Science & Technology Briefs

The World Will Not Ban the Internal Combustion Engine

While the governments of Britain, the EU, and the U.S. would like to make the internal combustion engine (ICE) extinct—as part of their drive for suicidal deindustrialization—most governments are not cooperating. Even the EU has had to back off somewhat. Still, much harm is being done to transport efficiency through the CO_2 hoax.

In Europe, the transport ministers of Germany, Italy, Poland, Hungary, Romania, the Czech Republic, and Slovakia, representing about half of the EU GDP, met March 13 to coordinate their opposition to the EU's ICE phase-out. Agreement was reached with the EU on March 25 that ICE vehicles running on synthetic, carbon-neutral fuels will be permitted.

China and Japan have no plans to forbid vehicles with hybrid power—part ICE and part electric. China announced Oct. 2020 that 50% of new vehicles sold in 2035 will be electric, plug-in hybrid, or fuel cell-powered. The other half will be hybrids.

Russia makes electric vehicles, but there seems to be no move to eliminate the ICE, hybrid or otherwise.

In Central and South America, Africa, and Central Asia, very few governments have plans to eliminate the ICE.

The recent European and U.S. background: On Feb. 15, the European Parliament voted 340 to 279, with 21 abstentions, to ban the sale of new gasoline- and diesel fuel-powered cars and vans in the EU by 2035, pursuant to its "Fit for 55" Green Deal climate target package. This confirmed the Oct. 28 agreement among the so-called "Trilogue" (EU Council, EU Commission, and EU Parliament).

From that date, no vehicle which does not run exclusively on a CO_2-neutral fuel, including hybrid-electric and plug-in hybrids, can be registered for use on EU roads. After that date, new car buyers will only have the choice of either battery-electric vehicles or cars fueled by hydrogen (but modified March 25, as above). The gasoline and diesel ban only affects sales of new vehicles; it will still be possible after 2035 to buy, sell and drive used cars that are powered by combustion engines. However, the cost of ownership for those vehicles—fuel, maintenance, purchase price, and insurance—will undoubtedly increase.

Electric vehicles are more expensive by about 25–40%, which will reduce car ownership.

According to a Feb. 16 online posting in *Forbes*, the Netherlands, Belgium's Flanders region, Sweden, Greece and Slovenia had already set themselves the goal to end the sale of new gas-powered cars even earlier—in 2030, or 2029 in the case of Slovenia. The only country in the world exceeding this insanity is Norway, where about 80% of new cars sold are already fully electric and 100% will be so by 2025. Several EU nations and some others have signed a COP26 declaration for gasoline car phase-out with a 2040 deadline.

Forbes reports: "While EU member countries are technically bound by laws the EU parliament passes, countries have in the past gone against decisions—risking fines in the process. A divisive issue like the gas car sales ban could trigger more deviant behavior."

In the United States, California became the first state, in August 2022, to set a phase-out date for new internal combustion engine (ICE) car sales, also 2035. While 17 other states have tied their vehicle standards to California's under the Federal Clean Air Act, several now want out, as a full phase-out date has been set. Those going along with California's decision (or expected to do so shortly) are Washington, Oregon, Connecticut, Massachusetts, New York, Vermont, and Delaware.

The UK will phase out ICEs even earlier—by 2030.

New Testing Technology Identifies Respiratory Viruses in 5 Minutes

A new, ground-breaking testing technology "combines molecular labeling, computer vision and machine learning to create a universal diagnostic imaging platform that looks directly at a patient sample and can identify which pathogen is present in a matter of seconds—much like facial recognition software, but for germs," reported the *Phys.org* website Feb. 10.

The new technology and its tests were presented in a paper published by *ACS Nano,* a journal of the American Chemical Society, authored by Oxford University physics doctoral student Nicolas Shiaelis, Oxford Professor Achillefs Kapanidis, and Dr. Nicole Robb from the University of Warwick and a Visiting Lecturer at Oxford.

"In the study, the researchers began by labeling viruses with single-stranded DNA in over 200 clinical samples from John Radcliffe Hospital. Images of labeled samples were cap-

tured using a commercial fluorescence microscope and processed by custom machine-learning software that is trained to recognize specific viruses by analyzing their fluorescence labels, which show up differently for every virus because their surface size, shape, and chemistry vary.

"The results show the technology is able to rapidly identify different types and strains of respiratory viruses, including flu and COVID-19, within five minutes and with better than 97% accuracy."

Through machine learning, the technology will "significantly improve the efficiency, accuracy and time taken to not only identify different types of viruses, but also differentiate between strains."

Dr. Robb explained: "Our simplified method of diagnostic testing is quicker and more cost-effective, accurate, and future-proof than any other tests currently available. If we want to detect a new virus, all we need to do is retrain the software to recognize it, rather than develop a whole new test. Our findings demonstrate the potential for this method to revolutionize viral diagnostics and our ability to control the spread of respiratory illnesses."

AlphaFold2: A Faster Path to Drug Therapies

Nearly everything the body does, it does with proteins. Each of the billions of proteins in our bodies is a different, ribbon-like sequence of 20 chemical units known as amino acids. Attraction and repulsion among the 20 amino acids cause the ribbon to fold into a 3D structure of intricate curls, loops, and pleats.

Determining the structures of proteins, and thus their functionality, has not only helped us tackle disease and more quickly find new medicines, but has revealed important elements of the emergence of life itself.

The first protein structure was solved in 1957, following 22 years of work. Today, determining a protein's structure experimentally still takes months to years in the lab. In principle, it should be possible to predict a protein's structure computationally, given its amino acid sequence. But computer programmers have long struggled to capture the subtle balance of forces that nature exploits to determine protein structure.

That all changed in 2020 when DeepMind, a UK-based firm, came up with AlphaFold2. Using a deep learning model, AlphaFold2 software accurately predicts, in seconds, the 3D structure of proteins *to the nearest atom*. It doesn't beat the lab techniques, it complements them.

Scientific teams around the world are now using AlphaFold2 for research on cancer, resistance to antibiotics, and COVID-19 therapies. Since 2020, DeepMind has released over 230 million protein structure predictions into a database called UniProt that is freely and openly available to the global scientific community. It includes nearly all proteins known to science, while millions more are being identified every year.

The revolutionary impact of AlphaFold2 is rapidly unfolding in labs worldwide.

A Giant Railroad Repair Robot for Remote Work

Last May, West Japan Rail Company and Nippon Signal unveiled a prototype of a new large robot designed to assist in dangerous tasks such as fixing remote railroad infrastructure. The robot is 32-feet high.

Next Web reported, "The robot has a large human-like torso and terrifying, mechanical claw-hands. It's mounted on a hydraulic crane, which rides around the rail system on a specially made vehicle…. Its main job is to enable human workers to lift and manipulate heavy equipment across the rail system without exposing them to the risk of electric shock, or falling. But it can do a bunch of other tasks as well, like handling maintenance tools and cleaning the power lines with a specially designed multi-angle brush."

The robot is controlled by an operator wearing a Virtual Reality headset: "The operator uses motion-tracking to control the movement of the cameras perched on top of the robot's torso. Then, by gripping a pair of handles, the human pilot is able to control the machine's arms and hands. This coupling between human and robot actually makes sense: the pilot can gain a kinetic feeling of the machine, as if operating a mechanical extension of themselves."

Commercial production is expected in 2024. A video of the prototype in action is posted here.

A Nuclear Rocket Engine by 2027? To Mars in Weeks, not Months

According to a Jan. 24 release, NASA and the Defense Advanced Research Projects Agency (DARPA) will collaborate on the DRACO project, the Demonstration Rocket for Agile Cislunar Operations, to develop a nuclear-thermal propulsion rocket system, to culminate in a demonstration of the rocket in orbit in 2027.

Nuclear propulsion is essential for extensive human access to the Solar system. With chemical rockets, the trip to Mars has taken 6–10 months, and can only be easily made every 26 months. With nuclear propulsion, however, championed by Lyndon LaRouche, the engine could fire for a significant portion of the spacecraft's flight, bringing the travel time down to a matter of weeks, rather than months.