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Adele Williamson, Concetta De Santi, Bjorn Altermark, Eric Hjerde Scientists are using seawater bacteria to engineer compounds that could potentially become cost-effective, renewable alternatives to crude oil. Current jet fuel is inefficient and expensive. It can be a cheaper, cleaner solution. It is the largest source of water on the planet, but seawater is mostly unsuitable for human use. Now researchers from the US Navy and the University of Manchester in England are using bacteria that grow in seawater to engineer high-cost compounds that show potential as jet fuel. Discovered in 1980, the Halomonas bacteria are most remarkable because they are extremely salty. Scientists at the Manchester Institute of Biotechnology (MIB) with the support of the U.S. Navy's Office of Naval Research Global (ONR) have re-instituted the genome of the microbe. The changes changed the metabolism of Halomonas, which in turn allowed for the creation of compounds that could become cost-effective, renewable alternatives to crude oil. Scientists call it microbial chasis. Effective biofuel strategies require economic fuel production derived from a reliable microbial host on a very large scale, usually cultivated on a biomass of renewable waste or industrial waste, but also with minimal downstream processing and avoids the use of fresh water, said Nigel Scrutton of MIB in a press statement. With Halomonas these requirements can be met, thus minimizing capital and operating costs in the production of these next-generation biofuels. The current generation of biofuels is based in agriculture, using maize and sugar beet. But with Halomonas-based fuel, scientists say that agriculture can be used for human consumption rather. And the use of crude oil is notoriously dirty. Even being able to partially add altered fuel bacteria can make for much cleaner energy. Current jet fuel is inefficient. For example, if you're thinking about extracting rosehip oil- you need to plant hundreds of acres of flowers and then collect flowers, squeeze oil out of rose petals to process the tiniest amounts for making fragrances, said Patrick Rose, scientific director of ONR Global in London, in a statement. It's economically very expensive, land and resource-intensive, in a climate to harvest, when these resources can be used for more sustainable agriculture, Rose continues. It is possible to reproduce exactly the same molecules we collect from crops to make high value compounds using this biological process, taking genes from the plant and inserting information into bacteria. With this engineering feat, there is no dependence on environment and increased reliability in the product. Finding fuel for big things that move fast is often dirty and hard to find. There's also a race for cleaner cleaner rocket fuel. This content is created and supported by a third party and is imported to this page to help users provide their email addresses. You may be able to find more information about this and similar content on piano.io Oil Companies extract crude oil from Earth via perforation on the Earth's surface called an oil well. Crude oil is a liquid form of oil. In addition, wells provide natural gas. Oil wells are 5 to 36 inches in diameter. The drill breaks through the ground a little bit and the drilling liquid brings the particles to the surface. Drillers add a hull or pipe to provide structural integrity to continue drilling through formations that are less stable. As the liquid returns to the surface, the drillers strain it to remove the rock clippings and the liquid is processed into the well to remove more ches. Completion of work on the well includes the addition of a perforated shell to the production area for the flow of oil into the well. Once the well is complete, the crew removes the rig and installs the pump. The pump removes the oil and distributes it over the network for transportation to the refinery. Since the well reaches a point where it is no longer economically viable for operation, the operator pours cement into certain parts of the hull to prevent gas and oil from stirring. The company sets the lid and buries the well. Silver is built into several different minerals, namely copper, zinc and lead, and the processing process varies depending on the source. Silver derived from copper and its derivatives, including copper sulfide, requires different processing and processing methods than silver minerals taken from zinc and lead deposits. These metals have different physical properties, which explains the different methods needed for proper extraction. Regardless of size, the rockets operate in the same way, i.e. by burning fuel to produce heat and energy. Most rockets turn fuel into hot gas or steam, which is then sent out of the engine by exhaust pipes or fans. The gases produced help propel the rockets forward, and unused parts are removed through the rear ends of the engines. Rocket engines come in two main varieties: those that use liquid fuel and those that use solid fuel. Engines that use liquid fuel are mainly in space shuttles. Liquid fuel engines tend to be larger than engines that run on solid fuel, which are found in fireworks, model rockets and cars. Rocket engines kind of like jet engines. However, unlike jet engines, rocket engines do not require air to operate. This allows them to function in space and at higher levels of the atmosphere. Rockets serve many purposes in everyday life, but are not new creations. The first rockets appeared in China in the 1200s and were used for fireworks fireworks As technology improved, their use spread to war and technology. Mark Rich, one of the most influential and controversial commodity traders who has ever lived, once called oil the blood that flows through the vein of the world. Crude oil is the main source of energy for the world economy. In addition to being one of the most actively traded commodities, the price of crude oil is extremely sensitive to geopolitical and weather events. In fact, the global crude oil market is all about waiting for investors to supply and demand, and oil prices are very volatile and heavily dependent on consumer and investor sentiment. Thus, global events, such as the growing threat of a new coronavirus, can send shockwaves across the market. When it comes to physical oil, there are different varieties. The most popular commercial varieties are Brent North Sea Crude (commonly known as Brent crude oil) and West Texas Intermediate (commonly known as WTI). Brent refers to oil produced from The Brent and other north Sea oil fields. The price of Brent crude oil is a benchmark for African, European and Middle Eastern crude oil. The pricing mechanism for Brent dictates the cost of about two-thirds of the world's crude oil production. Oil contains sulfur, and the percentage of sulphur in crude oil dictates the amount of processing needed to convert oil into energy products. Sweet crude is a term that refers to crude oil that has less than 1% sulfur. The sulphur content of both Brent and WTI is well below 1%, making them both sweet. They are also less dense (light) than many of the raw oils produced elsewhere. Both of these characteristics facilitate their processing and are more attractive to oil product manufacturers. WTI is the benchmark for North America. NYMEX (New York Mercantile Exchange) CME (Chicago Mercantile Exchange) lists futures contracts for WTI crude oil. The supply of futures for WTI crude oil takes place in Cushing, Oklahoma. Brent crude futures are traded on the Intercontinental Exchange (ICE). Since Brent crude oil is traded internationally, delivery locations will vary by country. Since both types of oil are used as benchmarks, different countries will use them differently. Asian countries typically use a mixture of benchmark prices for Brent and WTI to assess their crude oil. Brent and WTI oil has different properties, which leads to a price difference called a quality spread. They are also located in different parts of the world (Brent in Europe and WTI in North America). This is called location distribution. The nominal price of crude oil is only one of the factors influencing the market's understanding of crude According to CME Group, which manages the NYMEX commodity market, the WTI/Brent spread is influenced by four key factors: U.S. oil in the United States Levels Of Cool Oil Supply and Demand balance in the U.S. North Sea crude oil operations Geopolitical issues in the international crude oil market Political shifts, weather events, and global health crises were among the biggest shock factors in the oil market. Due to the outbreak of coronavirus, the International Energy Agency (IEA) has lowered its forecast for global oil demand in March 2020, Predicting the first year-on-year decline in demand since 2009, the IEA said in its April 2020 report that demand is likely to still decline by December 2020 to understand how global events can lead to a sharp decline in the spread between Brent and WTI over long periods of time. Look back a few years. At the beginning of 2011, the Brent-WTI spread was close to flat. Spread in 2011 expanded, Brent is trading at a premium level compared to WTI. Around the time the Arab Spring (the uprising in much of the Arab region) began in Egypt in February 2011, the spread expanded. Fears about the closure of the Suez Canal and the lack of available supplies have made Brent crude more expensive than WTI. As tensions over the canal eased, the spread decreased. Then, at the end of 2011, the Iranian government threatened to close the Strait of Hormuz, through which about 20% of the world's oil comes annually. Once again, the spread widened as Brent soared to \$25 per barrel above WTI. In 2015, the premium fall of Brent occurred for two reasons. First, an agreement was reached with Iran allowing the country to export more oil, which was supposed to increase the amount of Iranian oil entering the market on a daily basis. Since Brent is the benchmark for Iranian oil prices, it lowered the price of Brent at the time. Second, the number of drilling rigs in the U.S. declined around the same time. And, with increased support for U.S. oil exports abroad, this meant less drilling in the future and less production in the U.S. on a daily basis. Thus, the price of Brent decreased due to hints of an increase in Iranian oil, and WTI strengthened due to lower production in the U.S. and increased exports. It is important to note that the expectation of oil inflow into the market was enough to cause price fluctuations. Weather can also have serious effects on prices. The U.S. Energy Information Administration attributed the 2005 hurricanes to a sharp rise in oil prices as refineries and production closed during weather events. The information is presented without taking into account investment objectives, risk tolerance or financial conditions of any particular investor and may not be suitable for all investors. 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