



Powering your knowledge

Protecting and commercialising innovations in hydrogen technology

Hydrogen power is likely to play a significant role in international commitments to achieving carbon emissions and net zero goals by 2050. This is why governments all over the world, as well as the private sector, are investing heavily in this technology. For example, the UK Government has recently doubled its ambition to 10GW of low carbon hydrogen production capacity (with $\geq 50\%$ of that being electrolytic hydrogen) and £9 billion of private investment by 2030. It has also recently announced a certification scheme, which it intends to introduce by 2025, to allow verification of low-carbon hydrogen product credentials and increase industry and consumer confidence in the technology.

Core hydrogen technologies (the capture, production, use and storage) are progressing ahead of the end user applications (namely, the plant and machinery powered by hydrogen) with several of the top players in the market in the automotive industry and companies in other industries, including fuel cell engineering and electronics, emerging. As interest and investment in the hydrogen market grows, companies will look to protect their investment in emerging hydrogen technology.

The growth and success of the hydrogen economy will largely be driven by advancements and innovations in both the core and applications technologies. It is therefore important for investors in, and developers of, new hydrogen power technologies to implement a dedicated procedure and IP strategy to allow innovations to be properly captured, protected and exploited. In this briefing, we consider some of the key IP considerations that are relevant.



With investment and development in hydrogen projects on the increase, we look at the key intellectual property considerations that are relevant to hydrogen projects and the practical steps organisations can take to ensure that their inventions and methodologies are sufficiently protected and capable of commercialisation.





Implement adequate procedures and processes for identifying and capturing new innovations

Organisations need to have adequate processes and procedures in place to identify new innovations and improvements to their existing technologies. IP ownership and licensing framework needs to be worked out at the outset. This requires not only strong contractual protections but also robust internal procedures requiring employees, contractors and research partners to report innovations promptly. In many jurisdictions, IP generated by employees will vest in their employer automatically, though this can sometimes depend on the nature of a person's role. There are also various countries that have statutory compensation schemes for employee inventions which can lead to significant pay-outs. It is therefore crucial that arrangements with employees (particularly those involved in R&D) are clarified and clearly documented early on to ensure that the appropriate rights flow back to the organisation. This is even more important where consultants and/or subcontractors are used to carry out development work; in such situations, organisations need to ensure that they have access to not only any developed IP but also any third party IP that may be required to commercialise the technology down the line.

The R&D process also needs to be properly documented as this will often be critical to seeking IP protection and ensuring that any advancements and improvements are properly captured. A strategy that is often deployed in other emerging technology areas is to undertake an IP audit to make sure that these processes are fit for purpose. In an area like hydrogen power where there may be critical developments in emerging technology involving multiple parts of the business, this is all the more important.



Have suitable protections regarding confidentiality

The business environment for hydrogen power is rapidly changing and we are seeing a shifting and dynamic labour market. This makes it all the more important to ensure that appropriate recruitment and retention strategies are in place and that contracts with employees, contractors, consultants and any research partners contain comprehensive provisions relating to confidentiality (both internally and externally). In addition, the use of appropriately drafted garden leave clauses and/or restrictive covenants will be important to protect an organisation's legitimate business interests, including business-critical information and supplier and customer connections.

It is also essential that access to sensitive information and materials is tightly controlled. This means putting in place strict physical and IT controls on who has access to sensitive data and results and having in place clear and transparent policies regarding confidentiality.



Confidentiality – contractual protections

Key contractual protections relating to confidentiality can include:

- restrictions on persons authorised to receive information (and requiring those authorised persons to enter into equivalent or stronger confidentiality terms with the discloser)
- restrictions on the purpose of disclosure and use of any disclosed information
- obligations to maintain adequate security measures and access protocols
- delivery up and destruction obligations when disclosed information is no longer required (with confidentiality obligations to survive for an appropriate period post-termination)

H2



Develop strategies on the appropriate form of IP protection

The appropriate IP protection strategy for a given hydrogen technology will depend on the nature of the innovation. The most critical forms of IP rights are likely to take the form of patents and/or trade secrets. In certain cases, copyright and design rights protection may also be an integral part of the IP strategy.

The patenting landscape

There is already considerable patenting activity for hydrogen technologies. This varies from country to country. Recent data from the United Kingdom Intellectual Property Office (UKIPO) shows that worldwide patenting activity for hydrogen technology has been steadily rising over the last decade, with the number of active hydrogen power patent families worldwide having more than doubled in the past decade. The recent focus has been on developing various forms of low-carbon hydrogen production technologies which could link to carbon capture, utilisation and storage (CCUS) since the captured carbon from the CCUS process can be re-utilised in industry or stored permanently underground (resulting in net zero emissions). Although the UKIPO data illustrates that low-carbon hydrogen patenting is scarcer (making less than 20% of worldwide hydrogen power patenting families in 2018), patenting activity in this area has picked up noticeably in recent years (with the number of annual filings increasing by over 40% between 2016 and 2018).

The UKIPO also recently undertook an analysis of the key technology clusters for hydrogen power patenting activity in the period 2001-2018. The data shows that innovations relating to core underlying technology – such as electric power generation, fuel battery storage and fuel supply processes – are presently the leading technology areas for patent filings. This suggests that hydrogen technology is still at a relatively early stage of development and as the technology matures one would expect to see greater number of filings in specific commercial application areas (e.g. hydrogen transportation and catalysts).

Patents protect novel and inventive products and processes and give the patent owner a 20 year monopoly over these ideas. The patentee must publicly disclose the relevant invention and there are minimum legal thresholds that must be satisfied in order for an invention to qualify for patent protection. Patents are also subjected to detailed examination before the patent office and the process can often take a few years. These features mean that patent protection is usually reserved for significant conceptual advances in the state of the art. If granted, patent exclusivity however can provide the patent owner with a significant competitive advantage in the market and is often seen by investors as critical in emerging technology areas such as hydrogen energy production and storage. Appropriate governance arrangements are required to ensure patentable inventions are captured early and not inadvertently or prematurely disclosed to the world at large (e.g. by way of a publication or press release) prior to the filing of a patent application in respect of that invention. Early inadvertent disclosure can defeat the novelty requirement of a patent (thereby rendering the application invalid).

On the other hand, trade secret protection may be more relevant for more incremental innovations or where the commercial value in an innovation is reliant on keeping it a secret. In general, to qualify as a trade secret, the information must be (i) commercially valuable because it is secret, (ii) be known only to a limited group of persons, and (iii) properly protected as a trade secret. Unlike patents, trade secret protection arises automatically and is not subject to a public examination procedure. It is typically used to protect complex process information that cannot be patented or which the owner does not want to disclose, such as site operating conditions, reaction parameters, equipment designs and production mechanics.



Agree on the roles of parties in joint ventures, collaboration and licensing arrangements and funding arrangements

The roles of third parties in collaborations involving hydrogen technologies (such as investors, subcontractors or partners in a joint venture) are often critical. There will usually be complex questions around IP ownership and the scope of third party IP licences as well as commercialisation rights will typically be subject to extended negotiations. The role of external funders and government grants also adds a further layer of complexity.

This means there will be a number of questions to ask at the outset of the new project, venture or collaboration:

- who should own any new (or 'foreground') IP developed in the course of an R&D collaboration? Whilst it is possible for parties to jointly own IP, this can give rise to issues down the line in the event of a dispute between rights holders
- if a funder is involved, what rights do they require in any new IP developed? Hydrogen development projects are often funded by governments as part of their renewable energy strategies and it is common to see conditions imposed relating to IP. For instance, some governments require that any new IP generated with grant funds is either co-owned or licensed back to the relevant government authorities and this can have important commercial implications and impact approaches to downstream contracting
- is there a need to limit the ability of an organisation to exploit the relevant IP going forwards? If so, are field restrictions appropriate?
- when licensing IP, are appropriate conditions on use of the licenced IP placed on that third party? These may include (for example):
 - a clearly defined scope of use and associated restrictions
 - appropriate remedies for infringement
 - provisions dealing with the ownership of improvements to the licenced IP
 - if restrictions are attached, are there any competition law issues?
- are licences of either party's background IP required to facilitate the collaboration or licence? If so, are these rights clearly set out and adequately protected against the other party (including provisions dealing with improvements to a party's background IP and appropriate permissions, conditions and restrictions on use)?
- do the agreements contain adequate remedies in the event of a breach by the other party (including appropriate limits on liability, indemnities, suspension and termination rights)?





Key takeaways

To protect and commercialise your innovation for hydrogen projects, remember:

- develop and implement an IP strategy to ensure innovations are properly captured, protected and exploited
- identify the innovation early and document the R&D process
- consider an IP audit across your business to ensure there is alignment and understanding on what needs protecting
- check your contract terms on confidentiality and disclosure of information are robust
- consider whether you have the most appropriate IP protection in place
- consider arrangements with third parties, including investors, subcontractors joint venture partners and funders
- document IP ownership early and agree the parameters for exploitation through licence terms which are fit for purpose



For more information, please contact:



Indradeep Bhattacharya
Partner, UK

T: +44 207 919 4696
M: +44 776 930 2386
indradeepbhattacharya@
eversheds-sutherland.com



Dr Anette Gaertner
Partner, Germany

T: +49 69 509589 315
M: +49 16 098964 934
anettegaertner@
eversheds-sutherland.com



Cedric Lam
Partner and Head of IP, Asia

T: +852 2186 3202
M: +852 9101 1265
cedriclam@
eversheds-sutherland.com



Ben Johnson
Associate, UK

T: +44 1223 44 3661
M: +44 782 782 6109
benjohnson@
eversheds-sutherland.com

[eversheds-sutherland.com](https://www.eversheds-sutherland.com)

© Eversheds Sutherland 2023. All rights reserved.

Eversheds Sutherland (International) LLP and Eversheds Sutherland (US) LLP are part of a global legal practice, operating through various separate and distinct legal entities, under Eversheds Sutherland. For a full description of the structure and a list of offices, please visit www.eversheds-sutherland.com.

CLOUD_UK\210878535\1