# Alternative energy sources to oil

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Olazar Martin, a chemical engineer at the UPV / EHU (Spain), has designed a fundamental process for the production of sustainable alternatives to oil refineries. According Olazar own, one of the unavoidable conditions of the process is to not harm the environment. This researcher has developed a reactor based on the conical spouted beds, which, by pyrolysis “flash” -pirólisis quickly produces fuels and raw materials from various types of waste.



Olazar has developed two lines, depending on the type of waste: one uses biomass; other plastics, tires and similar waste. The first line uses agricultural waste and biomass from forests. According Olazar, 70% of the treated mass can be converted into bio-oil, “meaning that if we treat one ton of biomass, we get about 700 liters of bio-oil,” he says. The process for the production of bio-oils is based on the pyrolysis “flash”. “It’s a very fast pyrolysis. We produce it in 20 milliseconds, at low temperature (500 degrees), “he says, so that a high consumption of energy is not required.”

With pyrolysis is degraded biomass, and the compounds produced must be removed quickly, since, otherwise, “begin to react together and produce elements that are not interested in. Therefore it is very fast pyrolysis” says the researcher. The compounds which are produced upon degradation extracted biomass, are condensed and produced bio-oil, which can be used as a substitute for petroleum. “This is, to put it in some way, biological oil,” says Olazar. According to the aforementioned research, the quality of bio-oil is lower than the oil, since, contrary to this, that contains oxygen, which must be treated. Stresses Olazar that can be used to produce any petroleum product hydrogen, olefins, aromatics, etc. He

remarks also that the process of bio-oil is much more
efficient than biodiesel: “To produce biodiesel, must cultivate a certain plant, of which a very small percentage is used. Moreover, only 10% of the dough used becomes biodiesel. We, however, use whole plant residues, and obtain a percentage of 70% “.

Said reactor is patented and has launched a pilot plant in collaboration with the research center IK4-Ikerlan. The project developers plan to open a larger facility in the future. In addition to project related to biomass Olazar also designed to develop other products like the original (or very similar) using other waste (plastics, tires …). This project is especially effective for the treatment of tires: “With a pyrolysis ‘flash’ made under certain conditions, we produce some interesting materials and carbon black.”
Carbon black is the main raw material used in the manufacture of tires. In sustainable refinery, treatment of used tires becomes 30% black carbon residue. “A profitable enough to share,” says Olazar. Besides as black coal, the solid has numerous applications also as adsorbent. The remainder (liquid) can be used for different applications. Among the advantages of that system emphasizes Olazar the following:. that can operate continuously. It is a single reactor of its kind Olazar patented, and he wants to launch a mid-sized unit.