarters or aboard a car, boat or plane

Folding electrical bicycle is a vehicle different from the other vehicle & flexible to the vehicle rider It reduces the manual work done which is normally done by the vehicle user .By arranging lithium ion battery when it charges four to five hours it runs 40 to 50 kilometers. The average speed of the vehicle 25-30 kmph. It facilitates the comfortable ride to the user Lithium battery reduces the mechanical which would be normally done by the rider .Folding can done by using cracking mechanism there are different steps involved in the cracking mechanism. Frame cracking can be done by knowing the specifications of the frame like tensile strength, centroid, moment of inertia& various forces (or) supports acting on the frame

We know that over usage of nonrenewable resources like petrol, diesel, kerosene etc. may decrease (or) reduce their quantity in the nature .In addition to atmosphere is being polluted with dangerous gases which are not good for the human health. Keeping all these aspects using of this folding electrical bicycle has been designed in such a way that it reduces the pollution in the atmosphere & saves the nonrenewable resources to the future generations

This folding cycle is portable & easy to carry with us

Definition for a folding electrical bicycle

Normally cycle has driven by mechanical work. But in the folding electrical bicycle we are arranging a lithium ion battery which is used to convert the electrical work into the mechanical work. The battery of the cycle helps to reduce manual work which is usually done by the rider.

The folding can be done by using cracking mechanism. The folded cycle can be stretched while the rider wants to ride it. And it can folded in the specified folds which should be usually provided by the retailer (or) mentioned fold arranged by the choice of the user

The folding electrical cycle usually provides the dual ride (or) single rid. Generally the capacity of the cycle is rider weight including the luggage should not exceed 220lbs (100kg). This provides the comfortable & smooth ride to the user. This folding cycle ease carries the cycle from one place to another place. It can be carried by just packing it a bag and it handle very easily. The folding electrical cycle specifically designed keeping the taste of the rider and reducing stress levels to the rider. While operating the rider we make sure the definitely enjoys the ride of folding electrical bicycle.

History of folding cycle

The first folding tandem bicycle was probably invented by Julien Simon and Victor Dussault, both of Paris, France. In their patent application dated May 10, 1895 they described a regular folding bike that could be converted into a folding tandem with the addition of another frame and connecting parts.

Quite a few historical texts claim that the French military invented the first folding bike. In particular, a French military officer named Captain Gerard is given credit. This simply was not true but there is a fascinating story behind this misnomer. A complete telling of the story is in a book entitled "Charles Morel - constructer dauphine's soups la troisieme republic. Since it is in French, here's the short version: Charles Morel, a wealthy French industrialist, became enamored with the relatively new bicycle craze and devised of a folding bicycle and built a prototype in 1892. Independently, in 1893, a French army lieutenant named Henry Gerard imagined the use of a folding bike by the army and filed a patent for one through his father-in-law Henri

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Noel on June 27, 1893. In early days these folding bicycles are used by the military mans, majors, soldiers etc they used these cycles to move from war fields to living areas. It also helpful to all the people especially who are living in the forests, hilly areas

Know a folding electrical bicycle (Heading 4)

Get to know folding electrical bicycle. Please refer to below for the names and basic function of various components on a folding electrical bicycle regularly referred to in this manual.

1. Handlebar (includes grips, brake levers and shifter)
2. Handlebar height adjustment quick release (some models)
3. Handlebar folding stem (joint for handlebar folding)
4. Frame rest (protects chain wheel when folded and resting on the ground)
5. Crank & chain wheel
6. Folding pedal
7. Chain
8. Seat post height adjustment (quick release for adjusting seat height)
9. Seat post
10. Saddle
11. Frame folding box (the main folding mechanism for your frame)

Cracking mechanism (Heading 5)

Folding can be done in a folding electrical bicycle using the cracking mechanism. There are different steps involved in cracking mechanism

Cracking at folds causes pages to fall out of magazines or corners of boxes to split. The occurrence of fold cracking becomes more prevalent at low humidifies and becomes worse when the ductility of surface fibers becomes diminished as may occur through application of starch coating or in the case of low freeness pulp being used in the top ply of multi-ply sheets. Increased use of recycled fibers also exacerbates the potential for cracking of sheets. An understanding of cracking mechanisms their measurement and control is desired for optimized production quality.

The basic mechanism for cracking is the higher stresses that occur on the surface fibers when a sheet is folded. These stresses more become greater for higher basis weights where the bending strains in the outer layers are directly proportional to the thickness t of the sheet for a given bending radius of curvature R. As depicted schematically in Figure 1, for a beam of modulus EMD, length L, bent to a curvature R, the maximum stress σ MAX and strain ε in the outermost layer

Where GMD-ZD is the shear modulus along his beam in the thickness direction and k is a constant related to the beam constraints. The terms contained in the square brackets in (1) and (2) account for shear of the beam in the direction of bending. The discussion is focused on MD which is more sensitive to cracking and surface stresses compared to the CD.

There are some shear forces acting on the frame beyond to their threshold limit. Then cracking can be obtained from the frame begin with the surface fibers & slows over the entire frame then cracking of frame can be completed then folding can be done to the frame in such a way what we want to require.

Folding that we are going to done on the frame is a very problematic in the converting in to the required frame. It is commonly exacerbated by the user of the starch surfaces have cracking by selection of material by testing prior to manufacture.

There are different types of tests are going to conduct on the frames. Based on the devised predictive tests are based on the principle that fold cracks are formed through the remainder cross section of the sheet

Tests that we are going to conduct on the frame are

1. A modified tension test
2. A modified Mullen burst test

The above mentioned two tests are very useful to select the type of material using in the frame. By conducting the above tests we can determine the torque values, tensile strength, forces that are going to support the frame

There are two types of tests are used to measurement techniques are shown to correlate with other more tedious fold cracking testing such as

1. IPST crack angle test
2. AF & PA (OR) MIT fold test

Prediction tests for cracking the frames

It is highly desirable from economic considerations to know the likelihood of a product to crack before it is shipped to a customer for converting. This section describes several tests that have promise to predict cracking. Additionally, two new techniques are proposed based on the measurement of the stretch-to-break for a specimen tested in a curved configuration.

IPST Crack Angle Test

Previous work at IPST has established a correlation between the crack angle [2] and cracking propensity expressed as a percentage in a series of reports [3, 4] which attempted to show relationships between various sheet properties and cracking. The developed cracking tester consists of two platens one of which remains fixed while the other is rotated. A sample strip is rigidly clamped across the platens with the intention to bend the sample until a visible fissure is observed across the CD.The edges of the anvils where the sample is bent are rounded to a radius of 0.010 inch.

Samples are spray painted flat black with solvent based paint for examination of crack angle. Test samples are conditioned at 20% RH for 48 hours prior to testing at 20% RH. The clamped samples are progressively folded the manual rotation of movable platen to the point were fibers underneath the blackened surface show through all along the fold line as may be seen in Figure 2 below. Bright illumination and low magnification assist with the determination of the onset of fissuring.

The angle at which a crack is observed across the width of the sample is recorded, larger angles approaching 90 or greater indicate a larger resistance to cracking.

AF&PA Fold crack tester

Since paper is a visco elastic material, the rate of deformation in testing is important since paper becomes stiffer at smaller time scales. The general rule is that paper strength properties decrease 7.5% for every decade increase in time scale. Accordingly, the AF&PA tester consists of a pair of motor driven rotating shafts which can be fitted with a pair of flat anvil metal scoring wheels with the gap set equal to the linerboard thickness shown in Figure 3. Linerboard samples are first folded loosely along the CD, then sent through the nip rotating at 400 fpm. Samples are visually examined under low magnification and the length of cracks divided by the length of fold examines is reported as the % cracking. The method is time consuming and detection of cracking is rather subjective. Painting the sample with solvent based flat black paint as in the IPST Crack Angle

Test procedure can increase the contrast to detect the cracking more easily.

These can be useful in the liner board production quality control after completing the cracking frame can be folded in the required predicted from the test result. Then smoothen the surface of folded surface and then livers are to be arranged to hold (or) to get control over the frame. Same process can be repeated on the various places that we required to fold corresponding livers are also to be arranged. Then look after the arrangement handle bars.

The handle bar arrangement in a folding electrical bicycle is a risk process due to the frame folding can be done these effects the bend movement of the frame. So, to avoid the bent on the frame a handling liver can be arranged to support the handle in such a way that when folding can be done loose the liver this made the handle free from bent at the time of fold. There are different types handle bars based upon their shapes & handling purpose. In the Brompton cycles various types of handle bars are available. There are

1. S type handle bar
2. H type handle bar
3. Normal handle bar
4. B type handle bar etc.

The type handlebar used in the cycle is based on the rider choice (or) Keeping the comforts & arrangement of accessories in the cycle

After completing the arrangement of handle bar corresponding cables of break wires that are going to arrange on the front wheel & back wheel.

These are connected to the brake shoes which hold the rim of the tyre when brakes are applied. Complete the brake arrangement go to arranging of lithium battery which helps the rider to reduce the mechanical work internally battery stored the electrical energy when the working electrical energy is converted in to mechanical energy and then cycle began to move in the specified path. From the battery cables are going to connect the chain pulley to the handle by accelerating the handle the folding electrical cycle acquire the speed

The hub as to be arranged on the handle bar to control the speed of the cycle & providing a safe ride to the user. Frequently inspection can be done on the bar it is very much necessary to inspect the handle bar. A large tooth pulley and small tooth pulley is required. A large tooth pulley is arranged on the frame & small tooth pulley is arranged at the center of the back wheel a chain is connected to the two pulley on the chain a protective cover can be arranged over the chain it can be adjustable by the user. The chain used is anti-rust type. From the center of the front & back wheel forks are arranged to connect the rim. Generally in the manufacture of folding electrical bicycle aluminum frame is used. Using of aluminum frame weight of the cycle is increased to reduce the weight of the cycle titanium frame can be used.

The above specification is an example for a normal folding electrical bicycle. Different models can be made on the taste of riders choice In Folding electrical bicycle manufacture generally uses aluminum frame instead of aluminum using of titanium frame reduces the weight of the cycle. The weight of titanium cycle is around 18lbs (8.1kg). This facilities the rider easy to transport by his own hands

The recent statistics show that the usage of petrol

Specifications of the folding electrical bicycle:

Based on Electrical System:

1. BATTERY : LITHIUM, 36 Volt
2. MOTOR : 36v, 250w brush less with steel Gears
3. DISPLAY : LED battery display
4. CONTROLLER : pedal assistance system

Based on the performance:

1. MAX SPEED : 25KMPH
2. RANGE : 45-100KM
3. CHARGE VOLTAGE: 100-240V SMART CHARGING

Based on the vehicle:

1. Saddle : Two-tone comfort saddle
2. Brakes : V-Brakes - Front/Re
3. Shifter : Shimano Redo Grip Shift 6-spe
4. Derailleur : Shimano TY15
5. Crank set : Alloy crank set w/ double chain Guard, 48T chain ring
6. Chain : Rust Buster anti-rust type chain
7. Spokes : Stainless Steel w/ brass Plated nipples
8. Number of Spokes : 28
9. Tires : 16" x 1.75"80 PSI (560Kpa)
10. Rims : Double Wall Alloy
11. Fenders : Aluminum Alloy
12. Kick Stand : Aluminum Alloy
13. Reflectors : Front, Rear and each Wheel
14. Bell : Alloy
15. Weight : 19.5 kg (aluminum frame)

Based on Accessories

2. Rear bag : optional
3. Front bag : optional
4. Carrier straps : optional
5. F/R lights : different led model lights

Suit case : optional

Per day in the metropolitan cities like Hyderabad, Vijayawada, Bangalore etc. Is around thousands of liters these definitely shows that depleting of nonrenewable resources. This folding electrical cycle is a small effort to conserve the nonrenewable resource.

Conclusion

The arrival of laptop has revolutionized the life style of the modern man He is able to carry it wherever he wants and use it at any place where it is necessary. Laptop increases the mobility & portability made life more comfortable & easier

The same will be the case with the folding electrical bicycle .Beside using the GPRS tracker, we can also specify the destination where we wish to go .Folding electronic bicycle will be the answer to many of transport problems which will be encountered by the future generations

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