



Development Update

MAY 2020

ASX: EGR
FSE: FMK

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Vertically integrated graphite business poised for development



Environmentally friendly EcoGraf™ processing technology to produce 20,000 tonnes per annum of purified graphite for lithium-ion batteries from a new state-of-the-art facility in Western Australia



Produced using leading equipment design, independent certification and a commitment to sustainable manufacturing

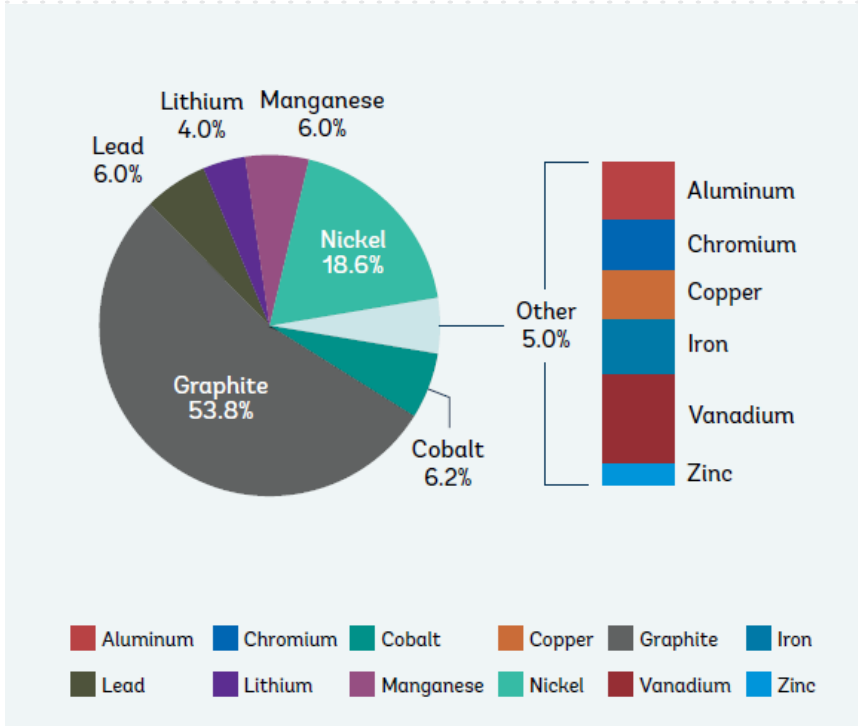
Supporting Australia's Future Battery Industry Strategy

- ✓ Proprietary processing technology developed through extensive research & development in Australia and Germany
- ✓ Global trademarks registered, patent in progress and leading ESG credentials
- ✓ Strategic interest for use of EcoGraf™ purification for global anode recycling and high purity graphite fines markets
- ✓ Establishing key relationships with anode, battery and electric vehicle manufacturers
- ✓ Existing natural flake offtake via leading German and Asian customers, with advanced discussions on inaugural battery graphite sales
- ✓ Financing support from the Australian and German Governments
- ✓ COVID-19 expected to intensify customer focus on supply chain security and sustainability

Compelling lithium-ion battery market opportunity

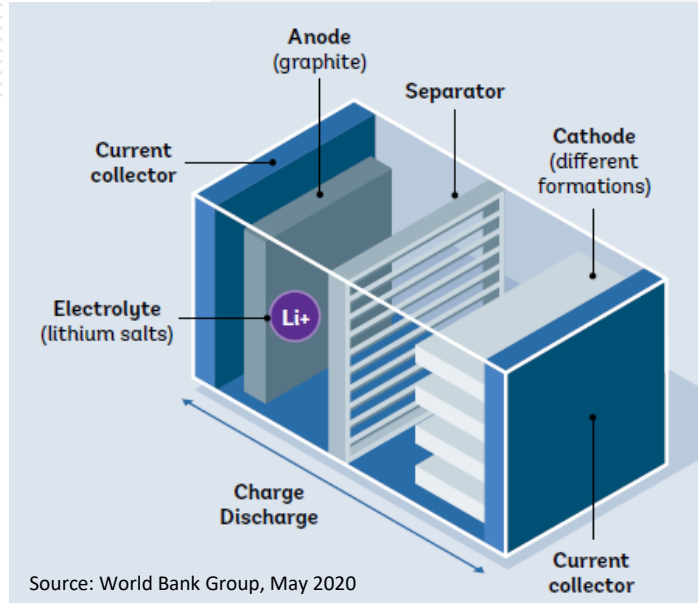


Graphite forecast to dominate battery mineral demand to 2050



Source: World Bank Group, May 2020

Battery graphite is processed from natural flake graphite into a +99.95% high purity product suitable for anode manufacturing



Source: World Bank Group, May 2020

EV market forecast to drive +700% growth in natural graphite demand by 2025 Roskill



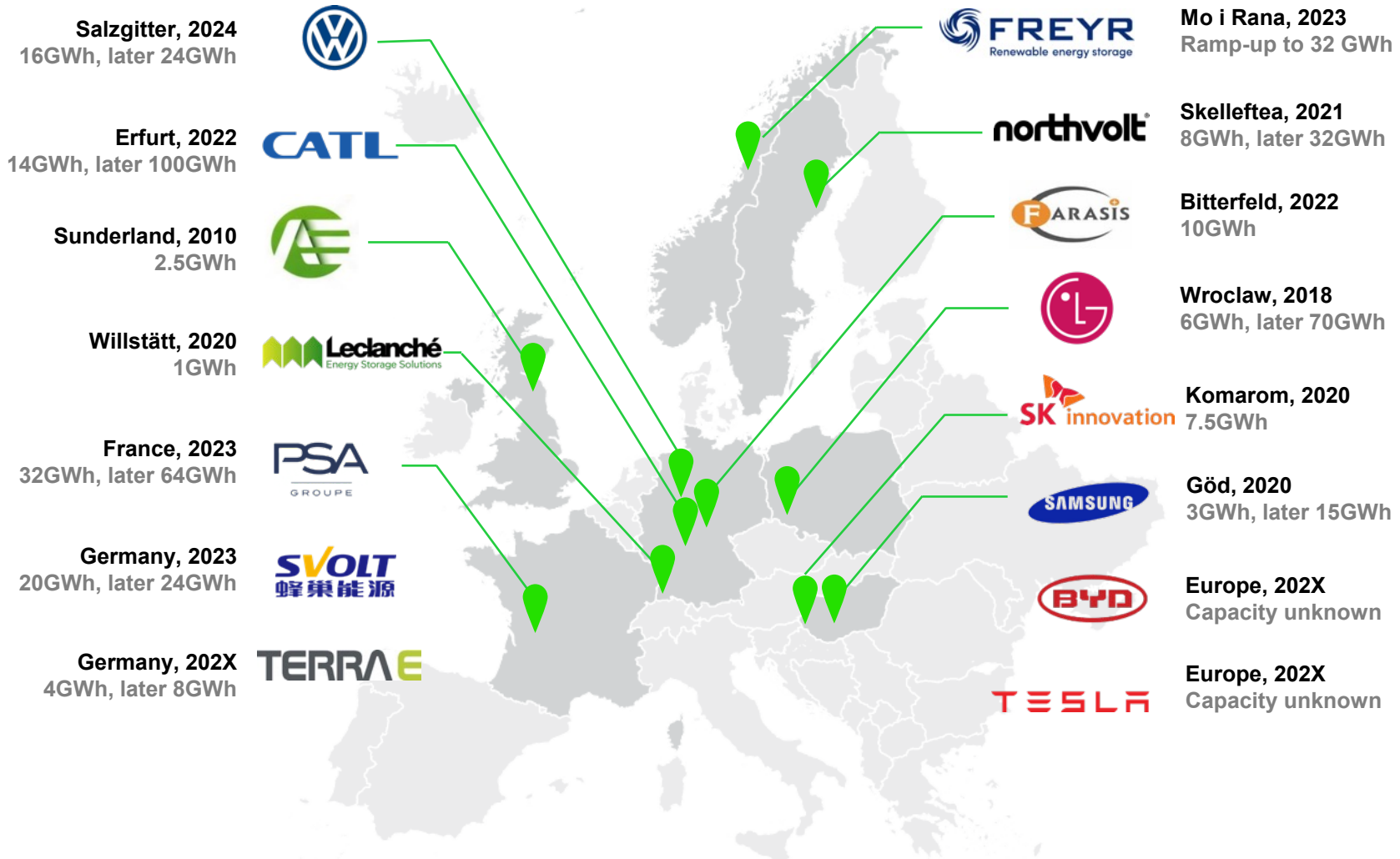
27kg

Purified natural graphite per EV

Requires 50-55kg of flake graphite

EcoGraf™ provides a high quality, cost competitive alternative to existing battery graphite produced using toxic hydrofluoric acid

Unprecedented investment in new European battery capacity



EcoGraf is positioned to support the massive demand for high quality, sustainably produced battery minerals for the global transition to electric energy

- ❑ December 2019: EU commits €3.2 billion to improve sustainability in battery value chains:
 - Raw materials
 - Manufacturing
 - Management systems
 - Recycling
- ❑ Expected to unlock additional €5 billion in private investment

Source: After Zenn (Europe)

Corporate summary



Board and Executive Management

Chairman (Robert Pett)	Mineral economist and founding Chairman of Resolute Mining Limited with over 30 years' experience developing projects and mines in Australia and Africa, as well as actively contributing to the educational and community sectors.
Managing Director (Andrew Spinks)	Geologist with over 25 years' experience in exploration, mining and corporate management in Australia, Asia and Africa across a range of commodities, including speciality and industrial minerals.
Director (John Conidi)	Certified Practising Accountant with over 20 years' experience developing, acquiring and managing businesses in the technology and healthcare sectors, together with extensive interests in the graphite sector.
Director (Grant Pierce)	Mining engineer with over 25 years' experience developing and managing mining operations in Africa and recipient of the Order of Australia Medal in 2003 for his contribution to social development in rural Tanzania.
Chief Financial Officer (Howard Rae)	Chartered Accountant with over 20 years' experience in acquiring, developing, financing and operating a range of businesses in Australia, Canada, Asia, Africa and Europe.



Partnership with ProGraphite in Germany provides market leading technical capabilities:

- ✓ battery graphite manufacturing
- ✓ product testing, analysis and development
- ✓ flake graphite mining and processing

Capital structure	Major shareholders	ASX : EGR Börse Frankfurt : FMK
Ordinary fully-paid shares 305,663,747	Mitsubishi UFJ Group 13% Board 10% GR Engineering 2%	Share price A\$0.075 Market capitalisation A\$23m



Battery graphite business summary

Establishing the world's first commercial battery graphite purification facility outside of China

Initial commercial production plant planned for Western Australia, commencing at 5,000tpa, expanding to 20,000tpa by 2022

- ✓ EcoGraf™ proprietary purification process eliminates use of toxic hydrofluoric acid
- ✓ Feasibility, engineering design and costing studies completed by GR Engineering Services
- ✓ Three years of pilot plant test work undertaken in Germany:
 - ✓ Successful application of EcoGraf purification process to a range of global feedstock supplies
 - ✓ Feedstock agreement with leading German trading group TECHNOGRAFIT GmbH
- ✓ Extensive product testing completed and advanced sales discussions in progress with customers in Asia and Europe
- ✓ Progressing financing with Australian Government for US\$35 million debt facility
- ✓ Finalising construction, operations and maintenance arrangements

Successful application of EcoGraf™ process for battery anode recycling to drive new opportunities

Global lithium-ion battery recycling market forecast to reach US\$18 billion by 2030 Bloomberg

Capital investment

Financial returns @ 20,000tpa

Initial 5,000tpa	15,000tpa Expansion		Pre-tax NPV ₁₀	Annual EBITDA	IRR	Payback
US\$22.8m	US\$49.2m		US\$141m	US\$35m	37%	4yrs

Initial battery graphite facility to be constructed in Western Australia



Staged expansion from 5,000tpa to 20,000tpa



Flexibility via scalable modular design



[PLAY MOVIE](#)



Australian Government support

Federal and State Government support for new technology and value added manufacturing

Kwinana to become a major global battery mineral processing centre

- Australian Government funding support and debt financing in progress
- Lead Agency role managed by Western Australian Government Department of Jobs, Tourism, Science and Innovation
- 6.7ha industrial site located in the Kwinana Strategic Industrial Area
- Advance approval granted by AusIndustry for research and development programs totaling A\$8m



Western Australian advantages

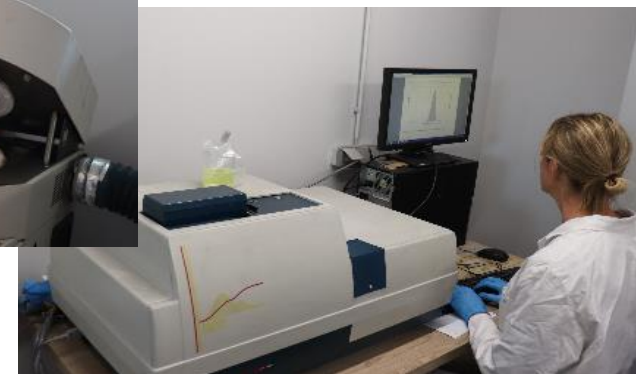
- ✓ Australia's strong reputation as a reliable supplier of high-quality industrial products
- ✓ Emerging industrial zone for value added processing of battery materials
- ✓ Direct port access and readily available infrastructure
- ✓ High transparency over ethical raw material production supply chain
- ✓ Protection of intellectual property rights for further downstream processing activities, including battery recycling



Rigorous commitment to on-going technical development

4 years of intensive test work and process design to develop a new eco-friendly chemical process that provides a cost competitive alternative to the use of toxic hydrofluoric acid

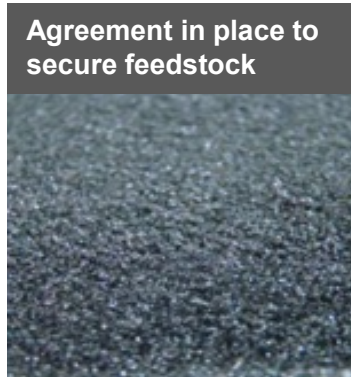
- Test work performed in Australia and Germany conducting >100 trials using a systematic, scientific method to optimise the purification process with research and development support from the Australian Government
- Micronising and spheronising study delivered industry leading yields of 45-55%
- On-going evaluation by potential customers in Asia and Europe confirms attractiveness of EcoGraf™ products as a high quality and cost-effective alternative to existing supplies
- Effectiveness of EcoGraf™ purification demonstrated through successful application to 10 existing sources of natural flake graphite from Europe, Africa, Asia and South America
- Successful application for use in battery recycling and graphite fines purification is attracting strong interest for new market opportunities



Cost-effective and scalable manufacturing process



Process flowsheet and planned scale-up de-risked through extensive engineering, optimisation and product qualification programs, achieving strong customer endorsement



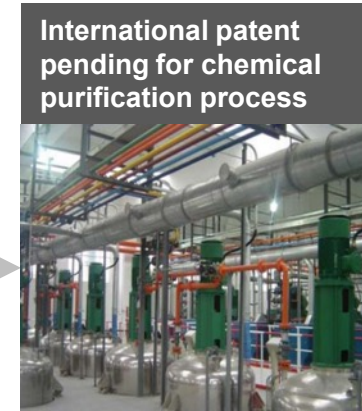
-100 mesh @ 94-95%C natural flake graphite
Produced through crushing, grinding and flotation



Mechanical grinding and shaping

Micronising and spheronising using proven milling equipment

- ✓ **Fines by-products for industrial customers**
- ✓ **Purification of fines for specialty products**



Multi-stage chemical purification, washing and filtration process that eliminates hydrofluoric acid



- ✓ **Eco-friendly**
- ✓ **Cost-effective**
- ✓ **High quality**



Purified >99.95%C battery graphite for lithium-ion batteries

Extensive product qualification testing successfully completed



Over 80 graphite product samples, including various grades of spherical graphite, tested successfully by battery anode manufacturers in Asia and potential customers in Europe and North America



Product specifications (SpG15)

Carbon content	>99.95%
Moisture	<0.2%
pH-Value	6-8
d10	> 9 micron
d50	14.5 – 15.5 micron
d90	< 25 micron
Tap density	>0.93 g/ml
SSA	< 7 m ² /g

Typical physical properties

Particle size distribution:
 d10 = 10 micron
 d50 = 15 micron
 d90 = 23 micron

Tap density: 0.99 g/ml
 Carbon content: 99.97%
 Moisture: 0.1%

Fe	<15 ppm
Ni	< 6 ppm
Zn	< 5 ppm
Cr	< 5 ppm
Al	< 10 ppm
Ca	< 10 ppm
Cu	< 5 ppm
S	< 20 ppm
Si	< 20 ppm

- ✓ Testing confirms EcoGraf™ products achieve battery anode manufacturers' specifications
- ✓ Positive feedback from potential customers on consistency of quality attributes, battery performance and environmental advantages

Typical ICP analysis result of EcoGraf purified spherical graphite

Element	Ag	Al	Ba	Bi	Ca	Cd	Co	Cr	Cu	Fe	K	Mg
ppm	>0.1	6.3	5.2	>0.6	5.9	>0.1	>0.2	0.3	0.3	7.1	6.6	1.5

Element	Mn	Mo	Ni	P	Pb	Si	Sn	Sr	Ti	V	W	Zn	Zr
ppm	0.2	<0.3	5	>0.8	>0.6	12	<0.5	<0.4	<0.4	<0.1	<0.5	<0.1	0.9

Battery results of EcoGraf purified spherical graphite

Discharge Capacity 3rd Cycle 367 mAh/g
 Discharge Efficiency 1st Cycle 94.5%

Flake graphite business summary



Long life Epanko Graphite Mine to supply industrial and battery markets

Defined, de-risked and ready for construction

- ✓ Bankable Feasibility Study completed by GR Engineering Services
- ✓ Bank appointed Independent Engineer's Review completed by SRK Consulting
- ✓ Supporting Tanzania's industrialisation strategy



Sector leading ESG credentials

Equator Principles development model, satisfying:

- ✓ International Finance Corporation Performance Standards
- ✓ World Bank Group Environmental, Health & Safety Guidelines



Scalable production plant

60,000tpa initial development with low cost expansion to meet market demand

Sales agreements with major international customers

thyssenkrupp (Germany) and Sojitz Corporation (Japan)



Capital investment

Financial returns @ 60,000tpa

60,000tpa	Pre-tax NPV ₁₀	Annual EBITDA	IRR	Payback
US\$89m	US\$211m	US\$44.5m	38.9%	3.5yrs

Epanko provides mine-to-market ESG supply chain assurance



- Mine development satisfies Equator Principles social and environmental planning standards
- Long-life, high quality supply of natural flake graphite for industrial and battery markets
- Ideally located to support European customers' supply chain management under the Paris Agreement on climate change
- German and Australian Government funding support
- US\$60m debt funding proposal developed in conjunction with Germany's KfW IPEX-Bank and presented to the Government of Tanzania in March 2020 with the aim of simplifying and fast-tracking the financing process
- Subject to the agreement of the Government of Tanzania, EcoGraf and KfW IPEX-Bank are ready to proceed to prepare formal loan documentation to enable the financing arrangements to be implemented.

Epanko to transform the regional economy, operating for over 40 years and contributing over US\$2 billion to Tanzanian economic and social development



Summary



Vertically integrated graphite business positioned for the global transition to clean energy

Development ready graphite businesses forecast to generate US\$80m EBITDA per annum

Proprietary EcoGraf™ purification technology provides sector leading ESG credentials

Funding support from Australian and German Governments

Extensive product development and successful customer testing

Strategic interest in EcoGraf™ for global anode recycling markets

 **EcoGraf**

ENGINEERING CLEAN ENERGY



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Forward looking statements

Various statements in this document constitute statements relating to intentions, future acts and events. Such statements are generally classified as “forward looking statements” and involve known and unknown risks, uncertainties and other important factors that could cause those future acts, events and circumstances to differ materially from what is presented or implicitly portrayed herein. The Company gives no assurances that the anticipated results, performance or achievements expressed or implied in these forward-looking statements will be achieved.

Production targets and financial information

Information in relation to the feasibility study conducted on the production of battery graphite using the Company’s EcoGraf technology, including production targets and forecast financial information derived from the production targets, included in this document is extracted from an ASX announcement dated 5 December 2017 “Battery Graphite Pilot Plant”, as updated on 17 April 2019 “EcoGraf Delivers Downstream Development”, available at www.ecograf.com.au and www.asx.com.au. The Company confirms that all material assumptions underpinning the production targets and forecast financial information derived from the production targets set out in the announcement released on 5 December 2017, as updated on 17 April 2019, continue to apply and have not materially changed.

Information in this document relating to the Bankable Feasibility Study conducted on the Epanko Graphite Project, including production targets and forecast financial information derived from the production targets, included in this document is extracted from an ASX announcement dated 21 June 2017 “Updated Bankable Feasibility Study” available at www.ecograf.com.au and www.asx.com.au. The Company confirms that all material assumptions underpinning the production targets and forecast financial information derived from the production targets set out in the announcement released on 21 June 2017 continue to apply and have not materially changed.

Competent persons

Any information in this document that relates to Exploration Results, Mineral Resources or Ore Reserves is based on information compiled by Mr Andrew Spinks, who is a Member of the Australasian Institute of Mining and Metallurgy included in a list promulgated by the ASX from time to time. Andrew Spinks is a director of EcoGraf Limited and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the “Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves”. Andrew Spinks consents to the inclusion in this document of the matters based on his information in the form and context in which it appears.

Information in this document that relates to Mineral Resources is based on information compiled by Mr David Williams, a Competent Person, who is a Member of the Australasian Institute of Mining and Metallurgy. David Williams is employed by CSA Global Pty Ltd, an independent consulting company and has sufficient experience which is relevant to the style of mineralisation and type of deposit under consideration and to the activity which he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the “Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves”. David Williams consents to the inclusion in this document of the matters based on his information in the form and context in which it appears.

Information in this document that relates to Ore Reserves has been compiled by Mr Steve O’Grady, who is a Member of the Australasian Institute of Mining and Metallurgy. Steve O’Grady is a full-time employee of Interline Engineering and produced the Mining Reserve estimate based on data and geological information supplied by Mr Williams. Mr O’Grady has sufficient experience which is relevant to the estimation, assessment and evaluation of the economic extraction of the Ore Reserve that he is undertaking to qualify as a Competent Person as defined in the 2012 Edition of the “Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves”. Steve O’Grady consents to the inclusion in this document of the matters based on his information in the form and context in which it appears.



The future is **electric.**

ASX: **EGR**
FSE: **FMK**



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