The biofuels industry is highly dependent on a variety of technologies. Some technologies are simply embodied in the machinery, chemicals and equipment that can be bought on the open market. Some of the process technology is well known and available in the public domain. The builder or owner may have previously developed proprietary technology in-house. But often some of the required technology is not available publicly or in-house, and in that case the developer must acquire technology available only from third parties. That’s where technology licensing comes in.

Licensing is a way to exploit technology. The party that has developed the technology (the Licensor) may be able to leverage its return on its technology by licensing it to another (the Licensee). The Licensee may have more capital and more broad industry expertise, and may be better able to put that technology to use more quickly and pay substantial fees back to the Licensor. At the same time, the Licensor can tailor individual licenses to limit and control how the Licensee puts that technology to use.

The benefits of a technology license to a Licensee can be immediate and dramatic. By acquiring a license of existing technology the Licensee can avoid the delays, risks and costs inherent in in-house development. A “develop or license” analysis is much like a “build or buy” analysis—in many cases it will be an easy decision to acquire a license. In some cases there may be no choice. For example, if the technology is protected by patents, independent development will not avoid the need to acquire a license of the relevant patents.

For both the Licensor and the Licensee, a license is typically a revenue-generating strategy. And for both the Licensor and the Licensee, a license is often the best solution to what would otherwise be a timing problem. A license may provide immediate cash to the Licensor, and provide immediately available technology to the Licensee.

**What Is a License?** A license is an agreement between the Licensor and the Licensee. The essence of a technology license is that the Licensor permits the Licensee to use the Licensee technology that otherwise could not legally use. It amounts to a promise not to sue for what would otherwise be a legal infringement of rights owned by the Licensor, such as patent or trade secret rights.

Licenses don’t transfer ownership of the technology, so the Licensor may impose conditions and limits on the Licensee’s use of the technology. Licenses are not usually free—normally the Licensee must pay something, either an initial fee or some sort of ongoing royalties. The Licensee will often be restricted in what it can do with the technology. Most licenses are not totally irrevocable; the Licensor will usually retain the right to terminate the license if the Licensee does not live up to the agreement.

Technology licensing is widespread in the biofuels industry. For example, a builder may license patents or know-how (trade secrets) to the developer and operator of the plant. In some cases there may be a subcontractor that will provide engineering expertise and a technology license to the developer, in conjunction with the builder’s engineering and construction activities. There are large developer/owners of ethanol plants that will license patented components of their proprietary technology to other developers, for a fee.

There are university technology transfer programs that have developed their own proprietary technology and that will license technology developed within the university to a builder or operator. The National Renewable Energy Laboratory has an extensive license-oriented technology transfer program.

**Legal Rights.** Technology licensing can apply to patents, copyrights, trade secrets and trademarks, but in the biofuels world the two legal rights that are most relevant are patents and trade secrets.
Patents. The gist of a patent under U.S. law is that the patent owner can exclude others from making, using or selling the patented invention during the 20-year term of the patent. Patents cannot be renewed, and after expiration the invention can be freely used by the public. Patents cover machines, compositions of matter, things that are manufactured, and processes. For an invention to be patentable it must be useful, new and provide an improvement over the state of the art.

A patent allows the patent owner to exclude others from using the patented invention, but the ability to use the patented invention may be dependent on rights owned by others. For example, if practicing a patented invention requires the use of a different patented invention, the patent owner may need to acquire rights under the other patent to practice his own invention. (This is often the case with patents on improvements to other technology.) Patents only apply to the country that issues the patent. For example, a U.S. patent only protects the invention in the United States, and a Chinese patent only protects the invention in China.

Patents are granted by the U.S. government only after payment of a fee, the filing of an application and review of the application by the U.S. Patent and Trademark Office. This process usually takes legal help, with legal fees that can easily range from $5,000 to $20,000 or more for the application and the follow-up and processing of the application. The interval between filing of the application and grant of the patent (often in a more narrow form than what was applied for) can range from two to four years or more.

Trade Secrets. Trade secrets (sometimes referred to as know-how) are a creation of state law. A trade secret is information of any kind that has economic value to its possessor from not being generally known or readily ascertainable by others, and that is the subject of reasonable measures to maintain its secrecy. The owner of a trade secret can disclose it to a Licensee on condition that the Licensee maintain the confidentiality of the information, and thus maintain legal protection.

A trade secret’s duration is potentially unlimited so long as the information is kept confidential. Once the secrecy is lost and the information becomes widely known, there is no legal protection. There is no application or registration process, and no filing fee. Trade secrets are recognized in virtually all countries.

Unlike patent protection, a trade secret, even though legally protected against misappropriation, will not bar others from independently developing the same information. The independent development may include reverse engineering of a product, such as by taking it apart and analyzing its components.

License Terms. Licenses are contracts that business people negotiate, so their terms are as variable as the imaginations of the parties. Nonetheless, technology licenses normally have four main components:

- Grant of rights
- Fees
- Limits and conditions
- Promises by the Licensor

Granting Clause. The granting clause is the heart of the license, because it describes the rights granted to the Licensee and the scope of those rights. For example, a typical patent license to a product manufacturer might grant the following:

“an exclusive, royalty-bearing license, with the right to sublicense during the term of exclusivity, under the Licensed Patents and Technical Information, to import, make, have made, use, sell, offer for sale and have sold Licensed Products and Combination Products in the Territory in the applicable Field of Use.” (The italicized terms both help define the license grant and limit the scope of the right.)
The granting clause in a license from a provider of engineering and design services for an ethanol or biodiesel plant would likely be more limited, perhaps covering only the following:

a non-exclusive, perpetual license to use the Licensed Patents and Technical Information, without the right to sublicense such rights to others, for the following purposes: construction of the Plant; operation of the Plant; maintenance, modification and optimization or enhancement of the Plant; and selling or otherwise transferring worldwide all products of the Plant."

This type of technology license limits use of the technology to one particular plant at one location.

**Fees.** Technology license fees come in many varieties. They can be up-front one-time payments, deferred payments, usage-based royalties, milestone based payments, or various combinations. Sometimes an up-front fee will be treated as an advance on royalties that will accrue later, when products covered by the license are sold. Some types of license are essentially a sale, for a fixed price, of a bundle of license rights. This would still be a license, but with no further payments. License fees are usually negotiated on a case-by-case basis.

Royalties, if required by the license, will be paid based on sales of products that use the technology, or on sales of products manufactured using a licensed process. They may be based on volumes, such as gallons of biodiesel refined in the plant, or on other metrics, based on the circumstances. Royalties are often preferred because they are self-adjusting, i.e., the more the Licensee uses the technology, the more the Licensee pays.

Royalties may have minimums associated with them, typically with adverse consequences to the Licensee if the minimums are not met. For example, in an exclusive license, the agreement may provide that if certain royalty minimums are not met, the license will shift from being exclusive to non-exclusive. This approach is used to protect the Licensor from being saddled with an exclusive license to a Licensee that does not generate the expected royalties, with no way for the Licensor to terminate the contract.

Audit rights should always be included in any license agreement that calls for royalties. Typical issues are how frequently can an audit be conducted, who will conduct it, whether the results will be confidential, and who will pay for it. Usually the Licensor will bear that cost, but if a significant discrepancy is found, with underpaid royalties, then the cost would be covered by the Licensee.

**Limits and Conditions.** Technology licenses always impose limits on how the Licensee can use the technology, and often impose various conditions and requirements (in addition to fees).

- **Exclusivity or non-exclusivity** – must be defined carefully. For example, does an exclusive license in a particular field of use mean that (a) the Licensor will grant no other licenses in that field of use, but may itself use the technology in that field of use, or (b) that third parties and the Licensor are precluded from using the technology?

- **Field of use** – the license could be limited to a particular market, a particular type of plant or a specified territory. For example, a license to the owner of an ethanol or biodiesel plant might only allow the Licensee to use the technology at the particular plant, and could require an additional license to expand the plant beyond the specified nameplate capacity.

- **Improvements** – if the Licensee improves the technology during the life of the license, the Licensee will not usually be required to provide improvements back to the Licensor if the license is non-exclusive. After all, then the Licensor could in turn license those improvements out to the Licensee’s
competitors. But if the license is exclusive, the Licensor may insist on a grant back to it of any improvements, so that if the Licensee fails to adequately commercialize the technology, at least the Licensor will not have lost all of the development time.

- **Confidentiality** – most biofuels technology licenses are either trade secret licenses, or if they are patent licenses they include a large trade secret component associated with the patented invention. Because of this, confidentiality clauses play a large role in most biofuels technology licenses. The Licensor will preclude the Licensee from disclosing the technology to third parties or from using the information for purposes other than as allowed by the license.

  - Because the industry is not all that large and because people move around, the Licensor may also insist on strict limits against disclosing the information to consultants or vendors that the Licensee might otherwise hire to take care of improvements or modifications to the plant.

  - Most confidentiality restrictions will provide for exceptions for information that is part of or becomes part of the public domain, information legally received from third parties, and information independently developed by the receiving party (by personnel with no access to the confidential information).

- **Term of License** – The duration of a patent license is usually for either a fixed term of years or until the patent expires. If the license is for multiple patents, the term will usually be until the last one expires. However, it is not legal to require that royalties be paid after the patent expires.

  - With a trade secret, the license term and the royalties can be perpetual.

  - If the license covers both patents and trade secrets, the royalties should be allocated between those for the patent and those for the trade secrets. Then when the patent expires, the trade secret royalties can continue.

- **License Termination** – Licensees need to be able to rely on the continuation of the license, but Licensors need the ability to ensure compliance with the license. In most cases the Licensor will have the right to terminate the license if there is a breach by the Licensee, but only after giving notice of the breach to the Licensee and a chance to cure the problem to avoid termination.

  - In some biofuels technology licenses the Licensor will not have the right to terminate the license even if there is a breach. This can happen in trade secret licenses when the Licensee is relying heavily on the license (such as by building a biodiesel plan), and when the fees are paid up front.

  - If the license is truly non-terminable on breach, it should be explicit that the Licensor still has its other remedies available, such as an injunction and damages.

*The Licensor's Obligations.* A Licensee will usually need some assurances from the Licensor. Since the Licensee is paying for the license to avoid infringement claims, the Licensee may ask the Licensor for a warranty that the licensed technology does not infringe any other party’s rights, or at least that to the Licensor’s best knowledge the technology does not infringe any third party rights.
The Licensee may seek a warranty as to the functional capability of the licensed technology. In many cases, especially if the license is for patent rights, the Licensor will insist that the Licensee make its own determination as to the utility of the patented invention. That is more feasible with patents than with trade secrets, because the patent itself, including its enabling disclosure, is publicly available.

Many technology licenses will include indemnifications that allocate risk between the parties. Frequently the Licensor will be required to defend and indemnify the Licensee against any third-party claims that the Licensee’s use of the licensed technology infringes the third party’s patents. Under such an indemnity, the Licensor must defend the Licensee against the third party’s claim and pay the litigation costs even if the claim does not stand up in court.

In trade secret licenses, the Licensor will usually be required to provide some enabling disclosure of the know-how. This may involve combinations of documentation, formal training, or hands-on involvement and tutoring in the construction and initial operation of a plant.

**The Good License.** What are the characteristics of a good technology license? There are two:

- A license reflects a business deal, so it must satisfy your business objectives. That doesn’t mean that there will not be compromises, because there always are.

- The license must provide enforceable rights. If you have to sue, you want the contract to be enforced in court the way it was intended. The contract should be clear and complete, and comply with law.