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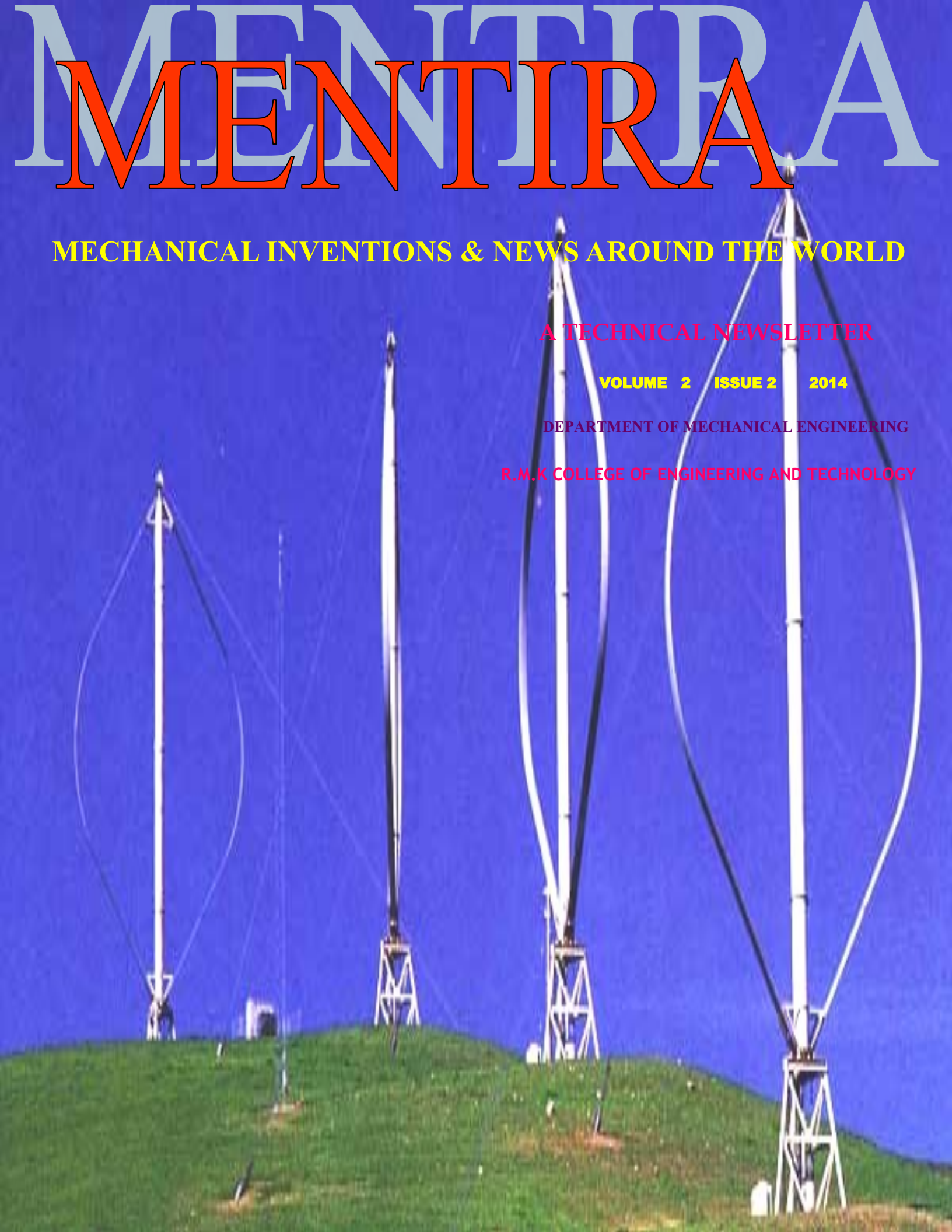
MECHANICAL INVENTIONS & NEWS AROUND THE WORLD

A TECHNICAL NEWSLETTER

VOLUME 2 ISSUE 2 2014

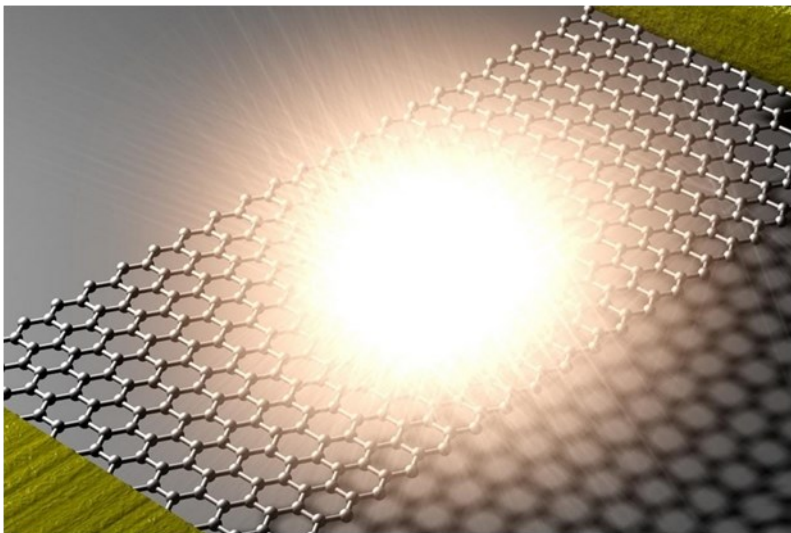
DEPARTMENT OF MECHANICAL ENGINEERING

R.M.K COLLEGE OF ENGINEERING AND TECHNOLOGY



SCIENTISTS JUST USED GRAPHENE TO CREATE A SUPER-THIN LIGHT SOURCE

Graphene is amazing. And we've only just touched on the very surface of what we can do with the wonder material. Here's another innovation a group of scientists came up with using the extraordinary allotrope: the world's thinnest light source. Created by a team of scientists from Columbia Engineering, Seoul National University, and the Korea Research Institute of Standards and Sciences, it's a light source created from the perfectly-crystalline, two-dimensional form of carbon. While measuring little more than the same thickness as a single atom, it manages to create light that's visible to the naked eye, opening the doors to future lighting products in downright crazy nano sizes. To create a filament out of graphene, the team attached small strips (by small, they mean smaller than the width of a human hair) of the material to metal electrodes, suspended them above a silicone substrate, and passed a current through the assembly to cause the graphene to heat up to 2,500 degrees Celsius, causing it to glow brightly. If you're familiar with graphene, it's an incredibly tough material, enabling it to withstand the high temperatures that create light without tearing apart. Graphene's unique qualities also manage to confine heat to a small spot in the center, keeping it from reaching the outer edges where tearing can normally begin. Because of its size, the graphene-based light emitter can be integrated into chips, making it possible to be used in super-thin, flexible, and transparent displays, as well as electronics for optical communications. The team also demonstrated the new model's scalability by creating larger-scale arrays of chemical vapor deposited (CVD) graphene light emitters.



(www.coolthings.com)

FORTIFY YOUR DRINKING WITH THIS BULLET PROOF SHOT GLASS



Yes, you can totally use the Bulletproof Shot Glass to defend yourself when being fired at with a 45-caliber pistol. We're not saying you'll survive the shooting, but, hey, it will make for a nice story to tell on Facebook if you ever live to tell the tale. Contrary to its name, this jigger isn't likely to survive an actual hit from a powerful firearm. Instead, it earned its moniker by looking like it has previously survived a bullet shot, all while remaining as a functional vessel for consuming shots of tequila, bourbon, whiskey, or



whatever cheap alcohol you can afford (we assume you just want to get drunk if you're taking straight shots). Made by Benshot, the Bulletproof Shot Glass is a custom-made jigger that incorporates a real bullet lodged in its body. Rather than merely encase the bullet in glass, the darn thing makes it look like the ammo is about to pierce through, with some magical force-stopping power allowing the glass to kill the bullet's momentum dead in its tracks. Or something like that. Each shot glass, handcrafted in the outfit's Wisconsin studio, is sized to accommodate 1.5 ounces of spirits – just enough to deliver a good buzz while leaving you wanting more. Yes, the glass is 100 percent safe to drink from (no glass shards or gunpowder whatsoever). They also make a larger tumbler version if you want to enjoy cocktails in a similar “bulletproof” vessel. Available now, the Bulletproof Shot Glass is priced at \$15 . (www.coolthings.com)

SCALEVO WHEEL CHAIR CAN CLIMB UP AND DOWN



We've seen wheelchairs decked out like custom race cars, wheelchairs that do stunts, and wheelchairs that can drive over rough terrains. It's about time we got a wheelchair that can scale a flight of stairs. That's exactly what they're bringing with the Scalevo. Currently a prototype, the mobility device gives its users the ability to climb up and down the stairs, all without requiring assistance or getting out of the wheelchair. That way, you don't need to find a ramp in order to enter a facility – just use the stairs like everybody else and get on with your day. The Scalevo is an erstwhile regular-looking electric wheelchair, which you can use to move around at the push of a button. Rather than simply running on level ground, it comes with retractable tank-like treads that you can deploy when climbing a flight of stairs, which it uses to move the user smoothly both upwards and downwards. To use the feature, the user drives up to the stairs (with their backs turned to climb up and facing the stairs to climb down) and push a button, causing the treads to pop out and plant themselves on the steps. After that, the chair is lifted up at an angle and kept level, as it uses the treads to crawl over the steps. An extra pair of wheels pop out at the final step to provide a smooth transition as the chair lands back on level ground. www.coolthings.com

USE SPARKY TO ADD ANOTHER FIRE STARTING OPTION TO YOUR CAMPING GEAR

Do you really need another way to start fires? Probably not. Would you like one if it looked as slick as Sparky? Probably



yes. If you're a frequent camper or an experienced outdoorsman, you're probably also familiar with the process of starting a fire using batteries and fine steel wool. Simply bridge the battery terminals with the steel wool, wait a few seconds, and, con-



gratulations, you've got the start of a fire going. Sparky is, basically, just that, except it replaces the ugly battery with an elegant-looking apparatus that you lay onto the wool to get sparks going. Designed to look like a writing instrument, Sparky consists of a tube-shaped metal with a copper tip and a screw-on cap. It comes in two types of bodies, aluminum and copper, each one weighing 3.1 ounces and 6 ounces, respectively, with a look that resembles a premium pen, rather than a handy camping tool. Inside, the body holds a pair of AAA batteries, with the copper tip connected to the positive terminal and the body connected to the negative one. To light up a small bunch of steel wool, simply remove the cap from the device, touch both the tip and the body to the wool, and wait a few seconds until you have big enough sparks going to tinder an actual fire. www.coolthings.com

Kirobo Mini Is An In-Car Robot Companion That Will Keep You Alert Throughout A Drive



Can a robot companion get you to drive more safely? That's what Toyota is hoping for with the Kirobo Mini, a companion robot that slots into your car's cup holder, keeping you company with a constant stream of conversation.

Designed by Tomotaka Takahashi (the same guy who designed Sharp's Robohon), the automaton will not just provide one-way chatter the way a radio broadcast or podcast would. Instead, it will talk like a human in conversation, responding not just to your own statements, but your actions and emotions during driving (e.g. it

will remark "Oops!" when you suddenly slam on the brakes).

When there's a drop in conversation, the Kirobo Mini will immediately start a new thread, making sure it keeps you mentally busy, so you don't drift into daydreaming or nodding off during long drives. Toyota is hoping the constant companionship the robot offers will not just keep you alert, but have you consciously drive more safely, too, since it will feel like you have a friend or family member sitting in the car.

The current version of the robot, which is still a concept prototype, measures roughly four inches tall and comes with a facility for docking that's sized to fit into the vehicle's cup holder. If market research points towards the concept's viability, the automaker is planning to fit it with the kind of features you'd expect from any in-car automation, such as turn-by-turn navigation, audio playback management, and interaction with smartphone apps, along with the conversational talents. (www.coolthings.com)

Yamaha's Motobot Robot Can Operate An Unmodified Superbike All On Its Own

A motorcycle-riding humanoid bot that's rigged to operate and handle a full-fledged, unmodified superbike. As in, it twists the throttle, squeezes on the brakes, and controls the steering all on its own, all while going round and round on the track. Built around a fusion of Yamaha's motorcycle and robotics technologies, the Motobot is still in the R&D stages, so it's not quite the racing automaton the company is hoping to turn it into. In fact, this initial version can only ride slowly and even uses training wheels to avoid tipping over when making a turn. Still, it's quite an achievement and an impressive first step. Plus, it totally looks like the way I always imagined what our future robot police force is going to appear like.



According to Yamaha, the goal is to eventually fashion the robot into one that's capable of piloting a two-wheeled 1,000cc machine to speeds of up to 120 mph on a race track. Not that they're hoping to build a robot GP league or anything, though. Instead, they want to employ it as a testbed for developing safety and rider support systems, as well as use any insight the robot provides to pioneer new lines of businesses. (www.coolthings.com)

Lunicycle Uses Leg Supports To Make It Easier To Balance Atop A One-Wheeled Ride



We have no idea how long it takes to actually learn to ride a traditional unicycle. Truth be told, it doesn't seem easy. That won't be the case, though, with the Lunicycle, which uses a leg support system to make it easier to balance than conventional unicycles.

Using a system similar to the [Solowheel](#), it provides a facility that your calves can lean into during a ride, making it easier to maintain your body's balance while pedaling. It also has a low center of gravity to ensure you're unlikely to suffer any adverse consequences even if you fall off.

Designed to offer some serious exercise, the Lunicycle comes with no seat, so you'll be standing and balancing your body the entire time you pedal. Like traditional unicycles, you turn by simply shifting your body weight, freeing up both hands the whole time, so you

can check your phone, eat a sandwich, and even carry groceries in each hand. Instead of a round wheel, it uses one that's slightly oval, which makes it easier to mount (it won't just roll out of control), apart from helping you maintain momentum when riding, although it does take standard bicycle tires, so you can buy replacements right off the local bike shops. Features include adjustable pedal locations, a maximum weight of 300 pounds, and a convenient handle on top, so you can carry it by hand in places where you're not allowed to ride.

(www.coolthings.com)



Ryno Microcycle Is A Lustworthy One Wheel Electric Motorcycle

The first time we saw [Ryno's Unicycle](#), it looked like someone took one end of a motorcycle and chopped off the rest.



Now that the company has unveiled its final design, it still looks like someone took one end of a motorcycle and chopped off the rest. Except with the new Ryno Microcycle, it looks like they chopped off a sporty big bike instead of a goofy-looking two-wheeler. Basically, it's awesome. From the looks of things, they compressed an entire motorcycle into the space of a single wheel. It comes with a smaller frame, motorcycle-style handlebars, and even a pannier rack in the back for carrying a small load of cargo. The Ryno Microcycle is a motorized unicycle that you accelerate by leaning forward, slow down by leaning backwards, and turn by leaning subtly into your desired direction. Oh

yeah, it can pivot 360 degrees, allowing you to spin in place while wearing a clown suit for traditional unicycle novelty. Onboard gyros take care of balancing the ride during forward and backward leans, although you'll need to balance it side-to-side just like a regular motorcycle. It comes with redundant motors built into the wheel itself, allowing it to run at speeds of up to 10 mph for up to 10 miles.

(www.coolthings.com)

ArcaBoard: Finally, A Hoverboard That Actually Hovers On Any Surface



With all the “hoverboards” that don’t hover being standard fare in the current news cycles, it’s refreshing to see news of an actual hoverboard. One that, you know, actually lifts off the ground. Called the ArcaBoard, it’s not just a real, functional hoverboard that can lift off any surface – it’s also going to ship by April of 2016 (hopefully not April 1st). Made by Arca Space, it’s a hoverboard that operates the way we always imagined them to work – with thrusters that lift it off the ground and keep it in the air. Unlike the hoverboard of our fantasies, though, it’s massive, being closer in size to an oversized pillow (or even a small mattress) than a flying skateboard. That’s right, instead of using mag-lev principles or applying a novel scientific concept, the ArcaBoard goes old school, using 36 high-powered fans that create a maximum thrust of 430 pounds (equivalent to 272 horsepower) to power its hovering capabilities. The fans are lined up on the two parallel sides of the board, with the center slot serving as compartment for the battery modules. Since powering 36 fans puts a heavy load on the battery, it’s only capable of running for six minutes at a time, with the accompanying Arca-Dock charging it from empty to full in as little as 35 minutes, so you can get back in the air after just over half an hour of waiting. It can hover to a maximum height of one foot and move at speeds of up to 12 mph, although we’re not entirely sure how to control its movements (they don’t show it in the video). Does it work? Looks like it. Is it the hoverboard we wanted? Probably not. Actually, definitely not, but it could be a fun toy for someone rich enough to not mind blowing \$19,900 (plus \$4,500 for the charging dock) on what’s, for all intents and purposes, a prototype device. (www.coolthings.com)



Lumen Flashlight Uses Heat From Your Finger To Power Its LED Bulb

It’s not the most powerful torch light in the world, but it just might be the most convenient. Called Lumen, the tiny flashlight’s LED bulb is designed to power using your body heat. Simply put a finger on the designated area on top and the device can draw enough heat to keep itself powered to light



your way in the dark. That’s right, it’s a torch light that shoots out a beam with no batteries, no solar panels, and no hand-cranking. As long as you keep a finger on top of the case (and you aren’t wearing gloves), it should switch on and stay lit, giving you a convenient, portable light that can never run out of power. The Lumen is a tiny flashlight that measures 1.6 x 3.2 x 0.4 inches and weighs a super light 1.5 oz, with a hole in one corner for conveniently adding onto your key fob. It houses an equally small CREE LED that can deliver a brightness on par with the flash you see used in smartphones. Yes, that isn’t much, but if you’ve ever used your phone as an instant flashlight in a jiffy, then you also know how useful it can still be, despite the underpowered LED. A ceramic bar that functions as a thermoelectric generator is situated on top of the case, producing enough power to turn on the LED at a 3,000 mCd of light output. Think the flashlight is too small to find in the dark? It just might be, which is why it comes with an option to be outfitted with a tritium vial inside, which should give it instant visibility in the dark for up to 10 years, ensuring you can easily find it, whether on a messy desk or a crowded pouch.

(www.coolthings.com)



Jetpack Aviation's JB-9 Flies Around Statue Of Liberty, Reignites Our Jetpack Dreams

If you want people to talk about your upcoming jetpack, what better way to create buzz than to fly it around the Statue of Liberty, right in plain view? That's exactly what Jetpack Aviation did with the JB-9, a turbine-powered, back-mounted flying machine that's exactly how we imagined the jetpacks of our future will look like. Unlike the upcoming Martin Jetpack, it's a true backpack-sized rig that you can walk around while wearing. That way, you can interrupt that morning flight to the office with a quick stop at Starbucks, then fly back up to resume your commute once you've had your caffeine fix. Yeah, a future with jetpacks sounds so awesome. Billed as "the world's only true jetpack," the JB-9 uses two vectored jet turbines to perform vertical takeoffs and landings, as well as zoom through the air like a flying superhero. While there's no exact weight or dimensions listed, it's light enough that you can jog while having it strapped to your back and small enough that it can be fitted inside the trunk of a car (the arms can be folded for a more compact storage size). The current prototype can hold 10 gallons of fuel, which the device burns at a rate of around a gallon per 60 seconds, restricting the flight time to under 10 minutes. It can fly up to several thousand feet in the air, with the speed electronically limited to 55 knots (around 100 kph) to ensure stable performance. The kicker? You still can't buy one either. According to Jetpack Aviation, they're not going to sell the JB-9 (or its successor, the JB-10) until they've finished developing the self-stabilization system, which should make it a whole lot safer for less-experienced pilots. Check out their website to learn more.



(www.coolthings.com)

Pocket Sun Power Bank Integrates Solar, Kinetic, And Thermoelectric Chargers



Like many folks, you've probably seen one of those power banks with integrated solar panels for replenishing the battery stores with natural energy. The Pocket Sun does it even better, harvesting energy not just from the sun, but from other natural sources, too. Created by Ghost Technologies, it's a pocket sized external battery that produces trickles of energy from sunlight, movement, and ambient heat. That's right, it combines a solar, kinetic, and thermoelectric generator in a single compact device, ensuring you can produce clean energy, whether you're lounging at the beach in the afternoon, riding your bike on the way home at night, or just chilling in the couch doing a Netflix binge. The Pocket Sun measures 3.5 x 3.5 x 0.7 inches, so you shouldn't have any trouble cramming it into a pants pocket. It houses a 2,500 mAh battery, which isn't a lot, but should be enough to boost battery life and keep your phone (or smartwatch or fitness band or... you catch the drift) humming by the end of the day. While it comes with a USB port for charging devices like other power banks, it also integrates Qi's wireless charging tech, so those with compatible devices can get their gadgets juiced without dealing with wires. It uses a 2 amp circuit for charging, although the current prototype can only dispense with 1 amp (they're aiming for a 2-amp charging capability for the final version). Do note, we doubt even a triumvirate of clean charging hardware will be enough to keep this thing topped up throughout the day, so you'll probably want to plug it to an outlet like any other power bank when you have a chance. It will, however, prioritize freshly-generated power before dipping into the battery, so it can minimize the

drain during use throughout the day.

(www.coolthings.com)

Kalam's life

1. Born on 15 October, 1931, in a Tamil Muslim family to a boat owner, Jainulabudeen, and Ashiamma, a housewife, in Ramanathapuram district of Tamil Nadu, Kalam's childhood was not easy and privileged..
2. In order to support his poor family, young Kalam used to distribute newspapers after his school hours to add to his father's income.
3. Kalam was a hardworking student too, who enjoyed spending hours on his studies.
4. His favourite subjects were Mathematics and Physics and ultimately, he took up aerospace engineering later in life.
5. His interest and work in aerospace engineering brought him close to India's civilian space program and military missile development efforts.
6. For his work on the development of ballistic missile and launch vehicle technology, Kalam came to be known as Missile Man of India.
7. India owes its development as a nuclear nation to Kalam's organizational and technical support for Pokhran-II nuclear tests in 1998, the first such tests after a gap of 24 years.
8. At ISRO, He was one of the pioneers of India's first space launch-vehicle program.
9. Kalam was recipient of Padma Bhushan, Padma Vibhushan and Bharat Ratna.
10. He was also a recipient of honorary doctorates from 40 universities.
11. A prolific writer, Kalam has authored around 15 books on various subjects ranging from nuclear physics to spiritual experiences.
12. His autobiography *Wings of Fire: An Autobiography*, first published in English, has been translated into 13 languages including French and Chinese.
13. Kalam's life also inspired *I Am Kalam*, a 2011 Hindi film directed by Nila Madhab Panda.
14. The film showcases a poor Rajasthani boy, who is inspired by the life of the former President of India, APJ Abdul Kalam. It's Kalam's life which fuels a strong desire to learn in the young boy.
15. Sworn in on 25 July, 2002, Kalam became 11th President of India, succeeding KR Narayanan. For his simple and humble attitude, he was affectionately known as the 'People's President'.

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