To whom it may concern in the press,
May 16, 2023
i Labo Inc.

i Labo Inc., a developer of hydrogen engines, and TPR Inc., a leading manufacturer of automobile engine parts, have formed a capital and business alliance with AQUARIUS ENGINES, an Israeli company developing the world's first Free Piston Linear Engine (FPLE), to work towards the early realization of decarbonization in the industrial sector through the development and popularization of hydrogen engines, as well as to enhance Japan's engine technology competitiveness.

i Labo Inc., headquartered in Chuo-ku, Tokyo and led by President and CEO Osamu Ota, aims to achieve early decarbonization in the industrial sector through the development and popularization of hydrogen engines. TPR Inc., headquartered in Chiyoda-ku, Tokyo and led by President and COO Kazumi Yano (listed on the Tokyo Stock Exchange Prime Market, Securities Code 6463), manufactures and sells engine parts such as piston rings. AQUARIUS ENGINES Ltd., headquartered in Israel and led by Ariel Gorfung, has the practical technology for the world's first FPLE.

In order to advance cooperation towards the early realization of a decarbonized society through the popularization of hydrogen engines, the three companies have signed a capital and business alliance agreement.

■ Brief overviews of　i Labo, TPR, and AQUARIUS:

i Labo has been promoting the spread of "hydrogen conversion," which replaces existing diesel engine parts in trucks with hydrogen engines based on the achievements of its half-century research on hydrogen engines. This technology can be applied to heavy machinery and generators, making it possible to achieve decarbonization at construction sites, ports, airports, and other locations where numerous diesel equipment and generators are in operation at low cost and with simplicity. To accelerate practical application, i Labo has an engine bench specialized for hydrogen engines, which is rare in Japan, at its R&D center in Yamanashi Prefecture. Furthermore, i Labo's hydrogen conversion technology has been adopted for the "FY2021 Demonstration Project for Decarbonization of Heavy Vehicles by Hydrogen Internal Combustion Engine Utilization" by the Ministry of the Environment.

On the other hand, TPR's core business is the powertrain business, which manufactures parts that support engines and transmissions used in transportation machinery, industrial machinery, and power generation machinery, including automobiles. The company's piston rings and cylinder liners boast a

significant share not only in Japan but also overseas, with business operations in 11 countries and 34 facilities worldwide. In recent years, TPR has been leveraging its technical foundation cultivated in the powertrain business to contribute to decarbonization by developing new materials such as industrial equipment, housing and living-related materials, carbon nanotubes, and nanoporous carbon for fuel cell catalyst support.

AQUARIUS, a publicly listed company based in Israel, established AQUARIUS ENGINES Co., Ltd. as a wholly-owned subsidiary in Japan in June 2021. The company has successfully achieved mass production of the world's first small and lightweight LE (Linear Engines). AQUARIUS' LE has an extremely low number of parts and no mechanical mechanisms such as valves, enabling it to achieve overwhelming downsizing and weight reduction compared to conventional reciprocating engines. In addition, the company's engine is being developed for practical use with fuels such as diesel, gasoline, ethanol, LPG, as well as hydrogen and ammonia.

■Background and Overview of Capital and Business Alliance with TPR

As decarbonization becomes a global challenge, electric vehicles and fuel cell vehicles are widely known in Japan as alternatives to powertrains using fossil fuels such as gasoline and diesel engines. On the other hand, attention is focused on hydrogen engines as the third powertrain using non-fossil fuels, mainly in Europe. i Labo believes that the widespread adoption of hydrogen engines is not only a significant contribution to decarbonization by truck operators and others at low cost but also leads to the maintenance and expansion of Japan's industrial competitiveness by utilizing Japan's engine technology. TPR boasts high technological capabilities in the development and manufacture of engine parts, mainly piston rings and cylinder liners, as well as tackling various new material developments that contribute to decarbonization.

In this context, the two companies have concluded a capital and business partnership by combining i Labo's hydrogen conversion technology and TPR's engine parts development and new material development technology and promoting joint research and development, mainly utilizing the hydrogen-only engine bench at the R&D center in Yamanashi. They have judged that this partnership can accelerate Japan's industrial competitiveness and decarbonization of the industrial sector. Some of the funds raised through this capital and business partnership are expected to be used for expanding i Labo's planned engine bench.

Overview of TPR and i Labo's capital and business alliance:

① Joint development of hydrogen engine technology utilizing i Labo's hydrogen engine bench.
② Improvement of analytical capabilities by combining TPR's evaluation and analysis technology with i Labo's hydrogen engine development technology.

③ Sharing of knowledge and expertise through mutual acceptance of engineers.

④ TPR's investment in i Labo for engine bench expansion, etc.

■The contents of the capital and business partnership with AQUARIUS

AQUARIUS is expanding its business to achieve decarbonization using internal combustion technology, mainly in Europe, where the development and implementation of hydrogen engines are progressing. They are also advancing the practical use of LE technology in power generators for communication antennas, and plan to expand to various powertrains in the future.
AQUARIUS has a high level of technological development and specialized network regarding the latest internal combustion engines in Europe. The two companies have agreed to a capital and business alliance based on their shared vision of making a significant contribution to the decarbonization of the global industrial sector by combining the latest technological capabilities and business networks across Japan, Europe, and Israel.

Overview of the capital and business alliance between AQUARIUS and i Labo:

① A mutual investment between i Labo and AQUARIUS ENGINES Ltd.

② i Labo will support the promotion of AQUARIUS ENGINES in the Japanese market.

③ AQUARIUS will assist i Labo in the global expansion of its technologies.
Joint development of new products for hydrogen engines and hydrogen engine generators through mutual technology sharing.

■About hydrogen engines:

Decarbonization is a global challenge, and Japan has declared a goal of reducing greenhouse gas emissions by 46% compared to 2013 levels by 2030. Among the decarbonization efforts, reducing carbon dioxide emissions from diesel engines used in the industrial sector, particularly in large commercial trucks, is a significant challenge.

In Japan, where fossil fuels are heavily relied upon for electricity, relying solely on electric vehicles (EVs) makes it difficult to achieve carbon dioxide reduction targets. Additionally, there are remaining challenges for fuel cells as they depend on rare earth materials, which need to be imported from overseas, posing economic and security concerns. Furthermore, there is a challenge of relatively high manufacturing costs for fuel cells.

Industrial diesel engines require high thermal efficiency at high load conditions, as well as durability for long-term use in harsh environments, such as ports, construction sites, and other

environments with dust, salt damage, and other harsh conditions.

A hydrogen engine can utilize existing engine technology to reduce manufacturing costs and is also suitable for high load areas and harsh usage environments. In addition, while a fuel cell requires high-grade hydrogen (Grade-D hydrogen), a hydrogen engine does not need such hydrogen, reducing the post-processing costs of by-product hydrogen from chemical factories, for example. Hydrogen engines with these characteristics have the potential to be highly effective solutions, particularly in the industrial sector for decarbonization, through the role sharing with EVs and fuel cells.

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