CIPHER NEUTRON INC.

Believe in hydrogen, believe in Cipher

Our name: Cipher is an Arabic word for zero. Hydrogen is the only element with zero neutrons, hence the name Cipher Neutron.

About Cipher Neutron

A Canadian cleantech company focused on

Green Hydrogen production

North America's 1st and 2nd company in the world to commercialize

AEM Electrolysers

World's 1st company to have patent pending

Reversible Fuel Cells

Trusted and funded by governments

Industrial partner of many Canadian universities and public research organizations

Hydrogen Market

Fertilizer Industry
Market Size: ($ 80 Billion)
Applications:

Ammonia Production

Oil & Gas Industry
Market Size: ($ 40 Billion)
Applications:

Oil and Gas Processing

Chemical Industry
Market Size: ($ 10 Billion)
Applications:

Methanol production
Other chemicals

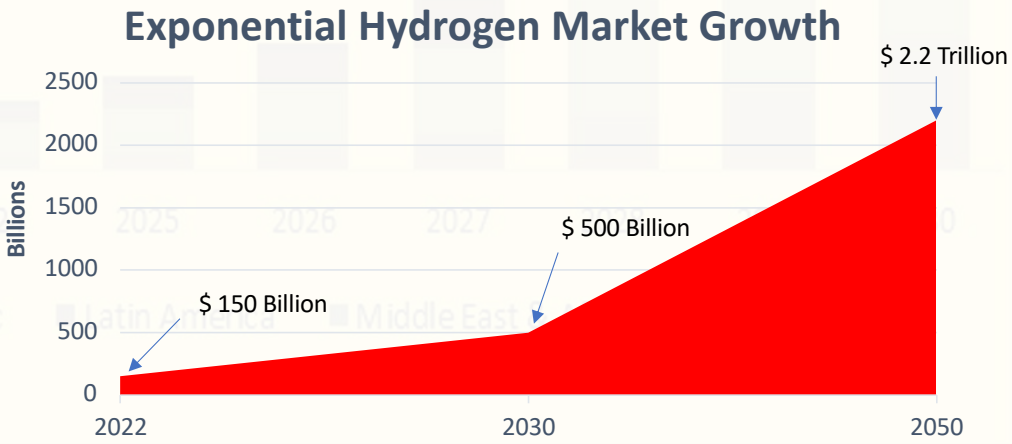
Mining Industry
Market Size: ($ 5 Billion)
Applications:

Smelters
Metal/Ore reduction

Industrial Use
Market Size: ($ 2 Billion)
Applications:

Food Industry
Steel Industry

- Green Hydrogen Future
- Hydrogen Market to grow more than 10 folds by 2050
- More than 70% of the Hydrogen will be Green Hydrogen by 2050
- AEM Technology will play a major role replacing PEM & Alkaline electrolysers
- Hydrogen will be a major source of energy replacing conventional energy resources



Traditional Green Hydrogen Production Methods

1. Alkaline Electrolysis

Alkaline electrolysis is the oldest technology to split water into H2 and O2 using a diaphragm. Alkaline electrolysis uses 30% KOH as an electrolyte to promote gas production. A diaphragm is used in between the cell to separate H2 and O2 gasses. Alkaline electrolysers have been used for many years to produce green hydrogen but have many disadvantages including but limited to:

Huge footprint
Low Pressure H2
Highly Corrosive
In-efficient

2. PEM Electrolysis

PEM (Proton Exchange Membrane) electrolysis is an advanced technology to split water using an exchange membrane. PEM electrolysers use a membrane coated with PGMs (Platinum Group Metals) to excite water molecules to split water into H2 and O2 gases. PEM electrolysers are dominating the traditional Alkaline electrolysers. However, the PEM electrolysers use PFAS or harmful chemicals and have many other issues including:

Highly expensive
Environment Issues
Supply chain issues

PEM Electrolyser (The Supply Chain & Emissions Issues)

- There is not enough Iridium to make enough PEM electrolysers to supply the Global demand of Green Hydrogen
- South Africa holds more than 90% reserves of Iridium
- South Africa is responsible for 83% of global iridium supply and 70% of platinum supply at present.
- >100 tonnes of CO_2_e to mine PGMs required for 1 Megawatt PEM electrolyser
- >1 million liters of water is used to process PGMs required for 1 Megawatt PEM electrolyser
- High waste rock and tailings generated (98% ore becomes tailings)

Iridium Gap (2030 scenario)

Required	Available
	
28 tons	12 tons

PEM Electrolyser (The Environmental Issues)

PEM Electrolysers use PFAS membranes

- PFAS are also called forever or harmful chemicals
- PFAS are known to
  - affect growth of infants and older children.
  - lower a women's chance to become pregnant
  - increase the risk of cancer.
- More than 45% of US tap water is contaminated with PFAS

European Union is considering to ban certain PFAS

More than 45% tap water in the United States has been contaminated with PFAS

Introducing Cipher Neutron's AEM Electrolyser

A Highly Efficient Way To Produce Green Hydrogen (Lower OPEX)

Longer Lifetime (Low Maintenance & Less Service)

Precious Group Metals Free (Lower CAPEX)

20 Years of R&D (Trusted And Tested)

PFAS Free (Sustainable)

Cipher Neutron's AEM Benefits

Highly Efficient

81.73% efficiency vs industry standard of 77% *(HHV@ 1.8V)*

High Ampacity

High current density (1.1 amps/cm^2) enables more H2 production per unit area *(@1.9 V)*

High Pressure

Eliminates the need for expensive secondary compressors up to 30 bars.

Compact Design

Enables light weight and smaller footprint electrolysers

No Precious Metals

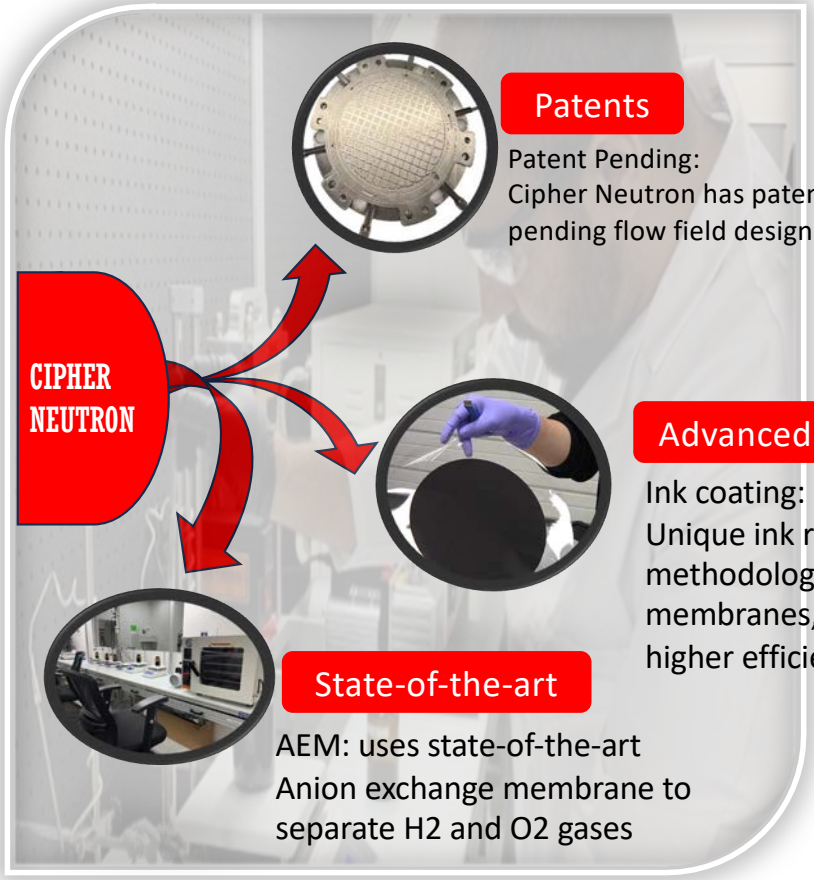
AEM Electrolysers do not use any precious metals as used in other technologies

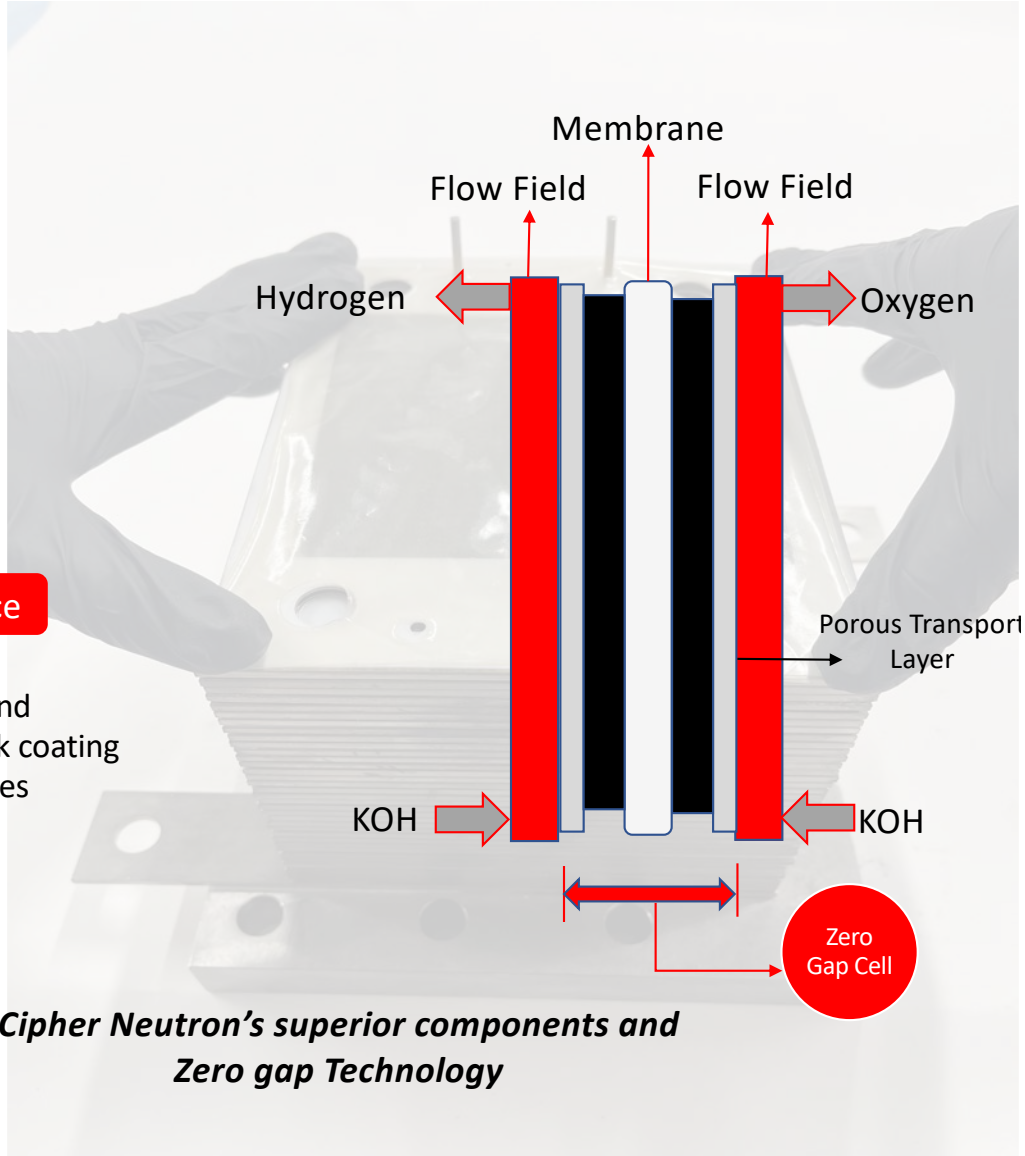
Price Reduction

Less than $700 (USD) per kW *(@250 kW stack)*

1. High Efficiency enables more hydrogen production using the same amount of energy/power. This results in lower operating costs to produce H2.
2. High Ampacity enables more hydrogen gas from a given area.
3. High Pressure enables easy storage of hydrogen and also eliminates the need to buy expensive hydrogen compressors to compress hydrogen.
4. Compact design enables less material required for the manufacturing of the electrolyser. This leads to lower Capex.
5. No precious metals enables electrolysers more sustainable and affordable.
6. Price reduction in AEM is significant due to its compact design and the elimination of expensive rare earth and precious metals.

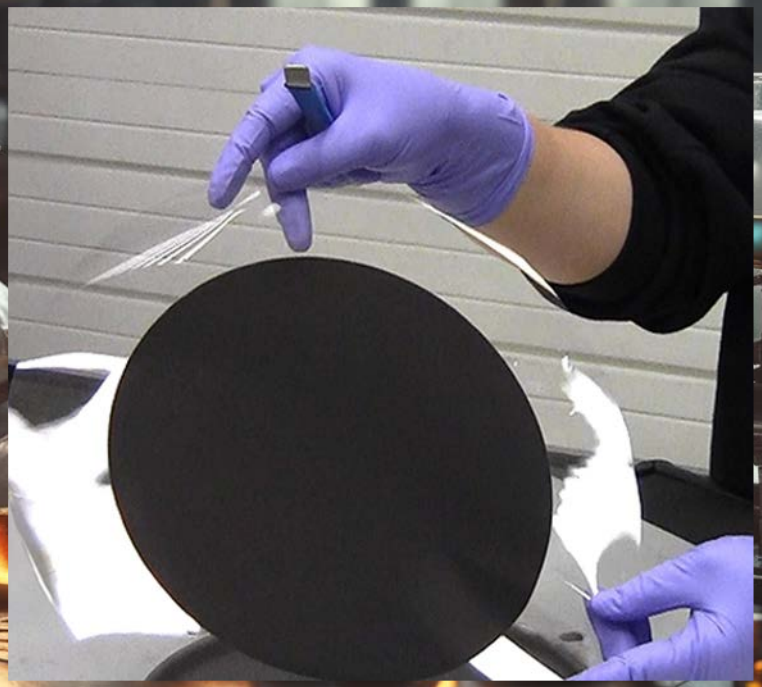
Cipher Neutron's Superior AEM Technology





Cipher Neutron's superior components and Zero gap Technology

Minimum Degradation

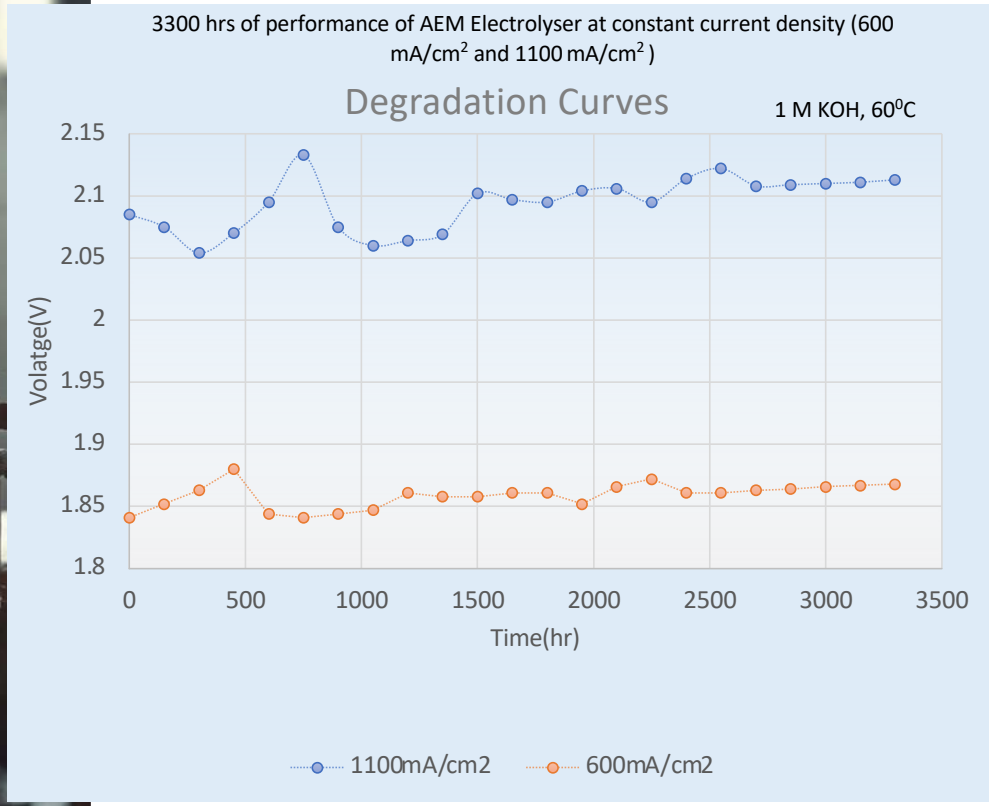


Less than 0.45% Degradation recorded after per 1000 hours

Less than 4% Degradation when extended on yearly basis

European benchmark for maximum allowed degradation is 9%

Expected Lifetime Of Our Electrolyser Is 10 Years



Few AEM Competitors Have The Know-how To Deliver

Existing AEM Industry Participants:

Enapter

Market Cap – 0.5 billion CAD
IPO value – more than 1 Billion Euros
Technology – AEM
Electrolyser size – 2.4 kW
Market ready – Yes

Cipher Neutron

Market Value– 40 million
Technology – AEM and RFC
Electrolyser size – 10 kW
Market ready – yes

Announced Attempts in Recent AEM R&D:

Evonik

Cummins

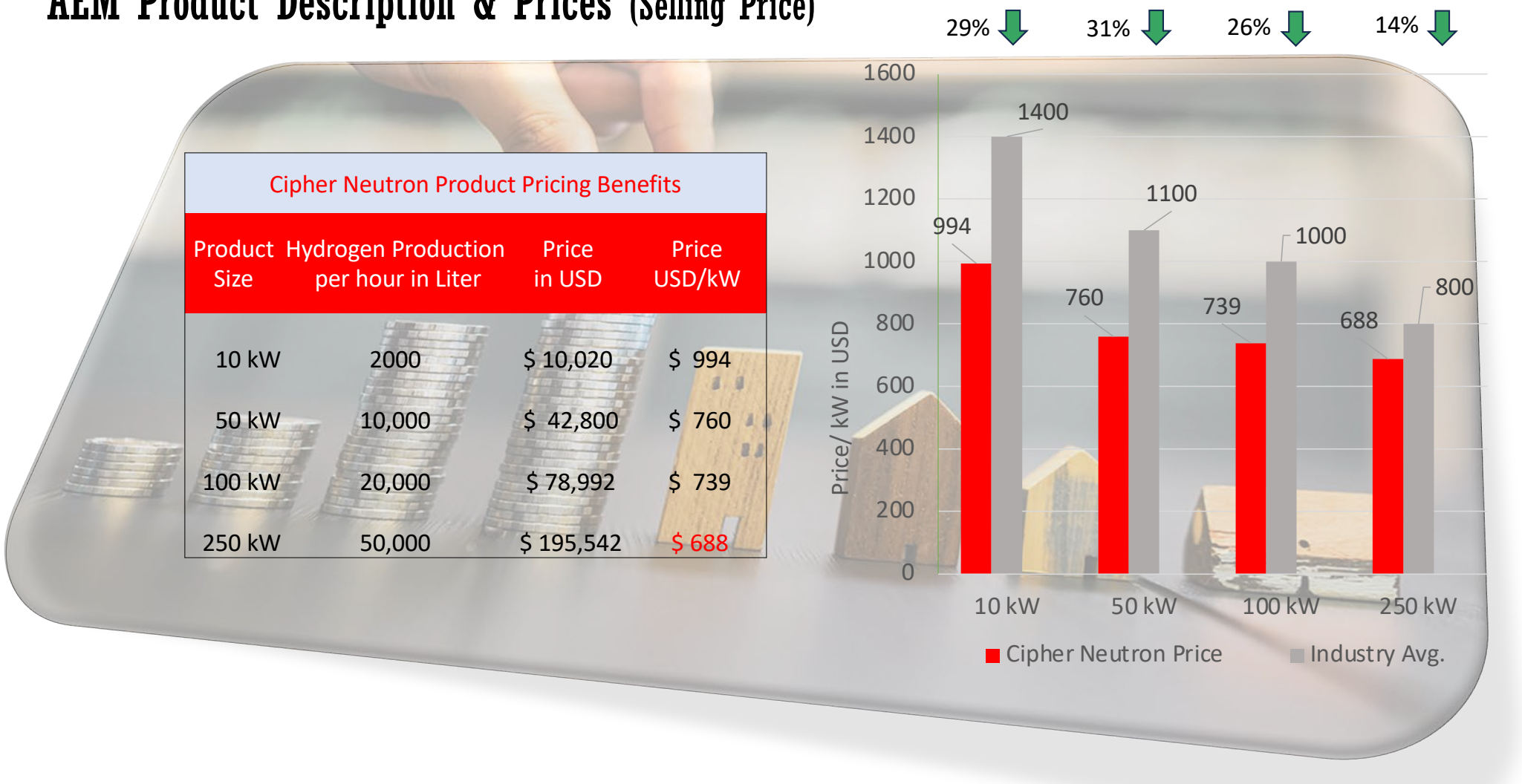
HydroLite

Sunfire

* subject to change

AEM Product Description & Prices (Selling Price)

Cipher Neutron Product Pricing Benefits			
Product Size	Hydrogen Production per hour in Liter	Price in USD	Price USD/kW
10 kW	2000	$ 10,020	$ 994
50 kW	10,000	$ 42,800	$ 760
100 kW	20,000	$ 78,992	$ 739
250 kW	50,000	$ 195,542	$ 688



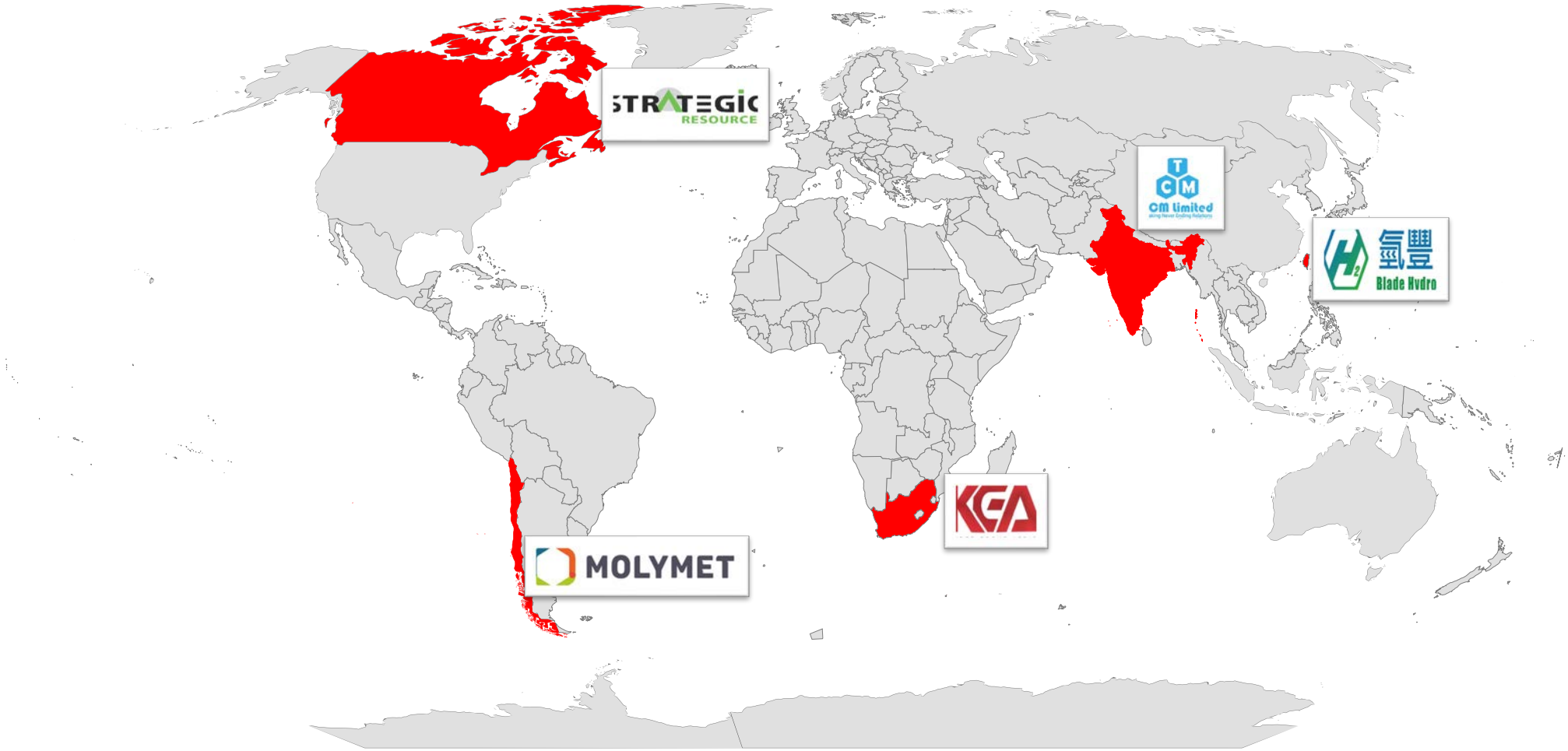
Research Partners

UNIVERSITY OF ALBERTA

Western UNIVERSITY · CANADA

dynaCERT
Carbon Emission Reduction Technology

International Sales



Future R&d Of Cipher Neutron

1st company in the world to have Reversible Fuel Cell

Single system to produce green hydrogen and electricity

Patent pending

Ability to replace lithium-ion batteries

Non-compressed hydrogen storage

The RFC (Reversible Fuel Cell)

RFC Applications

Remote houses/cottages

Surplus power capture

Residential power backup

Power generation

Product Launch Timeline (Cipher Neutron Is Production Ready)

2023	2024	2025	2026	2026
Q4 2023 • 10 kW AEM Stack	Q3 2024 • 50 kW AEM Stack	Q1 2025 • 100 & 250 kW AEM Stack • 5 kW RFC	Q2 2026 • 10 kW RFC	Q4 2026 • 10 kW RFC • 50 kW RFC

Monthly capacity 20-MEGAWATT CAPACITY (2000 Stacks of 10 kW)

Patents Filed

Successfully filed 5 patents. Many more under development.

Patent - Title	Status
Graphene Slurry Based Power Back Up System	Published, Patent Pending
Highly Efficient HT-PEM Fuel Cell Using Heat Pipe Based Cooling System	Published, Patent Pending
A Highly Efficient Polymer Acidic Electrolyte-based Reversible Fuel Cell With Serpentine Micro Flow	Published, Patent Pending
A Hybrid Solar Chimney With Wind Turbine Fore Hanced Efficiency	Published, Patent Pending
Highly Efficient Anion Exchange Membrane Electrolyser With Circular End Plates And Flow Channels	Published, Patent Pending

Trademark Logo

Key Success Factors

- Professionals at Cipher Neutron
- Commitment to protect all our intellectual property & competitive innovations by filing worldwide patents
- Collaborations with top universities
- Corporate reward programme for employee excellence in innovation
- Careful selection of priorities to deploy research and production funds effectively

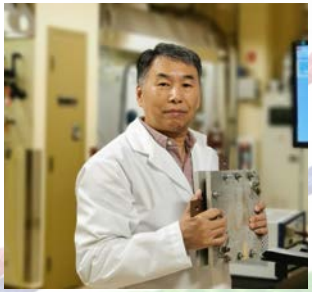
Our Management

"Great things in business are never done by one person; they're done by a team of people."
– **Steve Jobs**

Gurjant Randhawa, M.Eng, P.Eng
Director, President and CEO
Hydrogen Experience:10+ year

Dr. Larisa Karpenko, P.hd
Product Development
Hydrogen Experience: 20+ year

Jean Pierre Colin
Director, Corporate Secretary
Hydrogen Experience: 7+ year



Dr. Xianguo Li, P.hd
Advisory Board
Hydrogen Experience: 30+

Dr. Mayilvelnathan*, P.hd*
Director, Business Development
Hydrogen Experience: 20+ year

Ranny Dhillon, M.Eng,
Director, Chief Scientific Officer
Hydrogen Experience: 8+ year

Amit Khedkar
Chemical Engineer, EPC Specialist
Hydrogen Experience: 10+ years

Dr. Amandeep Oberoi, P.hd
Head of Research & Development
Hydrogen Experience – 20+ years

Gurpreet Bhullar, M.Eng
Chief Technical Officer
Hydrogen Experience – 8+ years

Nancy Massicotte
VP, Corporate Development
Hydrogen Experience – 9 +

Our Management

Gurjant Randhawa, M.Eng, P.Eng
Director, President and CEO

Gurjant Randhawa is a visionary and highly respected professional with extensive background in Cleantech technologies with focus on Hydrogen. Gurjant is registered with Professional Engineers Ontario, a highly respected licensing and regulating body for professional engineering in the province.

Gurjant Randhawa has more than a decade of hands-on experience in hydrogen electrolysers and fuel cells. Mr. Randhawa has led the Cipher Neutron team with his unparallel leadership skills and his in-depth knowledge in hydrogen technologies including but not limited to thin-film deposition, flow through porous media/ gas diffusion layers, material characterization skills and electrochemical diagnostic methods.

Mr. Randhawa has successfully put together a global team of scientists, engineers, technology developers, experts in hydrogen technology, and people that have worked in hydrogen and power generation sector for decades. Previously, he served as the Head of Research and Development for a very successful Toronto Stock Exchange listed company which markets alkaline based electrolysers globally. Mr. Randhawa co-invented new technologies and filed many international patents in the hydrogen space.

Mr. Randhawa also serves as an Advisor for the Hydrogen Technology for a Toronto based private corporation, established to create one of Canada's leading hubs of Clean Technology public company-related knowledge. Randhawa holds a master's in mechanical engineering degree from the University of New Brunswick.

Ranny Dhillon, M.Eng,
Director, Chief Technical Officer

Ranny Dhillon is a result oriented and innovative professional with 8+ years of research and development, prototyping, protype to production experience in hydrogen electrolysers, fuel cells and Membrane electrode preparation techniques. Ranny has thorough understanding of PEMFC, PEM Electrolysers, AEM Electrolysers and their sub-components such as MEA, Gas Diffusion Layer, Porous Transport Layer, Flow Fields etc. Ranny co-invented 3 international patents in switching cell technology, amperage-based analysis of hydrogen gas and Graphene-based hydrogen storage and delivery system.

Ranny has also worked on other renewable energy sources such as solar chimney, pump storage, geothermal and wind energy. Ranny has a very strong background in electromechanical engineering and holds a Masters in Engineering degree in Electrical Engineering. Ranny successfully developed and launched numerous automotive grade products.

Dr. Mayilvelnathan*, P.hd*
Director, Business Development

Dr. Mayilvelnathan Vivekananthan (Vivek) is an Inventor, Innovation Coach and likes to work at the convergence of multiple clean and green energy technologies. Dr. Vivek has 20+ years of experience in the clean energy industry and in the area of research, planning, designing, development, implementation and operation of Green hydrogen projects in various parts of the world. Dr. Vivek's extensive international experience in both academia research and industry has allowed him to build an extensive network of friends and collaborators across the whole hydrogen value chain that work right now in the amazing challenge of building a new energy system for our society.

Currently Green Hydrogen Advisor for International Solar Energy Storage (ISES),Germany, Expert member in Global Wheels Foundations, USA, and Startup mentor for E4 Shell Green projects, Dr. Vivek also has expertise in application Engineering, Estimation for Green Hydrogen projects with timelines and study for Hydrogen value chains, and Hydrogen production by water electrolysis. Dr. Vivek also has in depth knowledge of optimisation of the Hydrogen electrolyser project's technical parameters, i.e. renewable power mix, hydrogen generator, ammonia loop etc. for the project.

Our Management

Dr. Larisa Karpenko, P.hd
Product Development,
Reversible Fuel Cells

Dr.Karpenko-Jereb Larisa is an expert in simulation and modelling of polymer electrolyte fuel cells with more than 20-years-experience in academic and applied research. She graduated in the field of Electrochemistry and Physical Chemistry from the Institute of Membrane Technology at the Kuban State University, Krasnodar (Russia).

Since 2009 she has been working on modelling and simulation of durability and lifetime of polymer electrolytes and catalysts applied in renewable energy sources. The newly developed models have been used to diagnose critical conditions and monitoring degradation processes in the cells in order to optimize energy source reliability.

Dr. Karpenko-Jereb is the author and co-author of two book chapters and around 25 peer-reviewed papers. She is also a reviewer for a few scientific journals published by Elsevier and Springer, a leader of research projects granted by the Austrian Promotion Foundation (FFG).

Dr. Amandeep Oberoi, P.hd
Chief Scientist

Amandeep Singh has 10 + years of Research and Development experience in Hydrogen Fuel Cells, Electrolysers and Hydrogen storage mediums. He has got 13 patents under his name and published more than 50 research articles in refereed internal journals and conferences. Dr. Oberoi has received his PhD in Mechanical and Manufacturing Engineering from the RMIT University, Australia. Besides, he is an Australian Commonwealth Government's Scholarship Awardee and a research grant awardee from Brown Coal Innovation Australia.

Dr. Oberoi is a renowned researcher in the field of hydrogen technology with a research focus on Green Hydrogen generation, its storage in various porous mediums, and utilization in PEM fuel cells for varied applications. Dr. Oberoi Executed numerous projects on the development of solutions for improved electrocatalysts and efficiencies for water electrolysers, fuel cells and reversible fuel cells.

Jean-Pierre Colin MBA, LL.L, DCS
Corporate Secretary

Jean-Pierre Colin is Corporate Executive & Director of Public Companies in the Environmental & ESG compliant industry, Green & Hydrogen Economy: Galaxy Power Inc., Galaxy Placements Inc., dynaCERT Inc., Sego Resources Inc., White Metal Resources Corp.

JP was a pioneer of Flow Through Shares who led $ Billions in Flow Through Share financings in Canada during his thirty-year career as an investment banker on Bay Street in Toronto. He also initiated numerous public Flow Through Share Funds which in aggregate successfully managed and invested over $750 Million.

During his career as an investment banker, JP led corporate finance, syndication and M&A professionals focussing on resources and technology sectors, including Clean Technology.

Long-standing track record as senior Investment Banker and M&A specialist in the Canadian & International Financial Markets heading successful Corporate Finance Departments of Canadian mid-cap Securities Dealers.

Jean-Pierre Colin is a member of the Hydrogen Working Group of the Government of Ontario & Lobbying Government of Canada for Clean Technology Tax Incentives. Mr. Colin is LL.L. (Civil Law), MBA, DCS, Member of the Quebec Bar.

Our Management

Amit Khedkar, M.Eng
Chemical Engineer, EPC specialist

Amit Khedkar is a hydrogen scientist with chemical engineering background. During his recent role, Amit was Assistant Manager, Hydrogen Group at Iwatec Corporation Ltd, Nagasaki, Japan. A position with the combined roles of system design & integration, vendor development, project management, EPC and EMS project execution, market research and business development for fuel cell, hydrogen, and biogas projects. Having lived and worked there since 2017, Amit has gained invaluable market and cultural knowledge to boost any organisation's development efforts in the hydrogen generation market.

Prior to joining Iwatec, he worked with BHEL R&D, India, Sree Harshi Infoway Pvt Ltd, India and h2e power system Pvt Ltd, India which gave him thorough understandings on PEM and SOFC fuel cell component design, integration and testing.

During 7+ years of professional work experience, he also gained skills to work on vendor development, negotiations and proposal presentation. Besides that. He worked with several other well-known companies from India, Japan, USA, Netherlands, Germany, Belgium, Taiwan and Italy.

Gurpreet Bhullar, M.Eng
Head of Research & Development

Gurpreet Bhullar is double masters in Mechanical Engineering and Management studies. Gurpreet has 8 years+ of work experience enriched with Product Development Techniques (PDT) and practical experience in design controls, risk management, verification, validation and change control, and failure investigation tools and techniques. His past work experience is a mix of academics and industry that provides him a critical theoretical and practical thinking ability.

Gurpreet has in depth knowledge of PEMFC, PEM Electrolysers, AEM Electrolysers and their sub-components such as MEA, Gas Diffusion Layer, Porous Transport Layer, Flow Fields etc.

Gurpreet has experience leading the development of the foundation design processes, design system and libraries, and adoption of the design strategy throughout the product lifecycle.

Our Management

Dr. Xianguo Li
Advisory Board

Dr. Xianguo Li is a Professor of Mechanical and Mechatronics Engineering at the University of Waterloo. His research interests include fuel cells and electrolyzers, liquid fuel atomization and sprays, and green energy systems, as well as the thermal management of power batteries for electric vehicles.

Dr. Li serves as the editor in chief for the International Journal of Green Energy, Field Chief Editor for Frontiers in Thermal Engineering; Vice President, Technical Program, Canadian Society for Mechanical Engineering; President of the Fuel Cell Division, International Association for Hydrogen Energy, and President, International Association for Green Energy (IAGE). He is a fellow of Canadian Academy of Engineering, Engineering Institute of Canada and Canadian Society for Mechanical Engineering.

Nancy Massicotte
VP, Corporate Development

Nancy Massicotte is the President of IR Pro Communications Inc. and has been involved in the corporate development, investor relations and advisory field for over 23 years, working with companies in various sectors such as mining, technology, biotech, oil and gas.

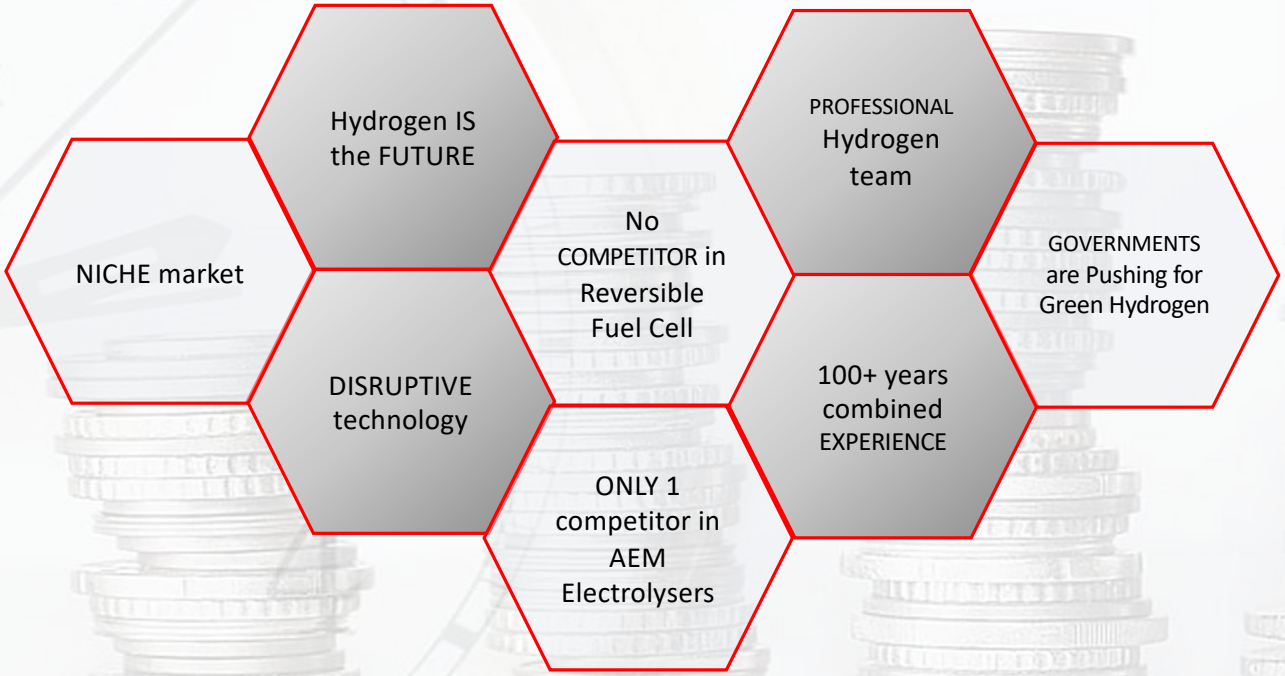
Ms. Massicotte has developed excellent personalized relationships with brokers, investors, analysts and newsletter writers. Her knowledge and experience enable successful communication to shareholders and the investment community in a particularly comprehensive way.

Ms. Massicotte understands IIROC rules and Canadian National Instruments relating to proper regulatory disclosure and language norms of press releases of public entities.

She has facilitated significant introductions to strategic partners and successfully assisted in sourcing equity and flow through financing. IR Pro Communications Inc. provides additional exposure for clients through social media channels, news dissemination channels and video interviews

Why Invest

Hydrogen is one of the most promising alternative fuels.
Cipher Neutron can produce low coast Green Hydrogen.



Sales Projections

Revenue										
Product	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Stack	$1,251,112	$ 4,116,337	$ 25,859,193	$ 58,159,522	$ 225,010,175	$ 524,877,635	$ 937,164,265	$ 950,617,087	$ 1,111,753,074	$ 1,144,370,499
Electrolyzer	$ -	$ 4,832,023	$ 37,339,886	$ 103,499,504	$ 427,087,962	$ 673,719,563	$ 363,350,120	$ 225,178,681	$ 674,345,358	$ 700,522,799
RFC	$ -	$ -	$ 6,328,159	$ 26,271,015	$ 45,059,812	$ 99,453,157	$ 748,010,846	$ 1,045,948,833	$ 512,768,934	$ 512,768,934
Total	$ 1,251,112	$ 8,975,871	$ 69,527,239	$ 187,930,041	$ 697,157,948	$ 1,298,050,355	$ 2,048,525,232	$ 2,221,744,602	$ 2,298,867,366	$ 2,357,662,232

Margin										
Product	**Year 1**	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Year 6**	**Year 7**	**Year 8**	**Year 9**	**Year 10**
Stack	$454,025	$ 1,502,960	$ 9,618,989	$ 21,613,708	$ 84,195,567	$ 196,744,021	$ 350,767,534	$ 355,649,522	$ 416,122,664	$ 428,188,282
Electrolyzer	$ -	$ 1,668,641	$ 13,212,627	$ 36,316,893	$ 151,585,155	$ 242,129,795	$ 129,468,710	$ 79,434,420	$ 241,088,079	$ 250,012,750
RFC	$ -	$ -	$ 2,146,672	$ 8,918,576	$ 15,347,555	$ 33,841,584	$ 255,576,094	$ 358,021,752	$ 175,098,980	$ 175,098,980
Total	$454,025	$ 3,171,601	$ 24,978,288	$ 66,849,177	$ 251,128,277	$ 472,715,401	$ 735,812,339	$ 793,105,694	$ 832,309,723	$ 853,300,012

Valuation

NPV *Enter Discount Rate* *10.0%*

NPV @ 10.0% (10 years) in CAD millions

Electroliser Margin	Stack Margin				
$ 1,866	10%	20%	30%	40%	50%
50%	$ 1,634.6	$ 1,692.4	$ 1,750.2	$ 1,808.0	$ 1,865.8
40%	$ 1,528.2	$ 1,586.0	$ 1,643.8	$ 1,701.6	$ 1,759.4
30%	$ 1,421.8	$ 1,479.6	$ 1,537.4	$ 1,595.2	$ 1,653.0
20%	$ 1,315.4	$ 1,373.2	$ 1,431.0	$ 1,488.8	$ 1,546.6
10%	$ 1,209.0	$ 1,266.8	$ 1,324.6	$ 1,382.4	$ 1,440.2

NPV Per Share

Per Share NPV @ 10.0% (10 years) in CAD

Electroliser Margin	Stack Margin				
$ 1,865,791,138	10%	20%	30%	40%	50%
50%	$ 14.15	$ 14.65	$ 15.15	$ 15.65	$ 16.15
40%	$ 13.23	$ 13.73	$ 14.23	$ 14.73	$ 15.23
30%	$ 12.31	$ 12.81	$ 13.31	$ 13.81	$ 14.31
20%	$ 11.39	$ 11.89	$ 12.39	$ 12.89	$ 13.39
10%	$ 10.47	$ 10.97	$ 11.47	$ 11.97	$ 12.47

IRR

IRR (10 years) in CAD

Electroliser Margin	Stack Margin				
182%	10%	20%	30%	40%	50%
50%	172%	174%	177%	179%	182%
40%	165%	167%	170%	172%	175%
30%	157%	160%	163%	165%	168%
20%	149%	152%	155%	158%	161%
10%	141%	144%	147%	150%	153%

Cipher Neutron In The News

- Cipher Neutron and University of Alberta collaborate on advanced Research and Development in AEM
- Cipher Neutron Receives Initial Purchase Order from Kuber Group in Africa and Enters Into MOU to Deploy Cipher Neutron's AEM Electrolysers Totalling 10 Megawatts of Capacity
- Cipher Neutron Receives Purchase Order from Blade Hydrogen in Taiwan for its AEM Electrolysis Technology
- Cipher Neutron Signs Collaboration Agreement with Ionomr to Create North America's First 250-Kilowatt AEM Hydrogen Electrolyzer
- Cipher Neutron concludes Marketing Agreement with Technomak to supply AEM ELectrolysers
- Cipher Neutron Live at the 1st Hydrogen Day (IIF) to be Held on June 15th, 2023
- Cipher Neutron Appoints Dr. Xianguo Li to its AEM Hydrogen Electrolyser Advisory Board
- dynaCERT and Cipher Neutron Catapult into the Hydrogen Economy Establishing an International R&D Facility in the Greater Toronto Metropolitan Area
- Dynacert Invests $17.5M in Cipher Neutron Under Collaborative R&D Deal
- dynaCERT and Cipher Neutron Signs MOU with Safe Energy and Astec in India, Europe & Middle East
- dynaCERT and Cipher Neutron to unveil new electrolyser technology at the Edmonton Hydrogen Conference
- dynaCERT and Cipher Neutron Applaud the Canadian Clean Technology Tax Incentives of Budget 2023
- Cipher Neutron enters Mining Industry with Molymet
- Edmonton region boasts $100 billion in hydrogen opportunities: expert
- European investment bank and kenya strengthen green hydrogen cooperation
- India makes $2.3 billion green hydrogen push to meet climate goals

Green Hydrogen Delhi 2023

Connecting Green Hydrogen MENA 2023 (CGHM2023)

CIPHER NEUTRON INC.

Believe in hydrogen, believe in Cipher

Toronto, Canada

+1 647-803-0002

info@cipherneutron.com