

Action Summary – 18 June 2020

Analyst Theodore R. O'Neill *is initiating coverage of KULR Technology Group, Inc. (KULR)*

- **We are initiating coverage of KULR Technology Group, Inc. with a Buy rating and an \$5 price target.** KULR Technology Group develops, manufactures and licenses next-generation carbon fiber thermal management and safety technologies for batteries and electronic systems.
- **Both the growth of electric-motor based transportation and demand for increased safety of lithium-ion batteries are key drivers for KULR.** Semiconductor and other components that control current flow to the motors must manage considerable heat in the process. KULR has what we believe to be better and lighter materials for thermal management.
- **We estimate the total available market for KULR products and services is approximately is approximately \$8 billion**
- **Although there is limited operating history, commercialization of its technology is proceeding.** In April it announced a new licensing agreement with Americase allowing it to use KULR technology in a lithium-ion battery shipping container that prevents thermal runaway propagation during storage and transportation. In April, it also entered into a partnership with Hazmat Safety Consulting LLC to increase awareness of KULR's Li-ion battery safety technology within the transportation community.
- **Attractive valuation.** The company has been cutting costs and is targeting cash flow break-even by 4Q20.

6/17 Closing price: \$1.00	Market cap: \$81 million	2021 P/E: NMF	EV/2021 Sales: 15
Shares outstanding: 81 million	Insider ownership: 52%	Avg. trading volume: 4,000	Dividend/Yield: NA/NA

GAAP estimates (EPS in dollars – Revenue in thousands)

Period	EPS	Revenue	Op Margin
1Q19A	\$(0.01)	\$195	NMF
2Q19A	\$(0.01)	\$56	NMF
3Q19A	\$(0.00)	\$527	NMF
4Q19A	<u>\$(0.01)</u>	<u>\$52</u>	<u>NMF</u>
FY19A	<u>\$(0.02)</u>	<u>\$830</u>	<u>NMF</u>
1Q20E	\$(0.00)	\$100	NMF
2Q20E	\$(0.00)	\$200	NMF
3Q20E	\$(0.00)	\$300	NMF
4Q20E	<u>\$(0.00)</u>	<u>\$650</u>	<u>NMF</u>
FY20E	<u>\$(0.01)</u>	<u>\$1,250</u>	<u>NMF</u>
1Q21E	\$(0.00)	\$650	(24.8%)
2Q21E	\$0.00	\$1,000	1.0%
3Q21E	\$0.00	\$1,500	18.0%
4Q21E	<u>\$0.01</u>	<u>\$2,000</u>	<u>22.3%</u>
FY21E	<u>\$0.01</u>	<u>\$5,150</u>	<u>10.9%</u>

Note: Numbers may not add due to rounding. See our full model in the back of this report.

Cash balance (in thousands)

• 2019A	• \$109
• 2020E	• \$229
• 2021E	• \$572

Debt (in thousands)

• 2019A	• NA
• 2020E	• NA
• 2021E	• NA

Adj. EBITDA (in thousands)

• 2019A	• (\$1.6)
• 2020E	• (\$0.5)
• 2021E	• \$1.1

Risks/Valuation

- Risks include: Highly competitive business; changes in customer demand, commercialization of technology
- Our \$5 target is derived using a discounted future earnings model

Company description: KULR Technology Group, Inc. (OTCQB: KULR) develops, manufactures and licenses next-generation carbon fiber thermal management technologies for batteries and electronic systems. Backed by a strong intellectual property portfolio, KULR enables leading aerospace, electronics, and electric vehicle manufacturers to make their products cooler, lighter and safer for the consumer.

Figure 1 – KULR Technology Group, Inc. – One-year Trading snapshot



Source: Thomson Reuters Eikon

Investment Thesis

We are initiating coverage of KULR Technology Group, Inc. with a Buy rating and an \$5 price target. KULR Technology Group, Inc. (OTCQB: KULR) develops, manufactures and licenses next-generation carbon fiber thermal management and safety technologies for batteries and electronic systems. Leveraging the company's roots in developing breakthrough cooling solutions for NASA deep space missions and backed by a strong intellectual property portfolio, KULR enables leading aerospace, electronics, and electric vehicle manufacturers to make their products cooler, lighter and safer for the consumer

Both the growth of electric-motor based transportation and demand for increased safety of lithium-ion batteries are key drivers for KULR. Semiconductor and other components that control current flow to the motors of EVs and E-aircraft must manage considerable heat in the process. KULR has what we believe to be better and lighter materials for thermal management. Electric powered vehicles and aircraft put significant demands on the semiconductor and other components that control current flow to the motors. These demands are not inherent in internal combustion vehicles and aircraft. KULR has what we believe to be better and lighter materials to manage heat. In addition, it owns the intellectual property being used to address the issue of fires in lithium-ion batteries, which drive most electric vehicles and aircraft. As of 12/31/19, the Federal Aviation Administration has been aware of 264 incidents of smoke, fire, extreme heat or explosion involving Lithium batteries since 1/23/06

We estimate the total available market for KULR products and services is approximately \$8 billion in four target markets consisting of: lithium-ion battery energy storage and battery transportation market, thermal management, space exploration and communications market, and the defense industry

Although there is limited operating history, commercialization of its technology is proceeding. In April it announced a new licensing agreement with Americase allowing it to use KULR technology in a lithium-ion battery shipping container that prevents thermal runaway propagation during storage and transportation. In April, it also entered into a partnership with Hazmat Safety Consulting LLC to increase awareness of KULR's li-ion safety technology within the transportation community

Attractive valuation. The company has been cutting costs and is targeting cash flow break-even by 4Q20. It is burning ~\$100K/month

Valuation Methodology

We believe KULR is undervalued and we support that belief with two valuation techniques, one absolute and one relative. The following valuation techniques are being used:

- 1) The discounted value of all future earnings was used for our price target (see Figure 2)
- 2) Valuation relative to peers (see Figure 3)

Discounted Future Earnings – Basis for Price Target

Our 12-month price target of \$5 is based on a discounted earnings model. For valuation purposes, we sum up all future earnings discounted at 10%. We are making two main assumptions:

- Near-term rapid growth for earnings which steps down to GDP after 7 years
- Company reaches breakeven in 2021

Our valuation model is shown in Figure 2 below. Note, this model understates future new products and growth through acquisitions and probably understates the tax benefits, but offsetting that, the earnings never have a down year. The implied share price is \$5.31 which we round down to \$5. Recognizing that the shares have not traded at this level, we believe the company's operations are at an inflection point: management has said that it is targeting to be at cash flow B/E in 4Q20. We would point out that the stock has traded within 80 cents of this target in the last 22 months.

Figure 2 – KULR Technology Group, Inc. – Discounted Future Earnings Calculation

Discounted Earnings		\$	5.31
	Year 1 is 2020	Forecast EPS	Discounted EPS
	1	(0.01)	(\$0.01)
	2	0.00	\$0.00
	3	0.10	\$0.08
	4	0.25	\$0.17
	5	0.50	\$0.31
	Terminal Value		\$4.75

Source: Litchfield Hills Research LLC

Valuation Relative to Peers

In Figure 3 we look at a summary of KULR peers according to market cap. If we compare KULR to a simple average of its peers, the shares sell at a significant premium. These metrics might also just be the wrong way to look at the stock. One thing common to the companies on the list is that they have high gross profit margins and companies with high gross profit margins tend to trade for higher sales multiples. A very high multiple for KULR isn't extraordinary. It is also possible that the market is anticipating a shift from losses to earnings. Details on each of the peers can be found in Figure 11 near the back of the report.

Figure 3 – KULR Technology Group, Inc. – Valuation Relative to Peers

	2021 EV/Sales	2021 Sales Multiple
Average	7.81	8.33
KULR	15.76	15.74
Premium to peers	102%	89%

Source: Litchfield Hills Research LLC and Refinitiv Eikon (Formerly Thomson Reuters Eikon)

Guidance and Financial Forecasts

Other than setting the expectation to reach cash flow breakeven in 4Q20, the company provides no guidance. Our financial forecast assumes a relatively rapid growth in revenue, accelerating at the end of 2020. We also assume that the growth we show in 2021 will require some additional capital to fund working capital.

Company Overview

KULR Technology Group, Inc., designs, develops and commercializes high-performance thermal management and test technologies for batteries, electronics, and other components across an array of applications. Currently, its main focus is a total solution to battery safety by which it aims to mitigate the effects of thermal runaway propagation. It also targets and provides thermal solutions for the following applications:

- Electric transportation i.e. EV, E-plane, E-bike, etc.
- Energy storage for commercial markets
- Cloud computing
- 5G communication technologies
- Directed energy weapons and high-power missile defense programs
- Aerospace and Spaceflight

Its proprietary, core technology is a carbon fiber material that provides what we believe to be superior thermal conductivity and heat dissipation for an ultra-lightweight and pliable material. Leveraging its advanced cooling solutions, developed through longstanding partnerships with NASA, the Jet Propulsion Lab and others, its products and services make commercial battery powered products safer and electronics systems cooler, and lighter. KULR's proprietary carbon fiber-based solutions are generally more thermally conductive, lighter weight, require less contact pressure, and offer greater design flexibility and durability compared to traditional solutions. A carbon-fiber solution to heat management works particularly well because it conducts heat many times better than metal, is significantly lighter, does not need to be attached mechanically, and "melts" at a much higher temperature. As a result, we believe KULR has solid potential to offer a unique value proposition to customers in the multibillion-dollar thermal management industry. KULR also has an exclusive perpetual license from NASA for a critical component used in Lithium-ion ("Li-ion") battery testing, known as an internal short circuit.

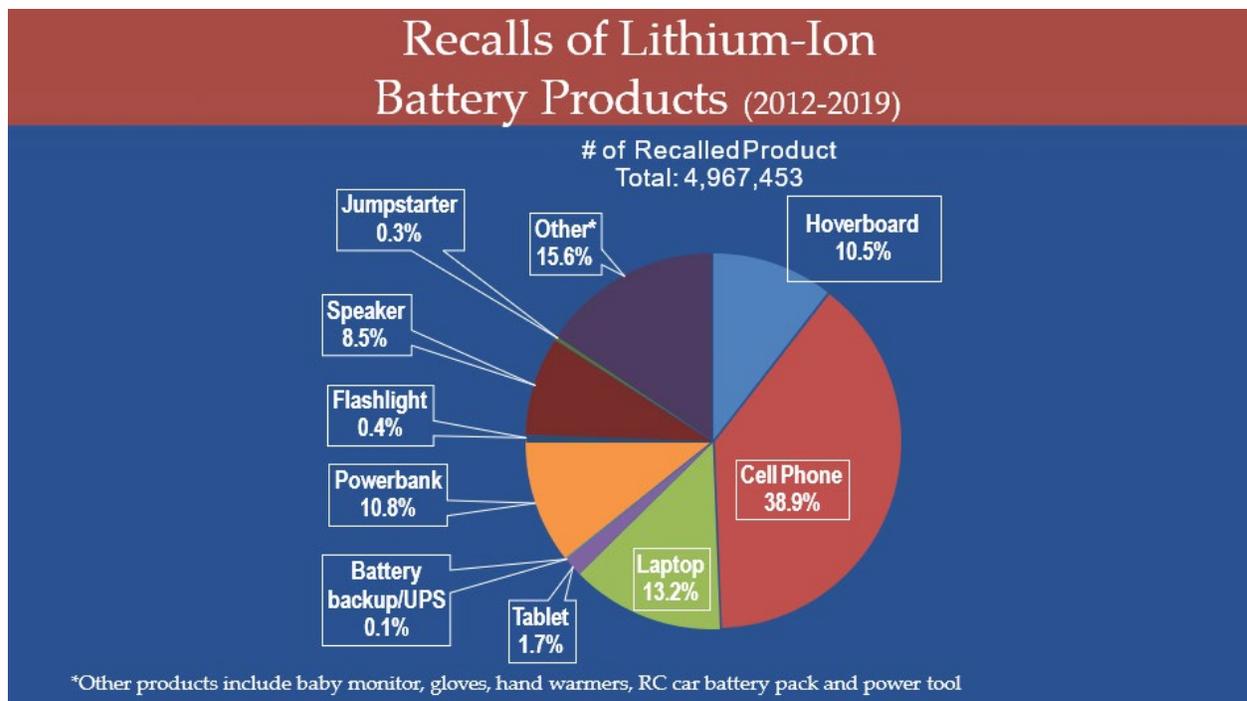
Battery safety technology is becoming increasingly vital to a world in which Li-ion battery-operated devices are everywhere. In addition to batteries used in aerospace, marine and automotive applications, the use of batteries in consumer products continues to grow exponentially. With the proliferation of batteries and the miniaturization of portable products, manufacturers have sought to increase battery operating times while reducing size and weight of the battery and the battery-powered product. This has led to battery chemistries that pack higher energy in smaller packages. High-energy chemistry batteries include lithium ion, lithium ion polymer, and lithium metal batteries that are thinner, smaller, and lighter weight and contain more energy than traditional rechargeable and non-rechargeable batteries. Although conventional battery chemistries, such as lead acid, pose fire and explosion hazards, the combination of high-energy volatile chemistry packed into a small volume requires special safeguards to minimize potential hazards. High-energy density batteries need enhanced safety systems and additional care when using and handling, both in or when

removed from the product; and batteries must be properly tested with the product, in its intended use and with the charger as a system.

Battery safety issues are driving regulatory bodies to make Li-ion batteries safer in use and while in transport

The Consumer Product Safety Commission (CPSC) staff has received consumer complaints and manufacturer and retailer reports involving hazards associated with batteries and battery chargers. Potential hazards include overheating, fire, electrical shock from battery chargers, thermal burns, exposure to alkaline battery electrolytes, and high-velocity ejected internal components of batteries. Reports indicate incidents have occurred while products are in use, in storage, and during battery charging. There have been a number of recalls involving lithium-ion batteries/battery packs/battery chargers used in cellular telephones, portable computing products, personal electronic products, and electric scooters. There have also been a number of recalls involving other types of batteries used in products such as battery-powered ride-on toys and portable battery-powered tools. See Figure 4

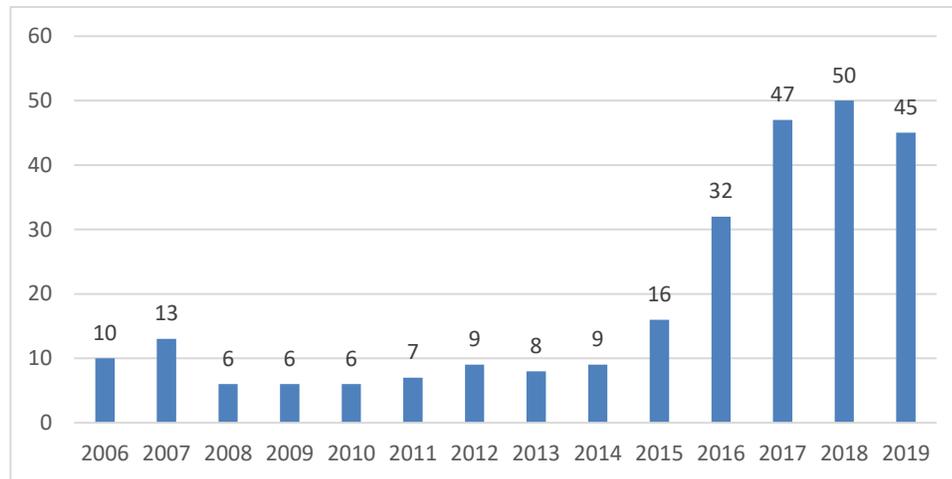
Figure 4 - KULR Technology Group – Consumer Product Safety Recall Summary



Source: CPSC FY 2020 Status Report and Action Plan for the High-Energy Density Batteries Project

But it isn't just a consumer problem. Li-ion battery fires have brought down airplanes, set FedEx (FEDX-NR) trucks on fire and the number of incidents is growing. As of 12/31/19, the Federal Aviation Administration has been aware of 264 incidents of smoke, fire, extreme heat or explosion involving Lithium batteries since 1/23/06 (see Figure 5). The FAA says that this is not complete compilation of such incidents, it is just the ones the FAA is aware of. The actual number of incidents is likely higher.

Figure 5 – KULR Technology Group – FAA Reported Li-ion Incidents



Source: FAA Office of Security and Hazardous Materials Safety

Li-Ion Battery Regulation

Regulation of lithium batteries has been a growing concern worldwide and is prompting an increase in safety requirements. There are at least seven regulatory bodies in the U.S. that have some input on lithium battery safety. Those organizations and some of the standards are detailed below:

- Consumer Product Safety Commission (CPSC). CPSC handles recalls and participates in voluntary standard activity related to batteries in consumer products including:
 - ANSI/CAN/UL 2272 - *Electrical Systems for Personal E-Mobility Devices*
 - ANSI/NEMA C18 - *Safety Standards for Primary, Secondary and Lithium Batteries*
 - ASTM F2951 - *Standard Consumer Safety Specification for Baby Monitors*
 - ASTM F963 - *Standard Consumer Safety Specification for Toy Safety*
 - IEEE 1625 - *Standard for Rechargeable Batteries for Multi-Cell Computing*
 - IEEE 1725 - *Standard for Rechargeable Batteries for Mobile Telephones*
 - UL 1642 - *Standard for Safety for Lithium Batteries*
 - UL 2054 - *Standard for Household and Commercial Batteries*
 - UL 2056 - *Outline of Investigation for Safety of Power Banks*
 - UL 2595 – *Standard for Safety for General Requirements for Battery-Powered Appliances*
 - UL 4200A - *Standard for Safety for Products that Incorporate Button or Coin Cell Batteries Using Lithium Technologies*
 - UL 60065 - *Standard for Audio, Video, and Similar Electronic Apparatus—Safety Requirements*
- U.S. Department of Transportation (DOT) Pipeline and Hazardous Materials Safety Administration (PHMSA)
 - Lithium batteries are regulated as a hazardous material under the U.S. Department of Transportation's (DOT's) Hazardous Materials Regulations (HMR; 49 C.F.R., Parts 171-180).

- (Proposed under the Invest in America act. Sec. 8201. Repeal of Certain Requirements Related to Lithium Cells and Batteries. Repeals Section 828 of the FAA Modernization and Reform Act of 2012. That section prohibits DOT from issuing any regulation ensuring the safety of transporting lithium batteries in air cargo compartments of passenger and cargo planes if the regulations are more stringent than the lowest common denominator of international standards. (*Analyst's note*: the current lowest common denominator is the United Nations Manual of Tests and Criteria, Sub-Section 38.3). Repealing this provision helps protect the safety of all passengers flying in the U.S. from safety risks associated with lithium batteries.
- National Transportation Safety Board (NTSB)
 - The NTSB is an independent investigative body that has no formal authority to regulate the transportation industry but does investigate aviation and surface accidents. The NTSB wants the U.S. Pipeline and Hazardous Materials Safety Administration to close a loophole that currently allows transportation of (untested for safety) prototype of low-volume production batteries.
- Federal Aviation Administration (FAA)
 - FAA follows UN 38.3 and FAA 49 CFR 175.10(a)(18)
- Transportation Safety Administration (TSA)
 - Enforces FAA regulation 49 CFR 175.10(a)(18)
- National Aviation and Space Administration (NASA)
 - Crewed spacecraft JSC-20793 Rev D
- United Nations (UN)
 - UN Manual of Tests and Criteria, Sub-Section 38.3

Clearly, the regulatory environment is large and fragmented while the risk of catastrophic failure caused by a Li-ion battery fire grows daily. We highlight these two features of the market to show that there are many multiple paths to an increase in regulation, any of which can lead to an improved business environment for KULR. That being said, the regulatory bodies with the biggest impact for KULR would be the DOT, FAA and NASA.

KULR Li-ion battery safety products

Passive Propagation Resistant (PPR) battery design with Thermal Runaway Shield (TRS)

We estimate that billions of Li-ion cells are produced and transported annually and even those packaged to prevent external short can still experience thermal runaway ("TR") when fully charged due to internal shorts, caused by latent defects. In these dangerous cases, a torch-like fire is released as energy escapes from the cell and sends nearby cells into TR resulting in a larger fire.

KULR has in recent years been successfully developing devices and methods for arresting thermal runaway at the single-cell level by managing the heat and ejecta produced by the cell. KULR uses combinations of TRS and other materials to provide functions of flame arrestor, ejecta barrier, and cell quenching in order to prevent cell-to-cell propagation, contain the battery fire within the enclosure, and minimize the exterior temperature effects on nearby persons or material. NASA JSC and Marshall has been working with KULR on NASA PPR battery designs with KULR TRS material. KULR is now deploying this technology for commercial customers in electric transportation, energy storage and battery transportation markets.

As part of its total battery safety solution, KULR has designed a bag out of its TRS material to quench the flames and prevent TR events. Suitably placed, the TRS provides a means of protection not only from adjacent batteries but also outside fires of arbitrary origin. Experts at NASA's Propulsion & Power Division found its TRS successful at extinguishing the fire generated by cells when they intentionally triggered the batteries into dangerous failures. Indeed, we show NASA's review in Figure 6.

Figure 6 – KULR Technology Group – NASA Product Review

- KULR Technology's Hydra Thermal Runaway Shield (TRS) was shown in testing to eliminate or at the very minimum mitigate the risks of dangerous fires and explosions that can occur when lithium ion battery packs fail.

- Between January and June 2019 experts with NASA's Propulsion & Power Division tested storage and use of rechargeable lithium ion laptop batteries. The tests intentionally triggered the batteries into dangerous failures in order to study what storage methods may stop battery fires from spreading battery to battery in the chain reaction known as thermal runaway propagation.

- NASA initiated the tests in part because thermal runaway, "is a serious concern for aerospace and defense customers and electric vehicle manufacturers."

- Testing involved dozens of configurations for storing fully-charged batteries in aluminized bags, eight batteries in total, up to two per bag. In one configuration with two batteries in one bag "with a single KULR Hydra Thermal Runaway Shield," when both batteries were triggered into thermal runaway, NASA found that "batteries in adjoining three (3) ... bags were actually protected, and did not rise above 61°C."

- In other storage and failure configurations NASA also found that:
 - Multiple NASA tests have demonstrated KULR's Hydra Thermal Runaway Shield stopped propagation within a single bag.

 - In all NASA test scenarios, the results have demonstrated KULR's Hydra Thermal Runaway Shield successfully prevented bag to bag propagation.

Source: Propulsion & Power Division, Nasa-Lyndon B. Johnson Space Center Houston, Texas

Its TRS bag is currently being used on the International Space Station ("ISS") through a project with Leidos (LDOS-NR), for storing laptop batteries in order to reduce the risk of TR. The technology is flexible and can work with different battery pack configurations across various industries. On April 13, 2020, it announced that it entered into a license and supply agreement with Americase, LLC, granting a license for Americase's use of its passive propagation resistant (PPR) technology and agreeing to supply its PPR materials for Americase's "Battery Bag" products (see Figure 7). Using KULR technology, Americase can expand its range and size of battery types it can ship. Americase is the company selected to package over 70% of all li-ion battery recalls in U.S. history.

Figure 7 – KULR Technology Group – Americase Battery Bag Product

The Battery Bag

Cell, Laptop, & Tablet

The Battery Bag is the most consumer-friendly cost-effective solution on the market for transporting damaged defective (DDR) batteries. The construction of the Battery Bag contains a proprietary heat-mitigating material. It contains protection that allows it to receive a DOT special permit for the safe transportation and return of lithium-ion batteries whether inside or outside of equipment.

We designed and manufactured based on the footprint of the three most common form-factors in consumer electronics (cell phone, tablet, and laptop). It's convenient and ready-made to quickly distribute to customers for easy returns. If you need to transport individual cells or batteries, the Battery Bag will do the job well.



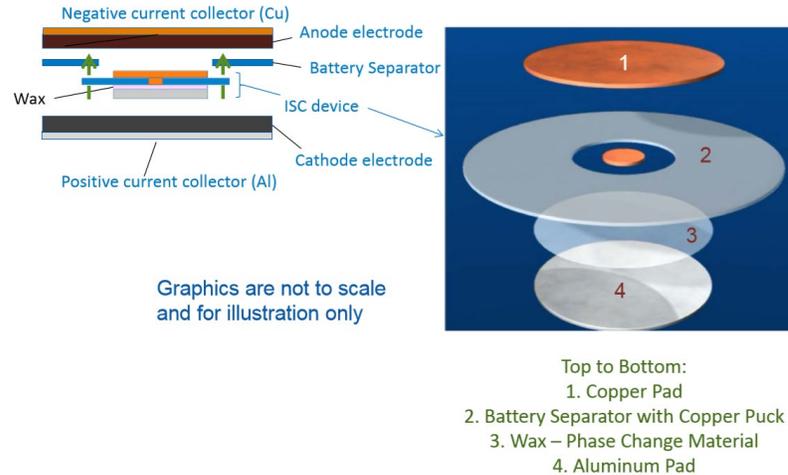
Source: Americase

Li-ion Battery Safety Tests

Another key element of its battery safety solution is KULR internal short circuit ("ISC") device and trigger cells which are used for cell testing and screening. The patented ISC device, licensed from NASA/NREL, can be inserted by OEMs or manufacturers into cells to mimic failure conditions in a cell (see Figure 8). Once the trigger device is placed inside the cell, it can be intentionally triggered on demand causing the cell to short circuit. Currently, it provides ISC devices to OEMs and cell manufacturers, as well as ready-made ISC trigger cells to customers to identify failure modes and safety issues within their systems. KULR is creating an ecosystem based on its technology which can be applied to different battery architectures and chemistries. The objective of the ISC are to:

- Simulate an emergent internal short circuit
- Capable of triggering the four types of internal shorts
- Produce consistent and reliable results
- Ability to function in a range of test conditions for the cell
- Provide relevant data to validate ISC models

Figure 8 – KULR Technology Group – Schematic of its Internal Short Circuit device



Source: National Renewable Energy Laboratory

Design to production Li-ion Safety Solutions

As a result of the risk of fire from a lithium battery, cell testing and screening has become a topic of focus within commercial markets, aerospace and defense, and high-value applications. The company is executing on a plan to expand its capabilities to include full battery screening and testing as outlined by NASA Johnson Space Center. It plans to fully incorporate this into its holistic approach to battery safety along with its PPR battery pack design and testing services, ISC device and trigger cell products and TRS bags. With increasing regulations and pressure from government bodies to mitigate the dangers of battery fires and TR, it plans to continue developing products and tools in this arena.

KULR Defense Industry Products

Directed Energy Components

Directed energy weapons are beams of electromagnetic energy, e.g. lasers, microwaves, that incapacitate an enemy aircraft, ship or vehicle and these are being developed here as well as in China and Russia. Using its expertise in carbon fiber developed a powerful directed energy component if calls the CRUX cathode. The CRUX Cathodes can be customized for different applications including the generation of microwaves, x-rays, and laser radiation. They can be fabricated in a wide variety of physical configurations, ranging from simple planar and cylindrical forms to more complex lobed shapes. The CRUX can be provided on a metallic or graphite substrate. These devices have been used by numerous customers from varying industries. For example, discrete-fiber emitters, utilizing several (or even one) individual carbon fibers, have been developed for use by researchers. Additionally, the CRUX has also been used by the Air Force Research Lab, the Naval Research Lab, KTech, Raytheon (RTX-NR) and others.

Thermal Management for offensive and defensive weapon system

Thermal management is another critical component of both hypersonic weapons programs and space missions and is another area in which its products excel. KULR carbon fiber velvets are used for thermal management in missile defense programs and are particularly effective because of their survivability at very high temperatures. They are also very effective at transferring heat, and mitigate the risk of overheating in such high-risk environments. Historically it has

provided value to this sector and we expect it to further develop its relationships with Airforce Research Lab, Naval Research Lab and prime contractors to market its solutions.

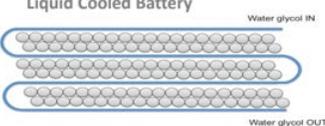
KULR Thermal Management Solutions where weight or thermal performance add value

In addition to evolving demands led by aerospace and defense, there are other industries that could use the thermal properties of its carbon fiber material such as electric motor vehicles (“EV”). These vehicles have multiple computers where lighter-weight heat sinks would add value. EVs are increasingly more reliant on the Cloud and high-demand processing power to support driverless functions. KULR’s high performance thermal interface materials can be used to accelerate 5G communications development due to its material’s core properties: high thermal conductivity, light weight, and low contact pressure. 5G is one of the biggest opportunities going forward for transportation technology. Testing is still in early phases for both digital and RF communication chips, however, we see a growth opportunity for thermal management for 5G. Cloud computing is also an application of interest since high power communications chips and optical communication modules require cooling solutions. KULR has an opportunity in EVs to protect the batteries that power the vehicles. EV’s generally use liquid cooling, however it could save weight by using KULR thermal management products (See Figure 9).

Figure 9 – KULR Technology Group – EV opportunity

	KULR Safety Platform	Standard EV Cooling	Passive Materials Solution
ISC Safety Testing	✓	✓	None
Battery Calorimetry	✓		None
Thermal Runaway Propagation Mitigation	✓	✓	✓
Battery Enclosure Protection	✓	✓	✓
Fast Charge Thermal Management	✓	✓	✓
Storage And Shipping Solution	✓	✓	✓

Current Standard:
Liquid Cooled Battery



Water glycol IN

Water glycol OUT

- **Use:** Used to cool battery systems
- **Efficacy:** Legacy solution is efficient at managing temperature
- **How it Works:** creates a cooling effect while physically separating batteries from each other
- **Issue:** Battery explosion risk still exists; creating liabilities

KULR’s Patented Solution:
Carbon Fiber Array



- **Use:** NASA space and aerospace applications
- **Efficacy:** Unmatched heat management/absorption
- **Patent Protection:** 14 granted, licensed and pending patents

Source: KULR Technology Group Investor Presentation

Market Size

We estimate the total available market for KULR products and services is approximately is approximately \$8 billion.

Lithium-Ion Battery, Energy Storage and Battery Transportation Market.

According to Prescient & Strategic Intelligence, Lithium-Ion battery market was valued at \$34 billion in 2018, the global lithium-ion battery market is projected to surpass \$106 billion by 2024, with a CAGR of 21.8% between 2019 and 2024. We believe KULR’s opportunity in design and test for Li-ion batteries could exceed 1% of this market or \$1 billion.

Thermal management.

According to Market Research Future, the global thermal management market is expected to reach approximately \$15 billion by end of 2023 with 7% compound annual growth rate during the forecast period from 2017 to 2023. According to the report, in recent years, electronic devices and systems have undergone tremendous technological growth. Advancements in the electronics industry have led to an increased need for innovative thermal management technologies, which serve to improve performance and reliability. We believe KULR's market opportunity in thermal management could reach 10% share of this market or \$1.5 billion.

Space Exploration and Communications Market.

According to BIS Research, the Space Industry, is valued at \$380 billion in 2019, and is projected grow at a CAGR of 5.6%, to a value of \$558 billion by 2026. Demand for nano-satellites and re-usable launch vehicle systems is anticipated to be driven by the massive investment made by governments and private enterprises. We believe that KULR's opportunity here could exceed 1% or \$5.5 billion

Defense Industry.

According to Strategic Analysis, Inc., the directed energy weapons appropriations budget is \$1 billion. We believe there is a 1% opportunity here or \$10 million.

Sales and Marketing Strategy

The Company markets and sells products and solutions directly to customers. We believe that its direct relationship with end customers allows it to have more in-depth technical interactions with its customers and faster turnaround time. It markets to its customers through its website, industry conferences, and industry market research reports. For PPR design service, it will continue to work with customers directly. The company takes a multi-prong revenue approach to best suit customers (See Figure 10).

Figure 10 – KULR Technology Group – Sales Approach

	Design Services	Product Sales	Subscription Services	IP Licensing
Electric Vehicle	✓	✓		✓
Battery Transportation	✓	✓	✓	
Battery Pack Design	✓	✓	✓	✓
Consumer Electronics and Cloud	✓	✓	✓	✓
Aerospace / Defense	✓	✓		

Source: KULR Technology Group presentation

Intellectual Property and Patent Strategy

KULR's intellectual property strategy includes pursuing patent protection for new innovations in core carbon fiber architecture development, application development, acquisition of intellectual property, and licensing of third-party patents and intellectual property. As of May 14, 2020, it has eight pending nonprovisional and provisional patent applications and four patents granted and assigned to KULR. It also has an exclusive license to four third party patents.

Competition

Currently, the battery industry uses a number of solutions to mitigate thermal runaway propagation that are offered by Unifrax, Lydall (LDL-NR), LHS, 3M (MMM-NR), Engineered Syntactic Systems, Celono, AllCell Technologies and others. Each of their solutions offer unique features and benefits for a specific application. There is not a one-size-fits-all solution across all applications. We believe its PPR design solution offers competitive light-weight and effective solutions for high energy battery cells because it is more flexible and can fit into different design configurations. For applications that require passive, light-weight solutions for high energy density battery cells, TRS offers a competitive solution.

Thermal interface material is a large and fragmented market with many large suppliers including: Henkel Bergquist, Fujipoly, Laird, 3M, Honeywell (HON-NR) and others. These solutions are typically based on silicone and thermal particles. KULR's material offers high bulk thermal conductivity and low contact pressure requirements, which we believe gives it a competitive advantage over other thermal interface solutions.

KULR's licensed ISC device offers a reliable way to trigger battery cell thermal runaway compared to nail penetration, over-charging or over-heating the cell. ISC does not rely on mechanically damaging the battery exterior to activate the short, as do most of the other evaluation methodologies. Instead, the ISC devices trigger true internal shorts. This makes it possible to accurately pinpoint and fix problems leading to malfunctions, an ability that we believe gives it a competitive advantage over other testing solutions.

Employees

As of May 14, 2020, it had 11 employees and 2 consultants.

Management

Michael Mo, CEO

Michael Mo, was appointed CEO and Director of the Company on March 16, 2011, is a technology entrepreneur and successful investor with over 20 years of experience in technology management, product development and marketing. In 2013, he co-founded KULR and has been serving as its CEO since then. From 2007 to 2015, Mr. Mo served as Senior Director of Business Development at Amlogic, Inc., a California high-tech company. In 2005, Mr. Mo founded Sympeer Technology and served as its CEO until 2008. In 1998, he founded Wish Solutions, and served as its CEO until 2001. Mr. Mo received his Master of Science in Electrical Engineering from the University of California at Santa Barbara in 1995.

Timothy R. Knowles, CTO

Timothy R. Knowles, was appointed CTO and Director of the Company, has over 30 Years of Thermal Management R&D and product development experience for the most challenging space and industrial applications. He conducted research and built building products for various space and industrial customers such as NASA, Boeing (BA-NR), Raytheon, Jet Propulsion Lab, and others. Since 1983, Dr. Knowles has been working as President at ELSI. In addition, in 2013, Dr. Knowles co-founded KULR and has been serving as its CTO since then. From 1977 to 1983, he was a postdoctoral research physicist at Hamburg University. Mr. Knowles received Ph.D. in Physics from University of California San Diego in 1977 and B.S. in Physics from University of Southern California in 1969.

Simon Westbrook, CFO

Simon Westbrook, was appointed Chief Financial Officer on March 15, 2018. In 2009, Mr. Westbrook founded and has since served as an officer of Aargo, Inc., a company specializing in financial consulting services to corporations in various tech-related industries. Prior to Aargo, Inc., Mr. Westbrook was CFO of Amber Networks, Inc., and the Chief Financial Officer of Sage, Inc. (SAGI-NR), a Silicon Valley company specializing in flat panel displays. Before joining Sage, Mr. Westbrook held a number of senior financial positions at Creative Technology (CREAF-NR), a leading PC multimedia company, and Atari Corp (AMEX: ATC), the video game and home computer company both in the USA and overseas. At various times, he has held positions as an advisory board member of the Silicon Valley Financial Executives Institute, and various technology start-up companies where he has assisted in strategic planning, fund raising and team development. Simon is a Chartered Accountant and holds a Masters in Economics from Trinity College, Cambridge University.

Michael G. Carpenter, VP Engineering

Michael G. Carpenter serves as KULR's Vice President of Engineering. Mr. Carpenter has been employed by ESLI since December 1983, serving as Director of the PCM Heatsink Group, Quality Manager, Facility Security Officer (FSO) in the Defense Industrial Security Program from 1988 to 1995. He also has been served as Safety Officer since he joined ESLI in 1983. Mr. Carpenter received his B.S. in Applied Mechanics from the University of California, San Diego in 1983.

Figure 11 – KULR Technology Group, Inc. – Comp Table

Ticker	Company Name	6/15 Close	Market Cap (\$MM)	2019 Revenue (\$MM)	2021 EV / Revenue	2021 Sales Multiple	GICS Sub-Industry Name
SNPS.O	Synopsys Inc	\$179.60	27,082	3,361	6.74	6.89	Application Software
CDNS.O	Cadence Design Systems Inc	\$89.46	24,976	2,336	8.98	9.08	Application Software
OLED.O	Universal Display Corp	\$153.92	7,251	405	12.28	13.31	Semiconductors
VICR.O	Vicor Corp	\$65.19	2,785	263	7.94	8.20	Electrical Components & Equipme
ALTR.O	Altair Engineering Inc	\$37.02	2,698	459	5.34	5.48	Application Software
THRM.O	Gentherm Inc	\$40.08	1,307	972	NMF	NMF	Auto Parts & Equipment
MTRN.K	Materion Corp	\$55.05	1,118	1,185	NMF	NMF	Diversified Metals & Mining
CEVA.O	CEVA Inc	\$32.87	723	87	5.58	7.02	Semiconductors
ADOM.PK	Adomani Inc	\$0.16	12	13	NMF	NMF	Auto Parts & Equipment
IPWR.O	Ideal Power Inc	\$5.40	11	0	NA	NA	Electrical Components & Equipme
	AVERAGE		0	0	7.81	8.33	
			0	0			
KULR.PK	KULR Technology Group Inc	\$1.00	81	1	15.76	15.74	Electrical Components & Equipme
	KULR Premium to peers:				102%	89%	
	NMF= Metric removed >2SD from mean						

Source: Litchfield Hills Research LLC and Refinitiv Eikon (formerly Thomson Reuters Eikon)

Figure 12 – KULR Technology Group, Inc. – Income Statement (\$'000)

December year-end	2018 Year	2019 Year	2020E				2020E Year	2021E				2021E Year
			Q1E	Q2E	Q3E	Q4E		Q1E	Q2E	Q3E	Q4E	
Total revenue	\$1,274	\$830	\$100	\$200	\$300	\$650	\$1,250	\$650	\$1,000	\$1,500	\$2,000	\$5,150
<i>Growth</i>		-35%	-49%	255%	-43%	1140%	51%	550%	400%	400%	208%	312%
Cost of Goods	337	227	45	90	135	293	563	332	510	750	1,020	2,612
Gross Profit	937	604	55	110	165	358	688	319	490	750	980	2,539
Gross Margin	73.6%	72.7%	55.0%	55.0%	55.0%	55.0%	55.0%	49.0%	49.0%	50.0%	49.0%	49.3%
Operating Expenses												
R&D	\$508	\$502	\$110	\$110	\$110	\$120	\$450	\$130	\$130	\$130	\$135	\$525
% of total revenue	40%	60%	110%	55%	37%	18%	36%	20%	13%	9%	7%	10%
General and administrative	\$2,511	\$2,081	\$300	\$300	\$300	\$300	\$1,200	\$350	\$350	\$350	\$400	\$1,450
% of total revenue	197%	251%	300%	150%	100%	46%	96%	54%	35%	23%	20%	28%
Total Operating Expenses	3,019	2,583	410	410	410	420	1,650	480	480	480	535	1,975
Operating Income	(2,082)	(1,979)	(355)	(300)	(245)	(63)	(963)	(162)	10	270	445	564
Operating Margin		-238.4%	-355.0%	-150.0%	-81.7%	-9.6%	-77.0%	-24.8%	1.0%	18.0%	22.3%	10.9%
Total Other Items	23	(0)	0	0	0	0	0	0	0	0	0	0
Pre-Tax Income	(2,058)	(1,980)	(355)	(300)	(245)	(63)	(963)	(162)	10	270	445	564
Pre-Tax Margin			-355.0%	-150.0%	-81.7%	-9.6%	-77.0%	-24.8%	1.0%	18.0%	22.3%	10.9%
Taxes (benefit)	0	0	0	0	0	0	0	0	0	0	0	0
Tax Rate	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
Net Income (loss)	(2,058)	(1,980)	(355)	(300)	(245)	(63)	(963)	(162)	10	270	445	564
Net Margin		NMF	NMF	NMF	-81.7%	-9.6%	-77.0%	-24.8%	1.0%	18.0%	22.3%	10.9%
EPS, as reported	(0.03)	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	0.00	0.00	0.01	0.01
Diluted Shares Outstanding	77,642	80,123	81,000	81,000	81,000	81,000	81,000	82,000	82,000	82,000	82,000	82,000

Source: Company reports and Litchfield Hills Research LLC

Figure 13 – KULR Technology Group, Inc. – Balance Sheet (\$000)

December year-end	FY2021E	FY2020E	FY2019	FY2018
Balance sheet				
Current Assets				
Cash and S.T.I.	\$347	\$229	\$109	\$230
Accounts receivable	2,000	200	30	112
Inventories	100	50	27	10
Other assets	50	50	43	55
Total Current Assets	2,497	529	209	406
Net PP&E	40	30	28	45
Goodwill & Intangible	0	0	0	0
Other non-current assets	0	0	0	0
Total Assets	\$2,537	\$559	\$237	\$451
Current Liabilities				
Accounts payable	\$1,250	\$750	\$349	\$118
Accrued exp. & other	\$1,200	\$1,000	\$659	\$374
Deferred revenue	\$0	\$150	\$15	\$0
Other current liabilities	\$0	\$0	\$0	\$0
Total current liabilities	2,450	1,910	1,034	576
Notes payable	0	0	0	0
Other Liabilities	0	0	0	0
Total Liabilities	2,450	1,910	1,034	576
Stockholders' Equity				
Preferred stock	1	1	1	3
Common stock	8	8	8	8
Additional paid-in-capital	9,500	8,000	7,591	6,284
Retained earnings	(9,421)	(9,359)	(8,396)	(6,417)
Cum. Other comp and treasury stock	0	0	0	0
Total stockholders' equity	87	(1,351)	(797)	(125)
Total Liabilities and equity	\$2,537	\$559	\$237	\$451

Source: Company reports and Litchfield Hills Research LLC

Figure 14 – KULR Technology Group, Inc. – Cash Flow (\$000)

	FY21E	FY20E	FY19	FY18
Net Income	(\$63)	(\$963)	(\$1,980)	(\$2,058)
Accounts receivable	(1,800)	(170)	82	40
Inventories	(50)	(23)	(17)	4
Other assets	0	(7)	11	61
PP&E	(10)	(2)	17	(1)
Goodwill & Intangible	0	0	0	0
Other non-current	0	0	0	0
Accounts payable	500	401	231	81
Accrued exp & other - related party	(10)	(0)	(74)	(170)
Accrued exp. & other	200	341	285	185
Deferred revenue	(150)	135	15	0
Other current liabilities	0	0	0	0
Notes payable	0	0	0	0
Other Liabilities	0	0	0	0
Common stock	0	(0)	0	0
Additional paid-in-capital	1,500	409	1,308	1,193
Cum. trans. adj. and treasury stock	0	0	0	0
Dividends	0	0	0	0
Total Cash Flow	118	120	(121)	(666)

Source: Company reports and Litchfield Hills Research LLC

Disclosures:

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KULR Technology Group, Inc.

KULR-Buy-\$5 PT

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