

The New Paradigm for IPR Evaluation in Design Engineering

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Years ago it was common practice for companies to competitively benchmark the products in their industry in a comprehensive and thorough manner. Recently there are numerous examples of companies who introduce new products to market without considering the potential for patent infringement.

As a corollary to this, there was a point in time at which independent technical certification of industrial equipment was not mandated. Nowadays, third-party technical certification is a necessity to secure project finance and a sensible precaution by a manufacturer to avoid downstream project liabilities.

Presently, independent intellectual property rights (IPR) infringement risk certification is not mandated in virtually any industry where project finance is utilized. For instance, in the wind energy sector, most turbine OEMs provide their own data and validation to turbine purchasers and project financiers. This only transpires if asked, and typically only in matters related to patent infringement litigation recognized in the public domain.

This validation from the turbine manufacturer is not an independent assessment. What most turbine OEMs do not realize or have not publicized, is that they are all infringing on one another! This information is typically ignored unless addressed to a turbine manufacturer or known by an OEM. If it is known, the potential infringement is typically kept quiet unless strategic considerations are at play.

Additionally, wind turbine manufacturers are introducing another level of risk for project financiers and turbine purchasers by not providing full indemnity in turbine supply contracts specifically to limit their own liability. Most turbine OEMs do, however, mandate full indemnity from their sub-component suppliers or those sub-component suppliers are barred from participation in a competitive bid or sole source award for key components in the wind turbine.

There is an opportunity here to plug these holes with an insurance product, but that is a stop-gap measure if the insurer can't quantify IPR infringement risk. They also require an assessment of IPR infringement risk and this type of analysis is typically not a core competency. In this manner an independent assessment can provide the needed clarity.

Litigation damage awards are not insignificant, but they pale in comparison to commercial considerations and brand tarnishing resulting for perceived infringement of IPR. Looking at past precedent in the industry we can see that at one point during the Mitsubishi / GE litigation on wind turbine controls MHI had a \$169M damage award liability against GE. While the matter was ultimately settled with a cross-license, ultimately GE won that battle since MHI was effectively excluded from the US market and lost billions in revenue from turbine sales.

There are numerous reasons we see the potential for an increase in IPR infringement litigation in the wind industry in the future:

Industry Consolidation

Enjoining key competitors from gaining market share or driving up a competitor's cost to compete in the market have been strategic reasons why regional market leaders such as GE and Enercon have used IPR enforcement in the past. As worldwide markets temporarily retract, the reduced number of players in a given market will result in market share squeeze. Times of market share loss for entrenched market leaders typically results in a reaction commercially and legally in an effort to regain lost ground.

As companies merge or exit the market their technologies and the associated IPR will be redistributed. This will lead to certain technologies being identified as preferred technical solutions by purchasers as the market picks winners and losers.

The consolidation of the wind industry has already resulted in IPR asset availability resulting from market exits or strategic technology and IPR divestitures. Approximately 230 patent families representing 2.5% of all patents related to horizontal-axis, utility scale wind were available for acquisition or in-license last year. Acquisition of all patents would make the owner #7 on the list of IP asset ownership, so this is a staggering amount of technology and IPR.

Companies are willing to acquire in turnaround times like these because they are starting to get the message that having IPR in their portfolio to trade / cross-license with a competitor can avoid costly litigation. While both sides would be forced to absorb exorbitant litigation costs, the commercial losses they face as a result could restrict their investment in market cultivation.

'Standards essential' patents

These patents cover widely used technologies, and many turbine purchasers and utilities will mandate certain key performance attributes are incorporated into a turbine offering in a RFP response. Those mandates create liabilities for the turbine manufacturers and drive up compliance costs for those manufacturers who would be required to take a license in a key technology from a competitor.

As we have seen in the past, manufacturers may price the license so high as to destroy the margins which their competitor is able to secure in a given market. The resultant inability to effectively compete on a level playing field will reduce the number of viable suppliers in the market and result in higher market prices for turbine purchasers.

'Patent Trolls'

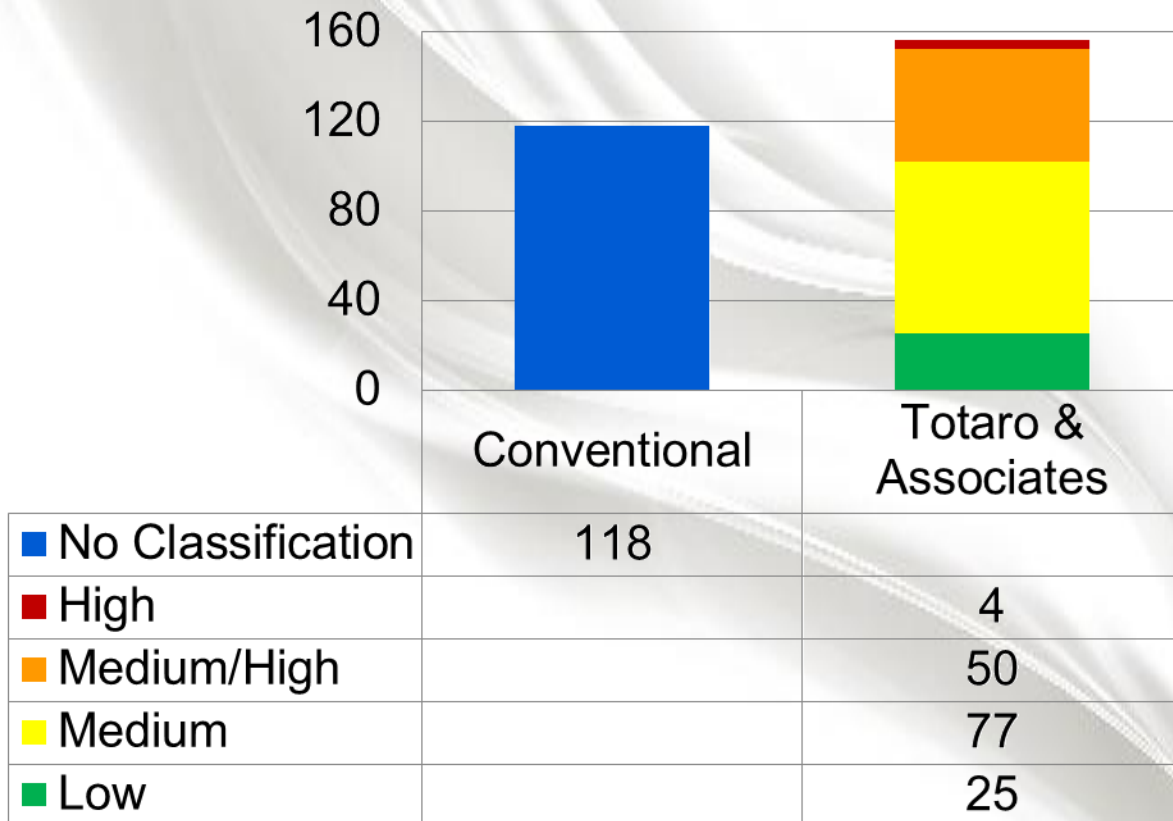
Non-practicing entities, who acquire IPR for the purpose of assertion licensing, are now becoming aware of the wind market as a viable opportunity for investment. Given the dearth of available assets mentioned above and an increasing knowledge of the sector, they are becoming an emerging threat to the industry.

So in order to mitigate these risks, the industry must adopt a philosophy of utilizing an independent IPR infringement risk certification as part of the project finance due-diligence process.

How to Incorporate IPR Evaluation into Design

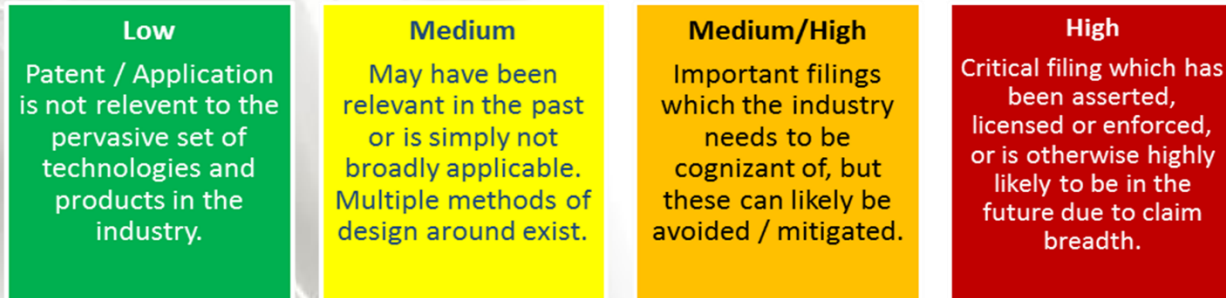
The process of IPR infringement risk mitigation works by starting off with a comprehensive patent landscape and catalogue of IPR and technology in the industry. This is typically the top failing of IP search firms and law firms, because lack of industry domain expertise and lack of technical subject matter expertise usually leaves an incomplete set of results for the freedom to operate (FTO) review.

From a study which was conducted, conventional patent search tools and methods were compared to a wind patent landscape which had been rigorously reviewed. Results on one category of technology indicate that the conventional patent search methodology employed by IP search firms or law firms will result in an incomplete set of results, false positive results, and results which require significant further study and examination. This last step is what leads to expensive costs of FTOs, and is typically one reason why most companies do not engage outside parties to help facilitate IPR infringement risk mitigation at all.



Keyword-based Prior Art Search	Search String	Totaro & Associates Patent Landscape
118 Results	“Wind Turbine” AND “Power Factor Control”	156 Results with Risk Classification (L, M, M/H, H)

Once again underscoring the importance of technical savvy, the patent claim breadth of each filing must be compared to the known use of that technology in the industry. The methodology used to assess the patent claim breadth is below:



The comparison results in the composite risk score of a particular product which can be compared to other products previously insured or industry average data. The composite risk score is then calculated based on the number of filings which can be classified in each risk category. These results are consolidated to provide an overall relative ranking and provide an understanding of the scope of mitigation work required, or the risk premium which can be assessed.

Patent #	Title	Component	Technology	Relevance to Utility-scale WTG Industry	Company 1		Company 2	
					Risk to Product #1	Risk to Product #2	Risk to Product #1	Risk to Product #2
USXXXXXX	DC-DC CONVERTER CIRCUIT USING AN LLC CIRCUIT IN THE REGION OF VOLTAGE GAIN ABOVE UNITY	Electrical	Frequency / Voltage Regulation	M Common technology, but design around possible.	M Requires investigation, design alternatives exist.	M Requires investigation, design alternatives exist.	M Requires investigation, design alternatives exist.	M Requires investigation, design alternatives exist.
USXXXXXX	TURBINE	Drivetrain	Reliability	L Older technology, limited industry applicability.	M Requires investigation, design alternatives exist.	L Technology not present.	L Technology not present.	L Technology not present.
USXXXXXX	A PROTECTED WIND TURBINE BLADE, A METHOD OF MANUFACTURING IT AND A WIND TURBINE	Blade	Manufacturing	M Only relevant if VARTM process is used.	L Technologies not present.	L Technology not present.	H Similar design architecture.	H Similar design architecture.
USXXXXXX	A WIND TURBINE AND A DIRECT-DRIVE GENERATOR	Generator	Efficiency	H Widely used technology.	H Similar design architecture.	H Similar design architecture.	H Similar design architecture.	L Technology not present.

In a case study which is presented here, one particular turbine manufacturer was seeking product validation for entry into the US market. The composite risk score was quantified at 18 of 3,200 patents being high risk, indicating immediate mitigation action was required on those matters. Nevertheless, in this case, the turbine manufacturer was still well below the industry average in the highest risk categories of patents.

The detailed risk mitigation of the 18 identified patents found that 5 of the patents had extremely broad claim breadth and were not actually being utilized, while the other 13 patents were deemed invalid. This clean bill of health enabled the turbine manufacturer to obtain an intellectual property indemnity insurance policy and qualify for preferred project financing.

Risk Categories	Product		Industry Average		Composite Risk Score
	#	%	#	%	
High	18	0.6%	32	1.0%	Below Average
Medium/High	167	5.2%	224	7.0%	Below Average
Medium	1,881	58.8%	1,728	54.0%	Above Average
Low	1,134	35.4%	1,216	38.0%	Below Average
Total	3,200	100%	3,200	100%	

The protocol for risk mitigation utilizes independent legal counsel, validity evaluation, and patent license agreements, if necessary. Therefore, the existing legal infrastructure is not displaced, only more intelligently leveraged. Many times, the engagement of legal counsel is unnecessary which saves significant cost to the process for all parties involved.

This comes in the wake of a recent matter in which three of the United Kingdom's most prominent offshore wind projects, valued at almost US\$5billion collectively are at risk from a patent infringement lawsuit between Enercon GmbH and Siemens (the equipment supplier), Dong (the owner / operator), and A2SEA (the equipment installer).

The real question is why are financiers allowing their billion-dollar projects to be put at risk by not authorizing the expenditure of 0.1% of the total commercialization cost for an independent assessment of IPR infringement?

The answers are out there if they would bother to look.