

The Problem:

A Fortune 100 Company asked iP2Biz to assess the current state of technology for recycling CO₂, including small startup companies for possible investment. Traditional methods for recycling CO₂ into useful components were not economically feasible. If a suitable means could be found for breaking the strong chemical bond, the client could convert undesirable CO₂ by-product into useful raw materials to be used in their own manufacturing processes.

Our Approach:

iP2Biz deployed its IPScoutSM process, starting with describing appropriate technology categories that have potential to provide a bridge to significant growth in the market space. Then iP2Biz unearthed promising technologies, assessed their market potential, and validated applicability through a rigorous market and incremental investment analysis. Finally, we focused on assessing the additional development required to demonstrate commercial viability in preparation for a “next step” joint proof-of-commercialization, (ProofCo®), to “prove and package” the technology for full-scale commercialization.

Results:

iP2Biz unearthed more than 200 technologies and startup companies. 36 technologies, including 20 from universities and 16 startup companies, were given further attention and described in detailed analysis. Five were recommended for additional analysis and potential investment.

Overall iP2Biz determined that many methods currently touted for carbon dioxide conversion are not able to provide an economical method to recycle CO₂ into a high value product on a large scale. In addition, the vast majority of carbon dioxide available for recycling is not consistently a clean source of CO₂, so additional energy must be expended to produce a relatively clean source of CO₂ input to the recycling process.

From an overall technology perspective we found some categories more useful than others. We also found that enzymatic technologies offer large potential. The processes operate at low temperature and pressure, if ‘designer enzymes’ (or enzymes that are designed with specific DNA for a specific application) are produced that more closely mimic nature’s own processes, real progress can be achieved. The team learned that both thermochemical and photochemical technology areas suffer from the very high costs of materials and energy without resulting in highly efficient conversion rates.

iP2Biz recommended the close monitoring of one company and the further follow up evaluation of four technologies in research which resulted in a detailed vetting of two technologies.

Upon consultation with the client research lead, one technology was selected and repositioned for further lab testing to confirm that the new material might result in a cost breakthrough.

Upon mutual agreement, a joint ProofCo® project was created to demonstrate the manufacturing repeatability of the process. iP2Biz invested together with the client in a unique model developed by iP2Biz. Both firms agreed to share the cost of the needed translational research on an equal basis, with iP2Biz negotiating and managing the research agreement and obtaining an exclusive, assignable license to the resulting, enhanced technology. iP2Biz granted a call option to the client which allowed them to acquire the iP2Biz rights expressed in the license based upon a pre-determined multiple of the iP2Biz cost in the deal. This feature allowed to client to control the risk – cost tradeoffs. As the project progressed, it became obvious that the technology discovery was a potentially major advancement. The client exercised their option and iP2Biz began the process of introducing the small company principal to the client’s senior R&D staff (the client’s identity was never disclosed to the small company), coordinating the filing of additional IP claims around the original patent, managing further development projects and even assisting in the grant of a multi-million dollar government research grant to further the technology commercialization.

The IPScout and ProofCo processes discovered and confirmed a significant breakthrough with high performance and much lower cost material which is now being developed for market. The client has transitioned the technology into its own R&D labs, new related patents are being prosecuted, capital budgets are being prepared for scaling the breakthrough technology, and the client has acquired strategic capability quickly, anonymously and at very low cost.