

Fuzzy Based Hybrid Car Model (A Prototype)

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Abstract- In the present work we try to introduce new prototype hybrid car model with the help of fuzzy controller. Renewable energy was used for transportation long before any other energy sources thousands year ago the human used only their own energy to get around like walking and gaudily running ,later they are using animals like horses and carts, camels, elephants etc but all the energy source is food only and the food energy were comes out from sun air and water these are the forms of renewable energy, as soon as requirement is increasing the new invention comes than the variety of various energy sources comes out and now a days we are all dependent on all those product .

In this we utilize the conventional hybrid technology like solar and wind. Because from the conventional battery model having lot of draw back like difficulty of charging, limited speed due to using various number of batteries the weight is increased and consuming the large space and not secure too and the structure is also large which also increase lot of problems on the road. There are lot of drawbacks of individual one like limited driving speed, more charging time, Some of the other drawbacks are fixed distance; due to lack of sufficient wind and sun energy it can't give appropriate output. Due to all the reason which indicates a new way to introduce a new proto type model can easily designed with the help of fuzzy controllers has to be implemented for rectifying all sorts of drawbacks . Throughout this work we utilize three combined conventional energy sources and try to introducing new sophisticated models which can work efficiently.

I. INTRODUCTION

The Concept of Energy Generally energy is often defined as "the capacity to produce work". A better definition of energy is "the capacity to induce a change in that which inherently resists change". This capacity represents a combination of an effort, expended in overcoming resistance to a particular type of change, with the change it produces. The combination is called energy. The effort involved is measured quantitatively defined as a "driving force" in thermodynamics. A driving force is a property which both causes and also controls the direction of change in another property. The quantitative value of this change is called a "displacement". Renewable energy was used for transportation long before any other energy source. For hundreds of thousands of years, humans used only their own energy to get around, like walking and running. Later, they learned to use animals to get around like riding horses, camels, donkeys, or even elephants! People and animals get their energy from food. Since the energy in food comes from sunlight, food is a form of renewable energy. We eat plants, and plants are sometimes called

biomass. Biomass is plants or garbage that can be used for energy. Biomass can also be used to make fuels to power our cars. A few thousand years ago, people discovered that they could use the wind to get around. Wind is another type of renewable energy. But less than 200 years ago, people started using fossil fuels like coal and oil The Energy is one of the most vital needs for human survival on earth. We are dependent on one form of energy or the other for fulfilling our needs. One such form of energy is the energy from fossil fuels. But the main disadvantages of these fossil fuels are that they are not environmental friendly and they are exhaustible. To deal with these problems of fossil fuels, we need to look at the .The product of a driving force and its associated displacement always represents a quantity of energy, but in thermodynamics this quantity has meaning only in relation to a specifically defined system. In any quantitative application of thermodynamics it is always important to make a careful distinction between energy changes within a system or within its surroundings and energy in transition between them. Energy is the ability to make things happen, cause changes and carry out work .In daily life energy is all around us in many different forms. Light and Sound energy is travel through the air as waves .Heat is a form known as thermal energy .Object even have energy because of their places or position .This is called Potential energy because the gravity tries to pull it down . Matter contains chemical energy, in the links of bonds of atoms the bond needs energy to form and they release the energy when they are broken .We are using chemical energy in fuels such as petrol, Diesel etc. The bonds break as the fuel burns and release the heat .The human body needs energy to drive its life processes like heartbeat breathing and movement. Energy can be changed or converted from one form to another form .But it never destroyed or created, lost or gained. It is converted the amount stays the same .At the end of the process or event the total amount of energy is the same as at the beginning. The principle of energy conservation means the total amount of energy in the universe is always the same. A similar process of changing matter in to energy happen naturally in the sun, Sun is made mainly by hydrogen. Tremendous temperature and pressure at its centre squeeze or fuses together the nuclei of the atoms

1. To form the nucleolus of a helium atom.
2. Vast amount of energy are given off.
3. This emerges from the sun mainly as light and heat.

“Natural energy” signifies the energy that drives, or activates natural phenomena. The term “energy from natural resources conversion system,” has two meanings. The first is scientific and technological as in the example of’mechanical energy conversion to electric energy has high efficiency, whereas

thermal energy can be converted to mechanical energy with somewhat limited efficiency.” The second meaning is economical and political as in the example of the term “conversion system” used in the present case has the second connotation. Putting this in concrete terms, “the present systems of energy carriers may be converted to advanced carrier systems the hydrogen energy systems in the twenty-first century.” Energy is defined as a capacity for motion, which is sometimes equivalent to work. Work is scientifically defined by the physical quantity that is given to a body when it is moved a distance by a force. There are two kinds of energy dynamic and static. There are several kinds of energy carriers in present energy systems for example, gasoline, kerosene, electricity, CNG gas, and LPG. The Natural energy conservation law holds among the conventional energies, kinetic energy, potential energy, electric energy, chemical energy, photon energy, and thermal energy. Let us consider following conversion systems are realized:

1. Chemical energy to burner (heat).
2. From heat to heat energy.
3. From mechanical energy to electric generator.

It should be noted that “energy is conserved,” but the useful available energy decreases at every step of energy conversion. Therefore, we obtain the second main principle: “available energy decreases whenever it is converted.” This principle is called the second law of thermodynamics the law of increasing entropy. This is why energy is not always ability of work as indicated above

1.2 Wind Energy:

Most of sunshine is absorbed in the atmosphere and is converted to heat. The temperatures are not uniform, so that the air streams occur to give rise of wind blowing. Thus, large part of solar energy falling the earth converted to wind energy. The total amount of the wind energies on the earth's surface are huge, however it is distributed so widely that the energy density is not large, except for hurricanes, typhoons, and tornados. The wind energy is not always available (intermittent) and has moderate density

1.3 WATER Energy:

Water is one of the most abundant and important substance known to man. It is present in the air as water vapor and in the ground in the form of underground streams .Surface water in the form of oceans ,rivers and lakes covers about three-quarters of the earth 's crust .It is essential constituent of all animal and vegetable matter. The first is that the sources of free energy are:

1. Electrical energy
2. Chemical energy
3. Photon energy. Any of these can activate the binding electrons of water molecules and separate hydrogen and oxygen.

Among these three sources, electric energy can be considered as unstable in the natural world, chemical energy is stored in fossil fuels, while photon energy is plentifully available in sunlight. Therefore, it seems reasonable to utilize solar photon

energy to split water, just as nature uses it in the photosynthesis of plants. The second fact is that if higher temperatures are available, then less free energy is needed.

II. WHY FUZZY MODELING

Fuzzy logic is a useful tool when dealing with uncertainty within data. Unlike Boolean logic, fuzzy logic has the power to deal with data that contains partial truth and ambiguity. Human beings deal with uncertainty in their everyday language. Since fuzzy logic is designed specifically to ad in data that is uncertain, it is an ideal tool for decision making involving real world applications. Fuzzy logic and set theory aid in uncertainty within data. Likewise an expression with a membership value of 1 would imply that the statement is absolutely true. In this IF and THEN rule is applicable ,because if solar panel unable to produce the sufficient energy then wind energy provided the support it is controlled by a fuzzy controller.

III. KNOWLEDGE BASED SYSTEM

Developer of knowledge based system (KBS) taken view to the problem solving task after require the use of domain is specific rule or thumb or heuristics. They provide technique for representing and reasoning with knowledge in a verity of the scheme including production rule or most common representation and allow one to heuristic representative with is contained from the express the consequent hold when some incident is true. The collection of rule for the knowledge based system of application and reasoning mechanism is called the inference engine and it can adopt various control strategies for select and applying rule, including proceeding from known data towards goal (forward changing) from goal towards data(backward changing) as well as mix mode and conflict resolution strategy. There is no sub statistical experience with development of knowledge based system and use of supporting development tool. Methodology of Simulation: Simulation process consists following eight rules

1. Identify and clarify the define problem.
2. List of statement in the objective of the problem.
3. Construct an appropriate model of the given problem.
4. Ensure that model represent the real solution.
5. Make Experiment with the model is constructed.
6. Analysis the simulation activity, make changes in the samples.
7. Tabulate the various values of the Decision criteria and choose the best fit.
8. Models include some elements of uncertainty.

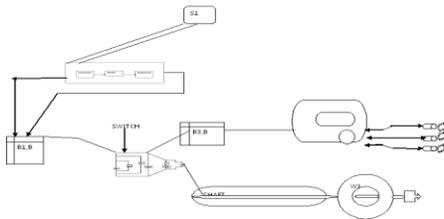
IV. SYSTEM DESIGN REQUIREMENT

This was divided following steps.

1. One prototype model
2. Three small wind mills.
3. Solar panel.
4. Batteries.
5. Two Sensors.

6. Two motors.
7. Switch.
8. Fuzzy Controller.
9. Wires
10. Triode, Capacitor, transistor
11. Connectors screws etc

4. Prototype Design:



Working Model Carbon Design

V. CONCLUSION

The Hybrid vehicle solves many problems related to the environment and is the best pollution free method. We need to make use of them so that we can reduce our dependence on fossil fuels. Hybrid vehicles do have some disadvantages like small speed range, initial cost is high. As this field of automobiles will be explored the problems will get solved. Prospective market and we should start using them in our day to day life. We have already completed making a solar vehicle prototype as our project and the vehicle is running successfully on solar and wind power. There are many hybrid cars available to buy today.

The proposed system is tested for practical purpose and found it having the following features through the testing design it is very easy in terms of installation, economically very cheap, comparatively very low in price no speed limits, no need for charging the batteries periodically.

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