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With over 4,000 new airports scheduled to be built worldwide within the next decade, an innovative design called the StarPort could produce fuel savings of 300 million gallons a year at each airport, would require only one-third of the land as a conventional facility and yield four times the revenue.

The breakdown according to www.AReCO.org is:
- 2,000 in the United States
- 1,800 in China
- 20 in the Baja Peninsula

Worldwatch Editor Ed Ayers calls the StarPort design a "breakthrough... a much more intelligent way of using techniques we humans have had all along".

The StarPort design by Jim Starry incorporates inclined runways that use gravity to help planes slow down on landing and accelerate on takeoff. Inclined runways would be shorter, requiring a smaller footprint.

"The impact of planes taking off down a declined runway means each plane will reach takeoff speed sooner, translating into a savings of 1,000 gallons of jet fuel per flight," stated Starry. "While that may not sound like much, considering a single modern airport consumes nearly 500 million gallons of fuel a year, the number quickly reaches astronomic proportions - add that to reduction of noise and pollution to the areas surrounding the airport."

(This statement is supported by a recent international Newsweek article released by John Ness.)

As StarPorts, the new airports would deliver nearly two billion gallons a day in fuel savings, more than 1,000 times the oil the Bush administration hopes to extract from the Arctic National Wildlife Refuge.

The runways would be slightly concave to help planes stay centered and stay out of cross wind vectors. Jim Bort and Jack Graham, Directors of LAX, recently stated that this is the only new airport design they have seen in 30 years that would definitely increase safety while reducing noise and air pollution.

Runways would be wider at touchdown, narrowing as they approach parking gates atop the terminal dome.

Jim Bushea, Director of FAA, has stated recently that "all designs are valid. Good luck designing airports."

"FAA regulations do permit inclines up to 1.5 percent," continued Starry. "It is possible to design a runway that starts at a 1 percent incline and slowly rises to a 4 percent grade."

"This design is the only design that's simple enough to be used in a short enough period of time to make a large enough difference - saving $80 billion in U.S. fuel a year - to arrest global warming - which is btw, murder in the first degree," added Starry. "The media has the presence and power to make the difference."

FACTS
A modern airport consumes nearly 500 million gallons of fuel a year - nearly half as much fuel as burned by a large city's automobiles. Since aircraft are not required to install catalytic converters, airports are responsible for more than half of the local urban air pollution. Airports create nearly 5 times the level of air pollution of the cars because they burn 1,000 gallons of fuel per hour.

Oakland's airport taxes a plane 178,000 a year from the terminal to the runway dropping 400 gallons of partially burned fuel each time.

"Eliminating the taxi very simply eliminates all noise and air pollution," stated Christy McKenny, Director of Planning at Oakland Airport. "Since planes don't back out to the runway, it's virtually instantaneous takeoff - no
more waste.

Airline gridlock at nearly every major airport causes more than 20 planes to be lined up on runways awaiting take off while spewing enormous amounts of partially burned fuel into the atmosphere. The fumes from idling diesel jet engines are about 14 times more polluting than gasoline exhaust.

At many airports, levels of carbon monoxide, hydrocarbons and nitrogen oxides are at least 10 times higher than in surrounding cities. Airports designed to handle 350 flights per day 30 years ago are now scrambling to handle 700.

A Boeing 747 jet consumes more than 500 gallons of fuel during taxiing - enough fuel to operate a car for a year. One thousand taxi-to-takeoffs consume 12 million gallons - sufficient to power 200,000 cars for a day. Only four percent of the fuel burned goes into actually moving the aircraft: The rest is thrown to the wind as exhaust and noise.

The sprawling 52-square-mile Denver International Airport was built to handle 2,000 flights daily - a landing or takeoff every 20 seconds. Denver International offers 100 gates and five 12,000-foot (2.3 mile-long) runways. The StarPort could save $200 million in fuel costs for an airport with the air traffic of Denver International while cutting taxiing distances by 48 percent.

Put on the Brakes
Regenerative braking systems installed on electric cars not only slow down speeding cars, they simultaneously transform the braking force into electrical energy that is stored in batteries for later use. If lightweight vertical armature electric motors were installed in aircraft wheels, the tires could be pre-rotated before touchdown (eliminating damaging structural shock and tread burn).

From the moment a plane touches down, the tires could begin generating electric power. Combined with an inclined runway, they would eliminate the need for noisy 30-second thrust-reversal engine burns that can easily burn 300 to 500 gallons of fuel for each landing.

The Subsurface Terminal
An incline of 2 percent would eventually lift a 6,000-foot-long runway 120 feet above the surrounding landscape. The central terminal, where planes park and wait to take on passengers, could tower as high as a 10-story building.

Most airport customers now endure a 1.5-mile trek from their cars to departure gates. At many airports, this means that each day 200 passengers on 700 flights wind up walking 70,000 miles to build up their Frequent Flyer accounts.

StarPort passengers would board from below, moving almost directly to their aircraft from a subsurface terminal in less than six minutes. For an airport the size of Denver, this design would reduce the average travelers’ curb-to-counter commute by 80 percent. In addition to terminal space, the sub-terminal space would include several floors of parking, restaurants, shopping, hotels, convention and meeting space.

Instead of circling a traditional airport and waiting in long lines to enter a single entrance, the StarPort would have traffic entering and leaving the airport from four directions.

Runways would be laid out side by side with a 600-foot separation, allowing simultaneous takeoffs and landings. Taxiing distances would be reduced 80 percent, with additional fuel savings. Lights beaming upward from the terminal could serve as runway lights. In winter, the terminal’s heat would serve to melt the ice and snow off the runways.

Major US cities are scrambling to find airport sites that meet a simple, but impossible, description: “50 square miles of unpopulated land - close to downtown.” A StarPort could be built on only 15 to 25 square miles. Instead of turning valuable open space into new mega-airports, StarPorts could be built at hundreds of smaller existing airfields that were abandoned with the move toward larger aircraft and longer runways.

“These airports will be built,” concluded Starry. “How they’re built is up to you.”

About Jim Starry
Jim Starry is the director of Economic Development Through Environmental Design, Inc [PO Box 1931, Boulder, CO 80306]. He has worked as an engineer at Martin Marietta and the National Center for Atmospheric Research. Articles on the StarPort design have appeared in Popular Mechanics, Popular Science, The Wall
Street Journal and will be cited in a forthcoming Worldwatch Report.

Recent presentations were made to World Bank, FAA, and Aspen Institute. Arrangements for presentations to city directors of transportation can be made by contacting George Ripley at or via email at . Fee for presentation is $5,000 plus transportation.

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