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Applied science and technology

Project ideas

Improving cup holders adapted for wheelchairs
 How do preservatives work?
 Improving the cleaning of production lines to facilitate the transition from one series of foods to another
 How are geostationary satellite networks developed for telecommunications purposes?
 Diminishing the spread of cracks in construction materials
 How can energy losses on power lines be diminished?
 How do electron microscopes work?
 How do laser diodes work (e.g. CD players, laser pointers)?
 How does heat treatment increase the properties of metals?
 How to maximize the use of a mine roadway
 How to maximize bicycle production in a plant
 How can water be used optimally in agriculture?
 How to prevent gas outbreaks
 How are frozen foods processed?
 How are small industrial cakes produced?
 How to make bullet-proof best vests more effective
 How is field irrigation done?
 How do oil tanker wrecks occur (e.g. Exxon-Valdez, Erika) and how can they be prevented?
 Designing cutting tools (e.g. blades, lasers, saws)
 Designing a spectroscope controlled by an electronic terminal
 Designing a wind generator
 Designing composite materials (e.g. fibreglass)
 Designing a snow cannon
 Designing a system that would indicate the volume of liquid contained in underground storage tanks at a gas station
 Designing a calculator
 Designing an automatic fish food distributor
 Freezing foods without desiccation
 Developing a calorimeter
 Developing a spectrophotometer
 Building a telescope
 Developing a bimetal thermometer
 Creating new products to facilitate relaxation
 Developing boot soles adapted to our climate
 Creating a flight simulator
 Creating ones own Van de Graaf
 Creating a less costly and more efficient anemometer
 Creating asphalt that is resistant to our winters

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Building a cement canoe
 Creating an ergonomic school environment
 Developing a game on the evolution of the atomic model
 Creating a functioning model of an artificial kidney
 Creating a compressed air engine
 Building a glider
 Creating a robot to help children learn to tie their shoes
 Creating a system activated from inside a truck cab that would enable a trucker to cover his cargo
 Creating a non-polluting vehicle
 Is it possible to create an ecological battery?
 What to do with excess snow in cities
 Robotic windows
 Lighter and less costly artificial limbs
 Robots made of recycled parts
 Developing an automated control system
 Eliminating toxic fumes from tire combustion by means of a new reactor
 Is it possible to build an unsinkable ship?
 Estimating the intensity of radiation received at the MIR space station during a given period
 What problems would we have to overcome to live on the moon?
 Testing the durability of concrete
 Manufacturing and optimization solar cells
 Manufacturing fire retardant textiles
 Making paper using industrial methods
 Manufacturing a Foucault device
 Making paper using ecological methods
 Creating an alarm system
 Water filtration using sand or peat
 Inventing a process that would improve an airplane wing's lift
 Gliders
 Land surveying
 Electronics associated with light phenomena
 Is an iris imprint more reliable than a fingerprint
 Is hydrogen an efficient and ecological fuel?
 Magnetic resonance imaging
 The effect of the physics of elementary particles in cancer treatment
 How does the shape and texture of feathers affect airflow around a bird's wings?
 How do solar winds affect power lines?
 Could the flooding of the Saguenay have been avoided?
 A tidal power station: using the force of the waves and tides to create currents
 The use and management of telephone lines

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The use of plasma
 Nuclear power plants—solution of the future?
 Designing electronic circuits that are more resistant to the environment (corrosion, humidity, extreme temperature, severe shock)
 The conquest of Mars
 Developing a data acquisition system
 Manufacturing fibre optics
 Fibre optics
 Yeast and the production of carbon dioxide
 Ecological housing—housing of the future
 A photoelectric house
 Fishways to help save endangered species
 An electrochemical battery
 Prospecting for new underground petroleum pools
 Pyrotechnics
 Voice recognition for the disabled
 The space shuttle's resistance to heat
 Condom resistance
 The resistance of skyscrapers to airplane crashes
 High-definition television
 Is it possible to have a fully reliable car?
 Is the "watt" appropriate?
 The frictionless tachometer for calculating speed and distance
 Is the thermocouple a new source of energy?
 Duralcan—material of the future?
 How does a silica sand purification plant work?
 How does a breathalyzer test work?
 The transition from CD-ROM to DVD-ROM
 The transition from CDs to DVDs
 The first transistor (in the 1950s) was as small as a pinkie and, today, we can fit 50 million on a fingernail. Up to what point can we miniaturize and what laws of physics limit this miniaturization?
 Recycling computer components
 Will video surpass film in terms of visual quality?
 Gliders
 The applications of lasers
 Hydroelectric dams
 Digital cameras
 Making carbonated beverage cans lighter, while increasing their resistance to shock and corrosion
 Are thermal power plants the way of the future?
 Various techniques for eliminating disruptive noises
 Is "Super" gas really superior?
 What would we do without fibre optics?
 Hydrogels as a delivery system for medication

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Expansion joints on bridges
 Are straw houses only for the three little pigs?
 How does the subway work?
 Nanotechnologies
 Are polymers better than wood or metals?
 Bridge construction and reliability
 Sewage and water supply systems
 Artificial satellites
 Existing ergonomic standards
 Superconductors
 Complex systems (e.g. creating a plant for manufacturing checker pieces)
 Cancer-causing cell phones? How can we make these devices less harmful to the brain?
 High-energy manure: "ecological" energy thanks to a power plant?
 Is it possible to measure distances without using a map or moving around?
 Optimizing space in a submarine
 Is it possible to build safe small-scale nuclear power plants near each town to satisfy the town's needs
 The principles of holography
 Problems related to the resonance frequency of a structure (e.g. collapse of the Tacoma Narrows Bridge)
 What happens to a product after it goes into the recycling bin?
 What is the future of nuclear power plants?
 What is the best wood for heating?
 Choosing the right material, identifying its basic properties (e.g. density, conductivity, corrosion) and determining its uses
 Conducting particle physics experiments in your basement
 What are the challenges resulting from an ever-increasing use of cell phones?
 What are the challenges involved in building huge passenger liners (e.g. the Titanic)?
 What are the challenges involved in building a leaning tower?
 Creating a reverse osmosis device
 Recycling waste from an aluminum smelter
 Replacing non-organic products contained in toothpastes with organic products
 Making skyscrapers more resistant to earthquakes
 The high-temperature heat resistance of ceramics
 Moving around by means of a turbo sail (revolving cylinder)
 Techniques for depositing ultra-thin layers (e.g. anti-glare treatment for eyeglasses, plastic wrap on chip bags)
 The obstacle effect of tracers in air or in water
 Radioactive waste treatment
 A device that heats liquid through the force of friction

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- A device that uses ultrasound to detect presence, motion and distance
- A self-sorting recycling bin
- An arm with an articulated hand
- A bionic arm
- A cybernetic arm
- A hockey helmet that provides better neck protection
- A cyclotron capable of accelerating electrons up to a kinetic energy of 1000 eV
- A scarf better adapted to out winters
- An anti-pollution engine thanks to compressed air
- A tool to help search for people lost in the forest
- Producing whiter paper without polluting
- A wood-burning stove? No, a grain-burning stove!
- A confidential radio transmitter
- A reactor capable of eliminating the odours produced by pulp and paper plants
- A heat energy saver (e.g. from the dryer to the hot water)
- A robot guided by light
- A robot design inspired by insects
- A robot that can go anywhere to save lives
- A robot that makes right-angle turns (robotized platform)
- An underwater robot to help underwater archeologists
- An all-terrain robot capable of detecting anti-personnel mines
- A sensor that opens doors
- A wire-guided submarine built from recycled parts
- An automated system capable of controlling the temperature inside a greenhouse
- An assisted braking system for wheelchairs
- A more effective system of wheels for in-line skates
- A system that turns lights on and off when a person enters and leaves a room
- A thermometer that measures to the thousandth degree Celsius
- A pager turner for musical scores
- A train that operates by means of superconductors
- A pneumatic train
- A dog sled for the summer
- A vaporizer connected to the toilet flushing mechanism that eliminates foul odours
- A customized downhill bicycle
- A bicycle made for winter
- An ultrasonic white cane
- A photoelectric cell for calculating the concentration of sugar in an aqueous solution
- A chair made of recycled cardboard
- An ergonomic chair
- A robotic spoon that enables disabled people to feed themselves
- A lens that adapts to visual variations (e.g. for diabetics)
- An ergonomic house

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- A faster space shuttle that uses antimatter
- A reusable space shuttle
- Is it possible to have a nuclear battery?
- A computer mouse with variable shape
- A toilet with no tank
- A non-polluting car thanks to dual combustion purification
- Use of quantum confinement for electronics of the future
- Using X-ray diffraction to analyze the quality of steel and aluminum
- Verifying the efficiency of insulation materials
- Will robots one day be more intelligent than us?