Executive Summary

QSO Interferometer Systems AB ("QISAB" or the "Company") is a research-driven industrial technology company with its seat in Halmstad, Sweden. QISAB was founded in 2013 by Professor Lars Bååth to commercialize novel metrology technology developed as part of a multi-year EU project together with Fraunhofer Institute. QISAB's patented Coherent Wave Scatter ("CWS") system quantitatively measures parameters of surface quality on metals and other hard materials. CWS is a robust laser system mounted on an industrial robot, measuring at the nanometer level in industrial production and offering unique advantages by controlling quality directly in the production line, dramatically reducing time required for manual and/or laboratory-based inspection. CWS fits in the heart of modern smart manufacturing known as "Industry 4.0" or "Industrial IoT". QISAB owns two significant and valuable patent families which facilitate a business model with a large addressable market, high gross margin, recurring service revenues and significant operating leverage. See https://youtu.be/0tddI1Ufja4 for a product demonstration from the EU project (QISAB's CWS instrument is exhibited from 1m37s to 1m54s into the clip).

QISAB's vision is to become an international leader within specific segments of metrology and automated in-line production process control. QISAB's business model is to assemble, sell and service state-of-the-art metrology instruments for in-line use in industrial manufacturing processes.

QISAB's total addressable market is estimated to be approximately €18 billion in Europe alone. For each 1% penetration of the addressable market, there would be demand for more than 2,000 CWS instruments. Key market segments include industrial cutting tools, tools for injection moulding and metal stamping, the automotive, aerospace and aircraft engine industries, gas turbines, medical prosthetics and watch manufacturing. Main geographic markets include Europe (especially Germany), China, Japan, India, and USA and are characterized by established high-precision manufacturing and a growing trend towards automatization and robotization.

Examples of surfaces to be measured with the QISAB systems on-line and in-situ in the production process.

QISAB operates in a highly technical niche where sales are made on the performance and benefits of the CWS family of instruments. Customers considering CWS instruments would generally replace a manual step in their manufacturing process or introduce a new surface quality control step earlier in the manufacturing process to detect errors or areas for further polishing (where – prior to using CWS – the customer would not have any data). The sales process therefore typically involves several stakeholders in the customer organization (e.g., quality engineer, development engineer, production engineer, R&D manager, procurement) and the sales process is typically 6-12 months (from first contact to purchase decision). However, QISAB is still early in its commercialization process and is continuously developing its expertise and knowledge in sales and marketing.

Today, 80% of polishing is done manually and that is the main competition for QISAB's CWS instruments. This includes manual inspection using the human visual system. Spot checks are sometimes made, either by cutting up larger objects into small parts or small parts only, by moving the object to a laboratory and measure a small area of e.g. 1x1 mm. Projections of future production processes developed as part of the ongoing EU projects involve changing from 80% manual to 90% automatic polishing over time.

The added values for the customer are multiple. We estimate that the time to produce e.g. a mould will decrease from 14-20 days to 1-2 days by going from manual to automatic processing. The CWS system is at the heart of such automatic processing. Also, the customer will benefit from doing complete surface inspection rather than spot checks of 1-2 mm over a surface of square meters, and to be able to schedule maintenance by measuring direct output from the production and thus observe changes before they turn into scrap.

Left panel shows today's manual polishing. Right panel shows tomorrow's automatic polishing. The QISAB systems are essential in order to perform automatic polishing, including direct process feedback and AI/human decision making.

QISAB's CWS technology is internationally patented. The second BWS system, a revolutionary next-generation white light interferometer product is patented in Europe and presently pending internationally. A third patent family, the PWS for detection of faults on very shiny objects, is pending.

2017 was the first year of commercial sales of the CWS instrument and orders have already been delivered to two large global engineering companies (in Germany and Japan) and academic research institutions in Germany, Sweden and Italy. QISAB has employed own sales staff in Germany with contracted sales agents in the UK and pending in Poland, Iberia, Sweden and the Benelux region. During 2017-2019 QISAB installed 14 CWS systems. QISAB's priority has been to successfully serve the European market. Given that the CWS technology was sprung from an EU research project, the QISAB founders already have a strong network in key European research hubs. The Company has been headquartered in Sweden and is operating with agents and own staff within the EU, especially in Germany which is the largest potential market in Europe for QISAB.

The industrial automation of Industry 4.0, is emerging rapidly and QISAB believe that a close collaboration with an internationally acclaimed industrial partner which is already present on the global market would be a clear win-win situation for all parties, the two partners as well as the customers.