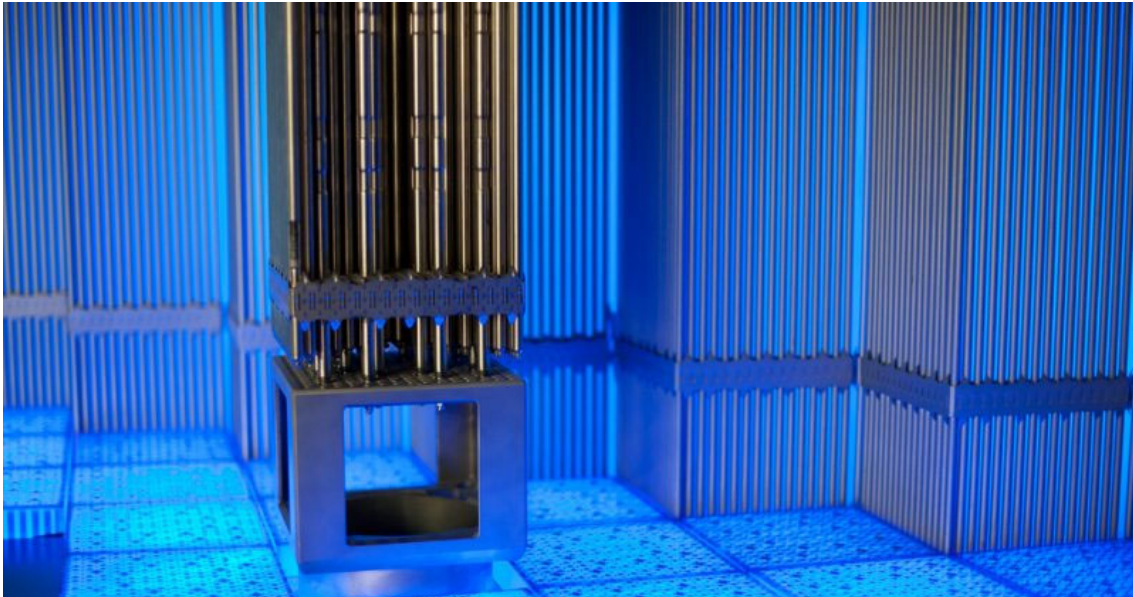


# Case study: Fuel rod clips

MSc EMINE and ESADE.



Source: Daily Energy Insider

## Instructions

Please read carefully the following (made-up) case study.

**Make groups:** divide the class in 6 groups, each group made of 4-6 participants. Each group will play the role of one the two possible sides: Seller or Buyer. Also, within the group you will take individual roles: CTO, CEO, IP consultant, CFO, VC delegate, M&A expert.

**Debate within groups:** At the end of this document, you will find some questions to be discussed within groups. This debate will help to prepare for the last task, a role-play exercise, which you will perform in the second session of the workshop.

**Negotiations:** Pairs of Buyers and Sellers will conduct negotiations. The seller will present convincing arguments on the competitive edge that the technology is bringing and how it can be delivered to the market free to use. The Buyer will ensure they get the market “exclusivity” needed from acquired or licensed intellectual property.

**The seller:** Fuel rod Clip (CLIPS) specializes in wind turbine technology for extreme wind and weather conditions. They have developed a fuel rod clipping system that prevents vibrations and extends the lifetime of those rods.

**The buyer** “General Nuke” (GN) is a systems and technology provider specialized in fuel rod manufacturing and installation. They have installed and supported over a 100 power plants in France, the US and other European countries. General Nuke (GN) is a large industrial partner looking for technical developments and new market opportunities.

### Asset summary

Technology	IPR asset	Ownership	Tech access (right to commercialize)
<b>Real-scale prototype</b> (Passed real condition test in nuclear plant)	-Know-How of installation as trade secret  -software code copyright of real-scale plant  Operation and maintenance manuals copyright	CLIPS and GN as co-owners  Independent commercialization of the parties allowed. But right of first refusal.	Please fill in
<b>Enhanced disposition of the clips near rod edges</b>  (Optimal rod vibration dumping)	-Patent EP2 (Pending European Patent Application)	CLIPS	Please fill in
<b>Clips geometrical shape.</b>	Industrial Design	Italian Nuclear Institute.	Please fill in
<b>Optimized test method for selecting best clips and discarding default ones</b>  <b>Optimal clip material composition</b>	Know-how protected as Trade secret	Spanish Nuclear Institute	Please fill in
<b>Fuel rod clips for preventing vibration.</b>  (LAB prototype, from simulations)	Patent EP1 (granted in US and Europe, strong asset)	CLIPS	Please fill in

# The full story

## 1. The beginnings

Mr. CTO did his doctorate thesis as Research Assistant in a German university in the field of nuclear energies, more specifically in fuel rod technology. In simulations, the main results of his work was a novel and inventive clip system to damp vibrations of fuel rods. Mr CTO realized that this control method could bring extra-long performance and some extra electrical power generation.

Fulfilling their obligations as research staff, he presented the idea to their University Tech Transfer Office, asking for the interest by the University to apply for a patent and exploit the invention. However, the Office kindly rejected the proposal and mentioned that it was of no interest for the University. He also mentioned that, according to the bylaws of that University, the ownership of that invention was now in the hands of the inventors. The University would only retain a simple, non-exclusive license to use the invention just for academic and research purposes without the right to sublicense.

Mr. CTO, was initially frustrated, but went on and realized the opportunity to start his own company to exploit and further develop the technologies. For that, he invited his friend Mr. CEO, a serial entrepreneur looking for new endeavours, to become the co-founder. With their money, and that of friends and fools, they founded "Fuel Rod CLIPS" (CLIPS) .

The first thing they did was filing a European Patent application **"Clipping device attached to rod fuels for preventing fuel rod vibration" (Patent EP1)** protecting Mr. CTO's invention, on behalf of CLIPS. The full rights over the invention was a non-monetary contribution of Mr. CTO to the startup, according to the founding agreement. 12 months after the filing, the company filed a US patent application, claiming the priority of the European patent application. Around 3-4 years later both the European and the US patents were granted. The company decided to validate the European patent in some of the largest European markets (Germany, UK, France, Italy and Spain) and is up to date with the corresponding maintenance fees.

Then the company hired a software developer and test engineer to make some further simulations and conduct some small-scale experiments. A first Lab Prototype was concluded with promising results.

## 2. Looking for funding: NUKE-VC and the European Commission R&D Programmes.

With the initial success of the very early Lab prototype, the Company received several rounds of investment. A Venture Capital investor, NUKE-VC, invested a relevant amount in exchange of a fraction of the company of 10% of their shares. Additionally, NUKE.VC holds a right of first refusal (that meaning that they could preferentially take over more percentage of the company, should the present owners wish to sell their shares, that is Mr. CTO and Mr. CEO). However, no transfer of any intellectual property or any license was involved during the funding.

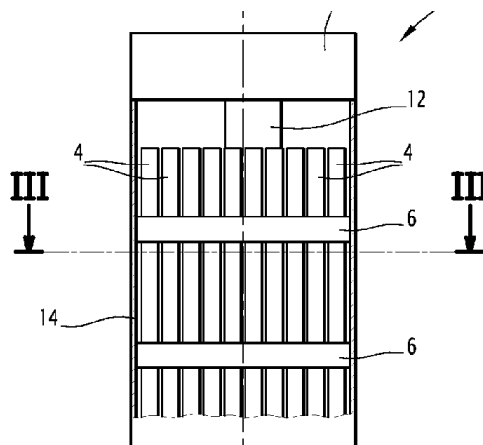
Subsequently, CLIPS formed a Consortium together with a Spanish nuclear institute and an Italian nuclear design firm, to request the European Union for a subsidy to research the

opportunities brought by the latest advances in wind turbines technologies. The Consortium was awarded the subsidy. CLIPS was able to perform extensive testing.

The Consortium Agreement that sets the grounds for the collaboration, the ownership and the exploitation rights of the collaborative project results, stated that any party would retain its own intellectual property and, if IP would result without each contribution being impossible to divide by their inventors, they would be owned jointly by parties. Moreover, the members would have the right to freely use other members' Background (technology created before the start of the collaboration) during the duration of the project and just for the sake of the purpose of the collaboration. After the end of the project the companies are obliged to grant to the other partners non-exclusive, non-sublicensable licenses on fair and reasonable terms on any Foreground (technologies developed during the collaboration), and any Background as long as it is needed to implement the Foreground. Each partner is though not obliged to license to a partner that does not request the license within the 2 years after the end of the project.

During the EU-funded project, the consortium worked on different activities.

- The Spanish nuclear Institute first mission was to confirm overall performance of technology by CLIPS. They did so effectively. Additionally, they designed **a new and inventive test method for selecting the best clips and discarding default ones. Also a new and inventive composition and materials for those clips was provided.** This expertise has been kept secret and is seen as very useful for the reliability of nuclear power installations.
- CLIPS was doing further studies . It found out that the position of the clips by the fuel rod edges was optimal This finding was protected by another European patent application, **EP2 Clipping device positioning in fuel rods for optimal vibration dumping.** In later tests, this turned out to be an optimal and energy efficient way to stop the blades while extracting energy.



Source: EP patent drawings

- An Italian nuclear design firm developed an optimal clip geometrical shape The shape has an improved technical effect but it was only protected as an industrial design. This design was protected in the European Union only

The ownership of each of the previously mentioned technology assets can be attributed the single partner that led its development, and thus there is no joint ownership for any of the results. However, there is some dependency, as for instance, the patent application EP2 owned

by CLIPS is only valid when using the material composition developed by the Spanish nuclear Institute.

### **3. Reaching maturity**

After some years of work, Stormy has become a world-reference in their field area of work. It attracted the attention of several big wind farm operators and manufacturers. A real-scale pilot project was concluded with General Nuclear (GN) one of the biggest manufacturers of nuclear plants. Without a doubt, General Wind is the incumbent marine operator in Europe.

As pointed out before, the clips had been successfully tested using theoretical models, and computer-generated simulations. Now, in the pilot project, General Nuclear Company has conducted some real scale tests and built a fully-grown model. The results confirmed all theoretical models.

GN and CLIPS have agreed to this knowledge and insight as trade secrets.

The legal agreement for this pilot project also stipulates that the ownership of any kind of know-how needed for the implementation of the pilot project would be owned by CLIPS and GN in a 50% ownership each.

The agreement included the right of both parties to commercialize the resulting technology independent from one another. However, a right of first refusal to license preferentially to the other party was also included.

### **4. Licensing Negotiations**

CLIPS and GN are currently involved in commercial negotiations. This week a meeting is being held to debate the IP (Intellectual Property) implications and clarify whether the seller has full rights to exploit its product (Freedom-to-Operate), whether the desired exclusivity could be ensured.

After the successful trial, GN is interested in implementing the technology in all its new installations. General Nuclear expects to negotiate the general terms of a licensing agreement or tech transfer agreement.

On its side, other large nuclear manufacturers have approached CLIPS. However, previous agreements with GN and NUKE-VC seem to make any third party deal a difficult one. In parallel, the situation on ownership and commercial access rights still needs to be cleared with their Italian and Spanish partners at the EU Consortium.

On the other hand, CLIPS knows that less mature spin-off from universities in similar technologies have sold to bigger players at a price tag exceeding 10 million euros.

### **Your task**

1) Please, fill in the table provided in the Asset Summary, reflecting all the technological assets that CLIPS owns or has a license thereof. Indicate the related Intellectual property rights that protect these technological assets and analyze whether the company has exclusivity over them,

right to implement them, any limitation related to these rights and finally any corrective measures that may be needed.

2) Please debate in groups about the following questions:

- Do you think CLIPS has a sound Intellectual Property strategy and a strong IP portfolio? Can it guarantee the desired exclusivity over the desired geographical scope?
- Do you think it would be a good approach that General Nuclear gets a bare license over CLIPS technology and build the system on its own? What are the barriers to follow this path?
- Could CLIPS walk away from this deal, what alternatives would it have?

3) Role Play Exercise

- One group will play the role of the Seller (CLIPS). Please assign specific roles for each member of the group (e.g. Mr. CEO, Mr. CTO, external IP advisor, CFO, invited representative of its partner, NUKE-VC VC, etc )
- Another group will play the role of the Buyer (General Nuclear). Please assign specific roles for each member of the group (e.g. Head of New products, Tech Expert, IP Expert, Finance Expert, Legal Counsel, M&A)

The group playing the Buyer will lead the meeting and will ask specific questions on the status of the different IP assets, their ownership, any encumbrance, or limitation to the rights, to determine whether CLIPS capable of providing General Nuclear exclusive access over its technology.

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