



PyroGenesis Announces Q2 2022 Results: Revenues \$5.8M; Gross Margin 43%; Current Backlog of Signed and/or Awarded Contracts \$35.3M

August 15, 2022

MONTREAL, Aug. 15, 2022 (GLOBE NEWSWIRE) -- PyroGenesis Canada Inc. (<http://pyrogenesis.com>) (TSX: PYR) (NASDAQ: PYR) (FRA: 8PY), a high-tech company (hereinafter referred to as the "Company" or "PyroGenesis"), that designs, develops, manufactures and commercializes advanced plasma processes and sustainable solutions which are geared to reduce greenhouse gases (GHG), is pleased to announce today its financial and operational results for the second quarter ended June 30th, 2022.

"We have posted Q2 2022 revenues of \$5.8M," said Mr. P. Peter Pascali, CEO and Chair of PyroGenesis. "Our backlog remains above \$35M, a significant level and our pipeline continues to expand. Despite gross reported revenue continuing to be impacted by delayed client and contract decisions related to ongoing international and regional logistical and resourcing headwinds, our margins are at a level that puts us among industrial technology and manufacturing industry leaders. The 43% quarterly gross margin illustrates the combined strength of the company's production process and the strategy and care taken with contract negotiations. Our trailing twelve-month (TTM) gross margin is a very healthy 32.4% despite the inclusion of the unusually low Q4 2021 gross margin of 18% that was seen as a result of the cost and resource synchronization process for Air Science Technologies acquisition (now Pyro Green-Gas). Both this quarter's gross margin, and our TTM, are well above those of many of our contemporaries including the high-profit industries we primarily serve: the aluminum industry at 22.7%, iron and steel at 31.5%, and aerospace and defense at 22.8%.¹"

Mr. Pascali remarked, "Concurrently, two of our flagship product lines, the NexGen plasma atomized metal powder system and our plasma torch system for iron ore pelletization furnaces, achieved long-anticipated milestones, placing both on the threshold of full commercialization and widespread adoption. Even more exciting is the momentum around reducing greenhouse gas emissions and fossil fuel use in heavy industry which continues to grow like never before. With the Inflation Reduction Act – the combined climate change and inflation-fighting bill recently passed by the US Congress – billions of dollars for clean energy research and implementation across several industries, billions more for targeted grant and loan programs to accelerate the transition to clean electricity, and extensive incentives to reduce emissions from industrial manufacturing processes – especially among the large emitters that PyroGenesis serves – are about to become law. We are well placed to benefit from this opportunity².

Q2 2022 results reflect the following highlights:

- Revenues of \$5,847,180,
- Gross margin profit of \$2,499,273 or 43% of revenue,
- Cash, cash equivalents and publicly traded shares at June 30, 2022 of \$9.4M
- Backlog of signed and/or awarded contracts of \$35.3M

Post-Quarter End Events

On July 5, the Company achieved a major milestone when it confirmed delivery and arrival of its plasma torch system to one of the world's largest producers of iron ore. This delivery, for the \$1.8M order made by a multi-billion-dollar international producer of iron ore pellets who has committed to reducing its greenhouse gas emissions, is in preparation for first-ever live site usage and site acceptance testing (SAT) of plasma in the pelletization process – a major upstream step in the steelmaking process. The delivery comes after the client – who has over ten (10) iron ore pelletization plants globally, each possibly requiring up to 50 plasma torches, or more than 500 torches in total – conducted extensive modeling, simulations, business case development, and live factory acceptance tests of plasma torches over the course of a year, as a potential solution toward meeting their carbon reduction goals. The Company also previously disclosed that it has provided a cost estimate for 36 plasma torches to that same Client, at a value range of \$95-115 million.

On July 18, the Company provided a corporate update to its 3D printing metal powders business unit. The update indicated that, with the Company's NexGen plasma atomization system now capable of production titanium powder at commercial bulk order scale, discussions are now underway between the Company and its European commercial partner Aubert & Duval for full distribution agreements, including broader distribution planning, order planning, and logistics. Additionally, the update indicated the Company has reached the final phase of the lengthy metal powder qualification process with a global aerospace company, with an anticipated end date during Q4 2022. If successful, the qualification will certify the Company's metal powders for use by the Client and its component suppliers. The update also indicated the Company has commenced general inventory production of titanium metal powder, has started discussions with a major distributor for Asian market expansion, is pursuing ISO 13485:2016 certification for medical device usage, announced an intention to produce aluminum alloy powder, and is pursuing a strategy to build and operate a metal powder manufacturing facility in Europe.

OUTLOOK

The first half of 2022 has proffered an unusual combination of events and results.

The Company – as with much of the industrial technology and manufacturing sectors – has felt the repercussions of macro-economic headwinds that have affected the planning, logistics, and spending of its customers and of its sales pipeline targets.

These conditions have weighed, at times heavily, on both the Company's top and bottom lines, with potential or planned sales being impacted by customer resourcing, staffing, and purchasing delays, and with continued governmental and logistical issues preventing other customers from finalizing contract negotiations or taking delivery of their fully completed orders – orders that represent significant revenue and income to the Company once they can be moved out of our warehouse.

What was anticipated to be a major growth first half, has adjusted to be more of a modest stage-setting for the second half of the year and into 2023, as existing and prospective customers moved back their planning and decision-making in the quarter to accommodate their own interruptions.

However, in parallel, and in contrast, during the last quarter the Company achieved some of its greatest corporate milestones – achievements that are considered major advancements for both PyroGenesis and its customers' industries, and which are anticipated to provide potentially large sales bursts through to and beyond 2023.

These achievements include producing and delivering plasma torches for the first-ever in-factory use within an iron ore pelletization furnace – a major upstream step in the steelmaking process – and the movement from sample size to commercial-scale batch production of titanium metal powder production for 3D printing and additive manufacturing, from the Company's plasma atomization system.

These milestones continue to set the company up for the accelerated business growth that the previous three decades of research and development have made possible.

Importantly, as the global economy transitions out of the disruption stage it has found itself in for several quarters, we see a return to logistical and resourcing stability for our heavy industry and government customers throughout the rest of 2022 and 2023, but with a renewed sense of urgency.

Our value proposition remains the same, yet with the events of 2020-2022 revealing the precariousness of the world's supply chain, fossil-fuel energy availability, workforce, and material cost certainty, the Company's technology offering looks even better positioned.

Our ability to help impact and remake several of the major priorities facing heavy industry – priorities that have fallen further behind during these past two years – such as greenhouse gas emissions reduction, fuel switching to combustion-free electric sources, improved value recovery of metal waste-streams, enhanced metal production output from the same input, safe destruction of pervasive chemicals, and more rapid and higher quality metal powder production for component weight reduction – leaves us excited about our recent critical milestones and our long-term positioning.

All of these factors, bolstered by the quickening global push towards fossil fuel reduction at both industry and government levels that further showcases the PyroGenesis advantage, allows Management to state with continued conviction that despite the challenges seen in the year's first half, the company believes opportunities for PyroGenesis continue to expand.

To note, until such time as the Company produces consistent recurring revenue or continuous large scale orders and can offer forward-looking guidance, we will continue to provide an Outlook that is more descriptive, with a combination of actual achievements combined with working opportunities, and less focused on financial numbers.

Overall Strategy

The Company continues to build on its strategy to offer technology solutions that produce benefits through greenhouse gas ("GHG") emissions reduction, clean electric fuel sources, safe waste destruction, and improved production output and quality, that take advantage of the Company's expertise in patented ultra-high temperature processes for heavy industry.

We have acknowledged our strategy to be timely, as many governments in jurisdictions around the world promote and fund environmental technologies and infrastructure projects. After 2021 proved an even greater affirmation of this approach as major industries targeted by the Company not only recommitted to their targets, but in some cases raised them significantly, 2022 has brought about more circumstances that highlight how technology solutions like those from PyroGenesis will be in even greater demand.

In particular, the conflict in Ukraine has exhibited how geopolitical influences will continue to impact the supply of metals that are already under extraordinary market demand. As supply chain issues, worries about supply reductions, and additional sanctions on Russia (a major producer of the world's aluminum supply) caused massive fluctuations to aluminum spot-prices, the conflict also more fully exposed the vulnerability of aluminum producers to power availability and energy price uncertainty, as energy supply challenges that were already being experienced by European and Asian metal producers were exacerbated during the war.

All of these factors show that with global metal demand growing (anticipated to grow by 80% by 2050)³, and industry carbon-reduction targets not yet on track to meet their goals, aluminum producers must find ways to improve their efficiency, and increase their yield of high-quality metal from current production – all while lowering their carbon footprint. PyroGenesis' range of technology solutions provide just such an opportunity, with the Company's DROSRITE™ systems providing industry-leading dross recovery rates of high-quality aluminum, inline and on-site, with a lower operating expense and lower carbon footprint than all competing technologies; meanwhile, the Company's mainstay plasma torch offering provides another technology-driven solution for metal producers looking to reduce their reliance on a volatile natural gas and diesel supply chain within any aspect of their operations that require metal melting or heating, while again eliminating fossil fuel emissions.

These same or similar pressures are affecting the global steelmaking industry, into which the Company has already sold and now delivered initial clean electric, non-combustion plasma torches for final pre-order test runs. Macroeconomic pressures may in fact serve to expedite the need for faster implementation over the next year or more.

For clarity, as stated often, PyroGenesis' product lines do not depend on environmental incentives (tax credits, GHG certificates, environmental subsidies, etc.) to be economically viable; with the increased industry carbon reduction commitments, it is anticipated that the Company's growth drivers will expand, and shareholders will see increased value.

While the Company is not immune to how COVID-19 and other external factors negatively impacted businesses over the past two years, specifically related to the work force and, more importantly, the supply chain, Management believes that – while it can do little about the strain on its customers' and prospects' – the Company itself is well structured, and through various mitigation measures these challenges continue to be dealt with in an effective manner. The Company expects even greater improvements as the impact of COVID-19 and other external factors continues to recede during the remainder of 2022.

Organic Growth

Organic growth will be spurred on by (i) the natural growth of our existing offerings; (ii) leveraging off the insider "golden ticket" advantage we have with several industrial customers due to how some of our industrial systems are installed inside a customer's facility (vs. the legacy systems that are installed off-site) – enabling us to see first-hand some of the additional daily challenges faced by our customers, and then upsell to them accordingly;

(iii) exploring new ways scientifically (and to corresponding markets laterally) to provide unique solutions and value that helps industries deal with some of the most pressing environmental, engineering, and energy problems; and (iv) building new manufacturing and chemical recovery facilities in overseas markets, as per our recent announcement to pursue the construction of a European production facility for metal powder production.

Over the past several years, PyroGenesis has successfully positioned each of its business lines for rapid growth by strategically partnering with multi-billion-dollar entities. These entities have identified PyroGenesis' offerings to be unique, in demand, and of such a commercial nature as to warrant the unique, long-term, supportive relationships that the Company has experienced while it ramps up various technologies to commercialization. We expect that these relationships have us well positioned to transition into significant revenue streams once full commercialization is achieved.

Aluminum Industry Process Improvement

As mentioned in previous reports, momentum with PyroGenesis' aluminum Industry strategy and offering continues to expand.

During the quarter, the company announced that its DROSRITE™ waste metal recovery technology had been successfully commissioned for Ma'aden Aluminum in Saudi Arabia, one of the world's largest primary aluminum producers with 2021 revenue in excess of US \$7 billion. There, the DROSRITE™ technology is helping to service the Ma'aden plant in Ras Al-Khair, a joint venture corporation with Alcoa that is the largest and most efficient vertically integrated aluminum complex in the world and includes one of the world's largest smelters. At Ma'aden, the first three DROSRITE™ systems passed site acceptance testing and were fully commissioned, with the remaining four already manufactured and awaiting final shipment at the end-user's request.

In addition to the DROSRITE™ waste metal recovery system – one of the largest and fastest growing dross recovery solutions in the world, with 11 large DROSRITE™ systems in use or slated for delivery to markets around the world, and three more LOI's in play – during the quarter the Company provided a comprehensive update on the aluminum business line as a whole, outlining how increasing demand, global supply shortages, and fluctuating prices and energy availability were impacting aluminum producers, allowing PyroGenesis to announce new-use markets after numerous inquiries for many different aspects of the aluminum production process. As the aluminum industry eyes greater technological innovation to improve production and reduce fossil fuel reliance, few technologies are as ready as PyroGenesis.

Subsequent announcements in the quarter outlined even more areas where the Company's technology is being considered. Combined, the various announcements revealed that PyroGenesis' technology is being used, studied, or actively evaluated for use in the upstream carbon anode baking process, as a fuel replacement in scrap re-melting furnaces, in molten holding furnaces, in new furnace production, in downstream cast-house furnaces, and in retrofitting of existing aluminum recycling furnaces.

With the relationships the Company has been developing throughout the industry, and as a result of the success seen by its technologies in the primary aluminum sector, interest has now expanded into secondary scrap-based producers, as well as downstream parts manufacturers. This represents a significant change and advancement from just 18 months ago.

Finally, the various joint ventures announced in prior quarters continue to evolve.

For the joint venture technology geared to handle the leftover residues resulting from the processing of waste stream metal dross, the pre-launch requirements and considerations have entered the final stage. Chemical residue samples from dross produced at one of the Company's clients' facilities are being tested in two different countries, and the results of those tests will inform final steps.

As stated previously, we believe that valorizing the residues and producing high end products will further define us as the go-to company for all dross-related processing.

For the partnership with Aluminerie Alouette (the largest primary aluminum smelter in the Americas and co-owned by Rio Tinto and Norsk Hydro), for the development of a solution to safely recover various metals and compounds from the heavily contaminated carbon lining of aluminum smelters (known as "spent pot linings"), work continues, with lab-scale tests concluded and initial pilot phase in development.

Steel Industry Process Improvement

With steelmaking being one of the most carbon-emission intensive industries in the world, estimated to be responsible for between 7 to 12 per cent of all global fossil fuel and greenhouse gas emissions, that industry continues to be under intense pressure, including huge financial penalties, to find emission reductions.

This pressure on the steelmaking industry allows PyroGenesis to expect demand for its upstream, iron ore pelletization solution to increase significantly, as steelmakers look to all aspects of the production lifecycle for carbon reduction opportunities.

As outlined in previous reports, serious consideration is being given to replacing large numbers of the fossil fuel burners in iron ore pelletization with PyroGenesis' proprietary and patented plasma torches.

During the quarter, the Company achieved a major milestone when, after extensive modeling, simulations, business case development, production, and live factory tests – during a period that was engulfed by a global pandemic – our plasma torch system for iron ore pelletization was produced, assembled, and shipped (as per the February 8 news release designating a Q2 quarter end shipping timeline) to the clients – in preparation for first-ever live factory usage and factory acceptance testing toward that carbon reduction goal.

As previously disclosed, that client is a multi-billion-dollar international producer of iron ore pellets and one of the largest in the industry, whose name will remain confidential for competitive reasons. The Client, which has committed to reduce its GHG emissions, has over ten (10) iron ore pelletization plants, each possibly requiring up to 50 plasma torches, or more than 500 torches in total. The Company has also previously disclosed, that we have provided a cost estimate for 36 plasma torches to that same Client A, at a value of \$95-115 million. The range is an estimate due to usage and customization uncertainties which will be more clearly defined in due course.

Other previously announced clients – Client B, one of the largest iron ore processes in the world who has signed a \$6M contract with the Company for 4 plasma torches for their pelletization system, and Client C, who is not only a significant player in the iron ore pelletization industry but is also a major player in the steel industry – continue to progress at their own pace.

For Client B, production of the four torches is underway. As previously announced, Client B has advised PyroGenesis that, upon the successful implementation of the torches, subsequent orders are expected to be for approximately 130 plasma torches.

PyroGenesis expects that the previously mentioned government initiatives, geared to stimulating their respective economies by promoting and funding environmental technologies and infrastructure projects, will only serve to increase interest in PyroGenesis' plasma torch offerings to other companies in this space. While potential clients seeking government support for large initiatives may draw out the onset of large contracts, the sheer number of potential customers, and the fact that the Company will engage with many of them in different stages at different times, will help to ensure a long, overlapping pipeline of potential projects.

In addition, PyroGenesis continues to target other industries which are experiencing significant pressure to reduce GHGs, and which utilize fossil fuel burners as well, such as the cement, aluminum, and automotive industries.

Plasma Torches for Emerging / Niche Markets

Separately, the Company also offers plasma torches to emerging / niche markets where there is a high probability of on-going sales from successful implementation.

One such example is when, in Q1 on February 7, the Company announced that it had signed a \$273,000 contract with a European research centre, to manufacture and deliver a 50Kw methane plasma torch, which will be used by the client to develop a process to convert hydrocarbons, including methane (a greenhouse gas), into useful chemicals such as olefins (e.g. ethylene, propylene, etc.), thereby significantly reducing GHGs.

That torch and system is currently in production.

For each new market, the Company will also benefit from providing proprietary spare parts and service, which generates significant recurring revenue, thus complementing the Company's long-term strategy to build a recurring revenue model.

Additive Manufacturing (Metal Powders for 3D Printing)

Our metal powders business line also saw a major milestone in Q2.

The Company's NexGen™ facility, which incorporates all the previously disclosed benefits (increased production rates and lower capital & operating expenditures), was announced as having produced and delivered two separate 100kg orders for titanium powders – the first two commercial batch orders for the system, after months of testing and sample size production.

These orders were both an important commercial milestone, as well as further validation of the Company's process and ability to supply some of the highest quality powder produced to the AM industry using our NexGen™ plasma atomization process. This process is a significant departure and upgrade from conventional plasma atomization – a technology the Company also invented and coined the term for, and which is still considered the gold standard for the production of metal powder.

The two orders came via our European business partner Aubert & Duval, who is a world leader in industrializing high-performance steel, super alloy, aluminum and titanium alloys for over a century. More specifically, they are a recognized supplier of metal powders for additive manufacturing, serving the Aerospace, Energy, Transport, Medical, Defense, Automotive and other large scale, demanding markets.

Of note, a major tier-one global aerospace company has already entered into an agreement with the Company to formally qualify its metal powder, at considerable expense to the global aerospace company, with a view towards having the Company become a supplier.

Under this agreement, the Client has been performing an in-depth qualification process with PyroGenesis – a procedure typically required before a company can become an approved supplier. The process was established to, amongst other things, evaluate the Company's manufacturing methods, test samples of powder for batch-to-batch consistency, and determine various mechanical and chemical properties. Subsequently, larger volumes of powder will be used to print test coupons to further evaluate mechanical and chemical properties.

Upon passing all steps, including acceptance tests, the Company's process will be locked down specifically for each client, with no additional modifications permitted. Upon successful completion of the testing, PyroGenesis would expect to receive formal acceptance as an approved supplier. The formal and methodical process with this top tier aerospace company is on track and is nearing conclusion, with additional updates to investors expected throughout Q3.

There are additional major top tier aerospace companies and OEMs, in both Europe and North America, eagerly awaiting powders from this new state-of-the-art production line, and we are currently in the process of supplying sample powders to them for analysis.

The Company expects that such developments will continue and will translate into significant improvements in contributions to revenue by this segment in the mid-long term.

HPQ/PUREVAP™

With respect to HPQ, a PyroGenesis client and a company whom PyroGenesis owns significant shares and options, the goal is to continue to expand our role as HPQ's technology provider for the game changing family of silicon processes which we are developing exclusively for HPQ and its wholly owned subsidiaries HPQ Nano Silicon Powders Inc. and HPQ Silica Polvere Inc., namely:

The PUREVAP™ "Quartz Reduction Reactors" (QRR), an innovative process (patent pending), which should permit the one step transformation of lower purity quartz (SiO₂) than any traditional processes can handle into a silicon (Si) of a higher purity level (2N-4N) that can be produced by any traditional smelter, at reduced costs, energy input, and carbon footprint. The unique capabilities of this process could position HPQ as a leading provider of the specialised silicon material needed to propagate its considerable renewable energy potential; and

The PUREVAP™ Nano Silicon Reactor (NSiR), which, if successful, could position itself as a new proprietary low-cost process that can transform the silicon (Si) made by the PUREVAP™ QRR into the nano-silicon materials (spherical silicon powders and silicon nanowires) sought after by energy storage, batteries, electric vehicle manufactures and clean hydrogen sectors participants. The aim of the ongoing work is to position HPQ NANO as the first to market with a commercial scale low-cost nanoparticle production system.

A new plasma-based process that could convert Silica (Quartz, SiO₂) into fumed silica (Pyrogenic Silica) in one step. This new process could be a low-cost and environmentally friendly option that combines HPQ Silicon High Purity Quartz initiatives with PyroGenesis' industry leading know-how in the development of commercial plasma processes. It is envisioned that the process will eliminate harmful chemicals presently generated by traditional methods. This new process could revolutionize the manufacturing of fumed silica, while repatriating production back to North America.

Government participation in a \$5.3M funding of the fumed silica project confirms our expectation that 2022 should be a year in which significant developments occur on all these fronts.

Land Based Units/Environmental

The Company did not previously aggressively target the Company's land-based/environmental solutions during the period where the Company's other offerings, such as in steelmaking and aluminum industry process improvement, were accelerating.

However, during 2021, interest in the Company's capabilities in this arena was renewed, and PyroGenesis' plasma-based solutions have generated interest in processing a waste stream that has recently been classified as hazardous.

In October of 2021, PyroGenesis was selected by a US municipal water utility to provide a C\$9.2 million system to destroy perfluoroalkyl and polyfluoroalkyl substances (PFAs), a group of hazardous chemicals that have become pervasive in product manufacturing, and which are now understood to be harmful as they leech out of products and into farmland, soil, and the water system.

Planning and negotiations for this project have drawn out considerably, for various client-side reasons related to logistics, resourcing, competing municipal and state project priorities and funding, as well as extensive legal ramifications related to hazardous chemical processing and the newness of operating in this realm, for all parties. As a result, great care has been taken to ensure a proper project and contract framework. The effort involved and the framework created will be very useful for future projects of this nature, as well as in this area of PFAS and hazardous chemical processing that is so new to governments, but expanding rapidly.

Growth through Synergistic Mergers and Acquisitions

As previously disclosed, the Company is conservatively considering synergistic merger and acquisition strategies to augment its growth, and the Company has been very actively involved in pursuing several opportunities to support this strategy. In so doing, the focus has been on private companies exclusively which (i) primarily leverage the Company's Golden Ticket advantage, or (ii) could uniquely benefit from the Company's engineering advantage and/or international relationships.

Additional Opportunities for Plasma Torches

Within the general plasma torch line of business, the Company continues to consider options to leverage its plasma expertise. We continue to review torch technologies, pursue grant applications and government research involvement, and client participation partnerships, that could complement our existing torch offerings, leverage off our unique relationships, or explore new opportunities. We are in early stage discussion across many sectors and many potential customers; no additional details are available at this time.

CONCLUSION

In conclusion, while headwinds have interrupted the intentions of many clients and prospects during the first half of the year, PyroGenesis continues to see 2022 as a platform from which decades of growth will stem.

The Company plans to take advantage of its unique position in its main business offerings to accelerate growth, with a particular emphasis on offerings geared to aggressively reducing GHG emissions and the world's carbon footprint, while finding and offering solutions to pressing environmental, engineering, and energy challenges.

Financial Summary

Revenues

PyroGenesis recorded revenue of \$5,847,180 in the second quarter of 2022 ("Q2, 2022"), representing a decrease of 29% compared with \$8,280,572 (which includes 3.3M sale of intellectual properties) recorded in the second quarter of 2021 ("Q2, 2021"), Revenue for the six months of fiscal 2022 was \$10,053,943 a decrease of 31% over revenue of \$14,545,075 during the same period in 2021.

Revenues recorded in the three and six months ended June 30, 2022, were generated from:

- (i) DROSRITE™ related sales of \$436,538, \$1,336,617 (2021 Q2 - \$1,648,882, \$4,389,606)
- (ii) PUREVAP™ related sales of \$727,378, \$1,168,983 (2021 Q2 - \$3,896,453, \$4,521,539)
- (iii) torch related sales of \$1,550,201, \$2,591,909 (2021 Q2 - \$557,613, \$752,835)
- (iv) development and support related to systems supplied to the U.S. Navy of \$591,099, \$1,336,359 (2021 Q2 - \$2,133,187, \$4,719,208)
- (v) biogas upgrading and pollution controls of \$2,181,107, \$3,171,152 (2021 Q2 - \$Nil, \$Nil)
- (vi) other sales and services of \$360,858, \$448,922 (2021 Q2 - \$44,437, \$161,887)

Cost of Sales and Services and Gross Margins

Cost of sales and services before amortization of intangible assets was \$3,129,148 in Q2 2022, representing a decrease of 6% compared with \$3,340,312 in Q2 2021, primarily due to a decrease in direct materials of \$1,612,969 (Q2 2022 - \$2,547,913) and increases in employee compensation, subcontracting, manufacturing overhead & other of \$1,987,111 (Q2 2022 - \$829,736), offset by the increase in foreign exchange charge on materials of (\$447,968) (Q2 2022 - (\$1,023)).

The gross margin for the Q2 2022 three-month period was \$2,499,273 or 43% of revenue compared to a gross margin of \$4,933,481 or 60% of revenue for Q2 2021.

As a result of the type of contracts being executed, the nature of the project activity, as well as the composition of the cost of sales and services, as the mix between labour, materials and subcontracts may be significantly different. In addition, due to the nature of these long-term contracts, the Company has not necessarily passed on to the customer, the increased cost of sales which was attributable to inflation, if any.

Investment tax credits related to qualifying projects from the provincial government in Q2 2022 were \$22,964 (Q2 2021 - \$36,315). The Company also recorded for the six months ended June 30, 2022, \$24,793 (2021 - \$37,498) of the investment tax credits against cost of sales and services, \$31,641 (2021 - \$23,880) against research and development expenses and \$15,000 (2021 - \$15,979) against selling general and administrative expenses.

The amortization of intangible assets of \$218,759 in Q2 2022 compared to \$6,780 for Q2 2021 relates mainly to the intangible assets in connection with the Pyro Green-Gas acquisition, patents and deferred development costs. These expenses are non-cash items and will be amortized over the duration of their expected lives.

Selling, General and Administrative Expenses

Included within Selling, General and Administrative expenses ("SG&A") are costs associated with corporate administration, business development, project proposals, operations administration, investor relations and employee training.

SG&A expenses for Q2 2022 excluding the costs associated with share-based compensation (a non-cash item in which options vest principally over a four-year period), were \$5,470,495 representing an increase of 62% compared with \$3,371,888 reported for Q2 2021.

The increase in SG&A expenses in Q2 2022 over the same period in 2021 is mainly attributable to the Pyro Green-Gas acquisition and the net effect of:

- (i) an increase of 45% in employee compensation due primarily to additional head count,
- (ii) an increase of 89% for professional fees, primarily due to an increase in accounting fees and legal fees,
- (iii) an increase of 109% in office and general expenses, is due to an increase in computer and internet expenses, security expenses and stationary and office related expenses,
- (iv) travel costs increased by 1,305%, due to an increase in travel abroad,
- (v) depreciation on property and equipment increased by 77% due to higher amounts of property and equipment being depreciated,
- (vi) depreciation on right of use assets increased by 4% due to higher amounts of right of use assets being depreciated,
- (vii) Investment tax credits decreased by 12%, due to a decrease in qualifying projects,
- (viii) government grants increased by 220% due to higher levels of activities supported by such grants,
- (ix) other expenses increased by 56%, primarily due to an increase in couriers & freight,

Separately, share based payments decreased by 51% in Q2 2022 over the same period in 2021.

Research and Development ("R&D") Costs

The Company incurred \$804,564 of R&D costs, net of government grants, on internal projects in Q2 2022, an increase of 13% as compared with \$710,734 in Q2 2021. The increase in Q2 2022 is primarily related to an increase in employee compensation, investment tax credits, subcontracting, materials and equipment, and other expenses and a decrease in government grants recognized. During the first six months of fiscal 2022, net spending on internal R&D was \$1,286,996 as compared to \$997,041 in 2021, primarily due to an increase in R&D activities performed.

In addition to internally funded R&D projects, the Company also incurred R&D expenditures during the execution of client funded projects. These expenses are eligible for Scientific Research and experimental Development ("SR&ED") tax credits. SR&ED tax credits on client funded projects are applied against cost of sales and services (see "Cost of Sales" above).

Financial Expenses

Finance expenses for Q2 2022 totaled \$156,113 as compared with \$40,086 for Q2 2021, representing an increase of 289% year-over-year. The increase in finance expenses in Q2 2022, is primarily attributable to higher interest and accretion due on the business combination.

Strategic Investments

The adjustment to fair market value of strategic investments for Q2 2022 resulted in a loss of \$7,477,865 compared to a loss in the amount of \$17,884,293 in Q2 2021. The loss is attributable to the decreased market share value of common shares and warrants owned by the Company of HPQ Silicon Resources Inc.

Comprehensive (Loss) Income

The comprehensive loss for Q2 2022 of \$13,039,531 compared to a loss of \$20,362,205, in Q2 2021, represents a decrease of 36% year-over-year. The decrease of \$7,322,674 in the comprehensive loss in Q2 2022 is primarily attributable to the factors described above, which have been summarized as follows:

- (i) a decrease in product and service-related revenue of \$2,433,392 arising in Q2 2022,
- (ii) an increase in cost of sales and services of \$816, primarily due to increase in foreign exchange charge on materials and the decrease in direct materials, offset by the increase in employee compensation, subcontracting, manufacturing overhead & other, investment tax credits, and amortization of intangible assets,
- (iii) an increase in SG&A expenses of \$430,962 arising in Q2 2022 primarily due to an increase in employee compensation, professional fees, office and general, travel, depreciation in property and equipment, depreciation ROU assets, government grants, and other expenses which is offset by a decrease in share-based expenses,
- (iv) an increase in R&D expenses of \$93,830 primarily due to an increase in subcontracting, material and equipment and other expenses and a decrease in government grants,

- (v) an increase in financial expenses of \$116,027 in Q2 2022 primarily due to interest on lease liabilities, interest accretion on balance due on business combination and other interest expenses,
- (vi) an increase in fair value adjustment of strategic investments of \$10,406,428 in Q2 2022,
- (vii) an increase in income taxes of \$19,542 in Q2 2022.

EBITDA

The EBITDA in Q2 2022 was \$12,341,307 loss compared with an EBITDA loss of \$20,082,063 for Q2 2021, representing a decrease of 39% year-over-year. The \$7,740,756 decrease in the EBITDA loss in Q2 2022 compared with Q2 2021 is due to the decrease in comprehensive loss of \$7,322,673, an increase in depreciation on property and equipment of \$64,351, an increase in depreciation ROU assets of \$6,181, an increase in amortization of intangible assets of \$211,980, an increase in financial expenses of \$116,028, and an increase in income taxes of \$19,542.

Adjusted EBITDA loss in Q2 2022 was \$10,720,267 compared with an Adjusted EBITDA loss of \$16,793,378 for Q2 2021. The decrease of \$6,073,111 in the Adjusted EBITDA loss in Q2 2022 is attributable to a decrease in EBITDA loss of \$7,740,756, and by a decrease of \$1,667,646 in share-based payments.

The Modified EBITDA loss in Q2 2022 was \$3,242,402 compared with a Modified EBITDA gain of \$1,090,915 for Q2 2021, representing a decrease of 397%. The decrease of \$4,333,318 in the Modified EBITDA loss in Q2 2022 is attributable to the decrease as mentioned above in the Adjusted EBITDA of \$6,073,111 and a decrease in the change of fair value of strategic investments of \$10,406,428.

Liquidity

As at June 30, 2022, the Company has cash and cash equivalents of \$1,291,508. In addition, the accounts payable and accrued liabilities of \$9,404,542 are payable within 12 months.

About PyroGenesis Canada Inc.

PyroGenesis Canada Inc., a high-tech company, is a leader in the design, development, manufacture and commercialization of advanced plasma processes and sustainable solutions which reduce greenhouse gases (GHG), and are economically attractive alternatives to conventional "dirty" processes. PyroGenesis has created proprietary, patented and advanced plasma technologies that are being vetted and adopted by multiple multibillion dollar industry leaders in four massive markets: iron ore pelletization, aluminum, waste management, and additive manufacturing. With a team of experienced engineers, scientists and technicians working out of its Montreal office, and its 3,800 m² and 2,940 m² manufacturing facilities, PyroGenesis maintains its competitive advantage by remaining at the forefront of technology development and commercialization. The operations are ISO 9001:2015 and AS9100D certified, having been ISO certified since 1997. For more information, please visit: www.pyrogenesis.com.

This press release contains certain forward-looking statements, including, without limitation, statements containing the words "may", "plan", "will", "estimate", "continue", "anticipate", "intend", "expect", "in the process" and other similar expressions which constitute "forward-looking information" within the meaning of applicable securities laws. Forward-looking statements reflect the Corporation's current expectation and assumptions and are subject to a number of risks and uncertainties that could cause actual results to differ materially from those anticipated. These forward-looking statements involve risks and uncertainties including, but not limited to, our expectations regarding the acceptance of our products by the market, our strategy to develop new products and enhance the capabilities of existing products, our strategy with respect to research and development, the impact of competitive products and pricing, new product development, and uncertainties related to the regulatory approval process. Such statements reflect the current views of the Corporation with respect to future events and are subject to certain risks and uncertainties and other risks detailed from time-to-time in the Corporation's ongoing filings with the securities regulatory authorities, which filings can be found at www.sedar.com, or at www.sec.gov. Actual results, events, and performance may differ materially. Readers are cautioned not to place undue reliance on these forward-looking statements. The Corporation undertakes no obligation to publicly update or revise any forward-looking statements either as a result of new information, future events or otherwise, except as required by applicable securities laws. Neither the Toronto Stock Exchange, its Regulation Services Provider (as that term is defined in the policies of the Toronto Stock Exchange) nor the NASDAQ Stock Market, LLC accepts responsibility for the adequacy or accuracy of this press release.

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RELATED LINK: <http://www.pyrogenesis.com/>

¹ https://csimarket.com/Industry/industry_Profitability_Ratios.php?ind=201

² https://www.democrats.senate.gov/imo/media/doc/inflation_reduction_act_of_2022.pdf

³ <https://international-aluminium.org/iai-releases-aluminium-sectors-decarbonisation-dataset-in-line-with-the-international-energy-agencys-beyond-2-degrees-findings>