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# PROJECT AND OPERATIONAL UPDATE

30 August 2010

## 1. THE PERIOD IN REVIEW:

The six months since our last update (refer ASX release 26/02/10) has been another productive period for Silex Systems, with three key milestone achievements:

(i) Successful completion of the Test Loop initial measurement program for the SILEX Uranium Enrichment Project;

(ii) The completion of the acquisition of the assets of the Solar Systems group, which has been developing a world-leading solar technology targeted at the utility-scale power station market; and

(iii) Official opening and commencement of commercial production at the Sydney Olympic Park (SOP) solar manufacturing facility, following the successful completion of solar panel product certification.

These milestones place the Silex group at the forefront of alternative energy technology development in Australia. In particular, the recent establishment of our two solar photovoltaic (PV) technology subsidiaries, SilexSolar Pty Ltd and Solar Systems Pty Ltd give the Company the potential to become a significant player in the global solar industry, which is set to grow at an extraordinary rate over the next two decades.

With success in these activities, Silex believes it will be well placed to capitalize on the world's growing demand for energy security and the need to shift to carbon-free alternative energy technologies, such as nuclear and solar, in response to global climate change.

Silex Systems remains in a strong financial position, with approximately $40.7 million in cash reserves at 30 June 2010. With Silex Solar expected to become cash flow positive in early 2011, we believe the group has adequate financial resources to progress its current activities through to the next stage.

For the year ended 30 June 2010, the Company has reported a net loss after tax attributable to members of Silex Systems Limited of approximately $18.1 million. This reflects the ongoing costs of the group's R&D projects and the costs associated with the start-up of the Silex Solar manufacturing business, and is in line with management's expectations. Further details on the Company's financial results are provided in the Appendix 4E accounts.

## 2. SILEX URANIUM ENRICHMENT PROJECT UPDATE

***Backgound:***

In 2006, Silex signed an agreement with GE to develop and commercialise the SILEX Process, the world's only third-generation laser based technology, to enrich uranium for fuel used in nuclear power plants. Global demand for enriched uranium is expected to increase significantly in the next several decades, with the anticipated construction of a new generation of nuclear power plants to help meet the world's converging needs to achieve energy supply security and address climate change.

The SILEX Laser Uranium Enrichment Project was relocated to GE Hitachi Nuclear Energy's headquarters in Wilmington, North Carolina during 2007, and in 2008 the agreement was assigned to GE-Hitachi Global Laser Enrichment LLC (GLE), a business venture of GE (51%), Hitachi Ltd. (25%) and Cameco (24%). GLE is currently undertaking a 'Test Loop' Program, an important pre-commercialisation demonstration of the technology. GLE will use the Test Loop results in determining whether to proceed with commercialization activities in preparation for the first full-scale commercial laser enrichment production facility in the world.

***Test Loop Project Update:***

The test loop facility is designed to demonstrate the technical feasibility of the technology and is intended to advance the design of the equipment and processes for the proposed commercial production facility. In April 2010 (refer ASX release 12/04/10) Silex announced the successful completion of the initial measurement program of the Test Loop project, meaning that the technology had met key enrichment performance criteria. Since then, activities have included ongoing Test Loop measurements, and various modifications to Test Loop equipment. These iterative activities will continue throughout 2010 with the aim of building up operating and life-time data on the technology to assist the engineering design program.

***Engineering Design Program:***

In parallel with Test Loop program activities, GLE will be increasing efforts in an engineering design program for a potential commercial production facility. To this end, in addition to the work being done in the Wilmington Test Loop facility, new engineering and manufacturing facilities are being established. Throughout 2011, GLE will conduct engineering design and prototyping activities required for the final design and specification of a commercial production facility.

GLE will continue to evaluate the project throughout this phase to decide whether to proceed with a commercial production facility with a target capacity of 3 – 6 million Separative Work Units (SWU's). A SWU is a unit measuring the energy used to enrich uranium, which is then made into fuel rods for nuclear power plants.

***Overview of Activities and Timeline:***

The following brief overview of Project activities and the timeline to potential commercial facility construction is essentially a summary of previously released information. Commercial facility construction is ultimately dependent on NRC License approval.

### (i) Test Loop Operations and Modifications:

- *Objective*: Technology validation - technical feasibility (includes plant scalability, lifetime performance and reliability data).

- *Expected Outcome:* Confirmation by GLE of the 'Technology Validation' milestone

- *Status:* Measurement program commenced July 2009. Initial test matrix completed with positive results. Additional modifications and testing to continue throughout 2010.

**(ii) Commercial Facility Engineering Design Program:**

- *Objective:* Optimise and finalise commercial facility designs (involves engineering-scale prototyping of plant cascade equipment and ongoing development of Test Loop laser enrichment facility). Verify economic feasibility of commercial production facility.

- *Expected Outcome:* Decision by GLE to proceed with construction of the first commercial production facility and receipt of the NRC License for the facility

- *Status:* Preliminary commercial facility engineering activities are continuing in parallel with the abovementioned Test Loop activities. Establishment of the Manufacturing and Engineering Facility is progressing. The Engineering Design Program will continue throughout 2011.

**(iii) NRC License for Commercial Facility:**

- *Expected Outcome:* Commercial facility license approval from the NRC.

- *Status:* GLE submitted License application to NRC in July 2009 - currently under review. NRC has advised they are working to a 30 month schedule expected to be completed in December 2011. This means that the commercial facility license could be received as early as January 2012, after which construction of a commercial production plant could proceed.

## 3. SILEX SOLAR PTY LTD

***Backgound:***

Silex Solar Pty Ltd, a wholly-owned subsidiary of Silex Systems, acquired the manufacturing assets and equipment of the Sydney Olympic Park (SOP) solar panel manufacturing facility in June 2009 (refer to ASX release dated 29/06/09 for further details). The SOP Plant is the only PV panel manufacturing plant in Australia, and one of the largest solar panel manufacturing facilities in the Southern Hemisphere, with approximately 50MW of solar cell production and ~13MW of module production capacity annually. SilexSolar currently employs around 80 highly skilled workers, including experienced engineers and technologists, several of whom have been involved in the pioneering of commercial PV panel manufacturing since the beginnings of the industry 30 years ago. There is scope to add to these green jobs and significantly expand the production capacity of the plant within the existing facility as future demand requires.

***Commercial Production and Market Information:***

Following the finalisation of IEC product certification in early 2010, the Silex Solar SOP production plant commenced commercial production at the end of February. An official opening for the Plant was held on 14 April 2010 as production and marketing efforts were ramped up. In response to strong market demand for Silex Solar PV panels, it was announced in July 2010 that a major expansion in the plant's panel production capacity from ~13MW max to ~35MW max per annum is to be implemented by mid- 2011. The first stage of this expansion (to around 20MW p.a.) is on track to be up and running by early 2011.

By June 30 2010, Silex Solar had booked over $3 million in sales from around 12 weeks of effective production during the start-up period. Revenues for FY 10/11 are expected to be in excess of $60 million on sales of approximately 20MW of panels and ~5MW of cells. With increased capacity coming on-line, we anticipate the business will become cash-flow positive in early 2011. Orders from the residential sector for SilexSolar PV panels look like remaining strong for the foreseeable future as high global demand soaks up increasing production around the world. Additional production during the next financial year might also eventuate from several larger commercial-scale projects currently under discussion with third parties.

The Australian residential rooftop panel market is currently undergoing strong growth, from ~80MW in 2009 to around 150MW in 2010 (calendar years). Meanwhile, the world PV panel market is set to roughly double from ~8GW to 15GW in the next year.

***Solar Panel Technology Roadmap:***

In order to maintain competitiveness in the Australian market, and later potentially in the global PV panel market, SilexSolar will maintain a strong focus on developing and implementing advanced solar technology aimed at progressively increasing solar conversion efficiency, and lowering the cost per watt of electricity produced. Currently SilexSolar is producing cells and modules using an optimised form of conventional mono-silicon processing with a cell conversion efficiency of approximately 17%. To further reduce the cost of solar electricity, SilexSolar has a implemented a plan to increase the conversion efficiency of its solar cells by utilising advanced silicon processing technology which could increase cell efficiencies to above 20%.

To accelerate the drive to achieve higher efficiency solar cells, SilexSolar announced on 12/05/10 that it plans to enter into a collaborative research partnership with the University of NSW's ARC Photovoltaics Centre of Excellence (UNSW) and Suntech Power Holdings Co. Ltd (Suntech), to develop advanced technologies aimed at breakthrough improvements to the power conversion efficiencies of crystalline silicon solar cells. The three-year collaborative research project has been selected for a A$5 million grant from the Australian Solar Institute (ASI), the largest award given to any of the 87 grant applicants in the ASI's first competitive funding round (refer to ASX release for further details). At the time of this report, the drafting of the terms of the partnership agreement was well advanced. It is anticipated that the agreement will be finalized and the development program commenced before the end of the year.

## 4. SOLAR SYSTEMS PTY LTD:

***Background:***

In March this year (refer ASX Release dated 16/3/10) Silex announced that it had completed the acquisition of the assets of Melbourne based Solar Systems Group (SSG) from the company's Administrators. SSG was placed in Administration on 7th September 2009 following a resolution of the company's Directors in response to financial difficulties which beset the group during the financial crisis.

SSG's solar technology is applicable to large utility-scale electrical power generation using its proprietary "Dense Array" concentrating photovoltaic (CPV) solar conversion technology. This technology utilizes ultra-high efficiency photovoltaic (PV) cells (initially developed for space applications) and is ideally suited to the burgeoning global utility-scale solar power station market. The key and unique advantages of this technology include the use of advanced 'triple junction' solar cells currently capable of approximately 40% conversion efficiency - approximately double the efficiency of today's best silicon-based cells - and the use of active cooling to maximize power output and lifetime performance from the solar cells.

***Technology Status:***

Development and refinement of the SSG technology is at an advanced stage, with approximately A$150million having been spent on it to date by the previous owners. Following completion of the acquisition, Solar Systems has launched a ~15 month technology commercialization program, due to be completed in mid- 2011, which will bring the technology to market readiness. In parallel with this program, business development and marketing activities are underway, with the aim of commencing commercial project deployment activities in the second half of 2011. These activities are expected to culminate in the construction of the first showcase plant - a 2MW pilot facility in Mildura (potentially a precursor to a 100 to 150MW power station), pending confirmation of up to $75 million financial support from the Australian Federal Government (up to $50 million of support has already been confirmed from the Victorian State Government – refer below).

***Market Potential:***

The potential global market for utility scale solar projects, based on third party estimates (refer to ASX release 09/03/10) could be in the order of US$25 billion per annum by 2015, with significant growth thereafter. Subject to successful commercialization, the acquisition of SSG's unique CPV technology could provide Silex with a strong competitive advantage to enter this growing market, at relatively low cost. A market strategy, including the planned construction of a demonstration facility in the US, is currently being discussed in conjunction with potential project development partners.

SSG CPV technology is fundamentally different from the solar panel technology being produced and marketed by Silex Solar at the Sydney Olympic Park manufacturing plant. Rooftop solar panels have traditionally been produced for the smaller scale residential and commercial market which is well established all around the world. The SSG CPV technology is aimed at the large utility scale power generation market which is now emerging as a major player in the utility power industry. That said, the combination of flat panel and concentrating technologies will provide flexibility in different deployment scenarios.

***Victorian and Federal Government Support for Commercialisation Program:***

The Victorian Government has confirmed its strong support for the technology by announcing the provision of $3.5 million to support the completion of CPV technology Commercialization program over the next 12 months, with another $1.5 million potentially available the following 6 month period. This funding is part of an existing $50 million grant discussed below. The Federal Government has also committed to funding of ~$1.9 million over the next 12 months for the same program. The company has budgeted up to $10 million (including the $3.5 million contribution from the Victorian Government and $1.9 million from the Federal Government) over the next 12 to 18 months to fund this work. In parallel, a marketing program is being implemented to prepare the CPV technology for large scale deployment, and to commence business development activities. Discussions are already underway with various third parties in relation to potential solar power station projects both in Australia and in overseas markets.

***Mildura Project and Funding Grants from Federal and Victorian Governments:***

The commercialisation program is expected to include the construction of one of the largest and most efficient solar power stations in the world in Mildura, Victoria. Stage one would involve a 2MW pilot solar facility commencing in 2011, potentially a precursor to the second stage: a ~100MW solar power station. This project has previously been the subject of strong financial support of up to $125 million (subject to milestones being met) from the Victorian State Government (up to $50 million confirmed) and Australian Federal Government (up to $75 million – being finalised) - refer to ASX release 09/02/10.

## 5. TRANSLUCENT ADVANCED MATERIALS PROJECTS

Silex recently increased its equity in Translucent Inc, a US subsidiary based in Palo Alto, California, from 81% to 98% through an agreement with the founders dated May 2008. Translucent has been developing advanced semiconductor materials called 'Rare-Earth Oxides' (REO's) for several years. These unique materials were originally developed for application in the photonics and semiconductor industries, but in recent years, their potential application to high efficiency solar cells has also been explored. Significant progress has been achieved in all these applications, with commercial outcomes potentially nearing for two key areas – high efficiency solar cells and silicon-on-insulator (SOI) substrates. Each of these project activities is reviewed below.

### 5.1 Advanced Materials for High Efficiency Solar Cells

State of the art silicon solar cells, which are inherently limited by their 'single junction' nature to around 20% to 24% efficiency, remain the dominant technology for commercially available PV solar panels due to their low cost. Much higher efficiency solar cells currently with around 40% efficiency have been developed using complex III-V semiconductor materials incorporating 'triple junction' structures. However, the high cost of these cells means their application is limited to large scale concentrating PV technologies such as that being commercialized by Silex subsidiary Solar Systems. Translucent's research into advanced solar cell materials has provided a novel approach to significantly reduce the cost of multi-junction cells by incorporating layers of patented REO materials to replace some of the high-cost materials without compromising performance.

For the past year Translucent has been fine tuning epitaxial REO layers that are crystal lattice matched to silicon wafer substrates. A logical extension for Translucent's patented technology of growing single crystal silicon onto lattice matched REOs has been developed to enable the conventional III-V multi-junction solar cell to be grown on large low-cost silicon wafer substrates. The net effect would be to dramatically drive down the cost structures of III-V multi-junction solar cells – thus enabling potentially a significant breakthrough in the solar photovoltaic industry. In the last 6 months Translucent has been modeling and developing new REO materials that allow the key step of transitioning from a large silicon wafer substrate to a germanium epilayer (this process is known as a virtual substrate), in the process creating additional IP for the company (see 5.4). This effort will continue in the hope of establishing a prototypical virtual substrate for testing by key industry partners in 2011.

### 5.2 Advanced Electronic Materials:

Work on Advanced Electronic Materials was re-kindled during 2009 with two enquiries from third party commercial organizations involving potential application of Translucent's REO materials to specific applications. Since the previous update, this work has progressed into advanced development with the creation of customer specification sheets now available on the Translucent website (www.Translucentinc.com/products.html). The advanced electronic materials work is designed to improve the performance and cost structure of silicon-on-insulator (SOI) technology as follows:

(i) Progress on Translucent's patented one-wafer, single-stage template wafer (cSOI™) for SOI based technology in the chip and micro electro-mechanical systems (MEMS) segments has continued in conjunction with a third party that would potentially become the end-user and customer.

(ii) Translucent's epitaxial reactors can currently deposit epitaxial layers on 100mm (4") substrates. Work is ongoing to finish a new reactor that is 150mm (6") capable. Translucent expects to deliver test cSOI™ structures to customer specifications on 150mm wafers during the next 6 months.

(iii) One of the key metrics in SOI device performance is thermal conductivity. Translucent rare earth oxide technology is currently being characterized using two state-or-the-art techniques used by the semiconductor industry. Theoretical calculations indicate that the thermal conductivity of rare earth oxides may be up to tenfold higher than current silicon dioxide solutions. Confirmation of experimental results during the next reporting period will demonstrate that Translucent's REO will be suitable for advanced development with several commercial SOI based chip technologies.

### 5.3 Photonics Project

Originally Translucent was formed to conduct research into the application of rare earth oxide materials for photonic emission, with the ultimate goal of producing a silicon-based photonic emitter (eg LED or laser) suitable for product commercialization. Whilst this goal has not yet been realized, we still believe that an electrically driven REO-based photonic material is achievable. Translucent has established a collaboration with Arizona State University (ASU) in Phoenix, to focus on optimising the photonic performance of REO materials.

### 5.4 Intellectual Property

The commercial significance of the projects being undertaken at Translucent has presented new opportunities to create additional intellectual property. Patent filing rates have increased significantly during the last reporting period as can be seen in the table below

| | |
|---|---|
| Issued in last 6 months | 2 |
| Filed last 6 months | 5 |
| Total issued | 32 |
| Total filed | 65 |

## 6. CHRONOLOGIC PTY LTD

ChronoLogic is an Adelaide-based subsidiary (90% owned by Silex) developing novel electronics equipment for the Test and Measurement (T&M) instrumentation market, incorporating its proprietary USB-inSync™ technology. In essence, ChronoLogic's USB-inSync™ technology transforms the ubiquitous USB connection from a simple consumer connectivity bus to an instrumentation grade interface with class-leading synchronisation capabilities. Potential applications include the Data Acquisition (DAQ) markets, Precision Timing markets and Cross-Platform Synchronisation of laboratory instruments. Products include a new Distributed Virtual Instrumentation (DVI) range of laboratory instrumentation, to be released to market over the next few months. These products will offer unprecedented flexibility and control for engineers and scientists.

With the instrumentation markets still recovering after the global economic downturn, ChronoLogic continues with the steady resumption of production and marketing activities. We believe the new DVI product range will generate significant interest in Chronologic's innovative technology, and are in discussions with several third parties.

Further information on the Company's activities can be found on the Silex website: www.silex.com.au or by contacting the persons listed below.

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***Forward Looking Statements and Business Risks:***

*Silex Systems is a research and development Company whose assets are its proprietary rights in various technologies, including, but not limited to, the SILEX technology, the SilexSolar technology and business, Solar Systems technology and business, Translucent technology and ChronoLogic technology. Several of the Company's technologies are in the development stage and have not been commercially deployed, and therefore are high-risk. Accordingly, the statements in this announcement regarding the future of the Company's technologies and commercial prospects are forward looking and actual results could be materially different from those expressed or implied by such forward looking statements as a result of various risk factors.*

*Some risk factors that could affect future results and commercial prospects include, but are not limited to: results from the SILEX uranium enrichment development program and the stable isotopes program; the demand for enriched materials including uranium, silicon, oxygen, carbon and others; the business risks associated with SilexSolar's manufacturing and marketing activities; the risks associated with the development of Solar Systems technology and related marketing activities; the outcomes of the Company's interests in the development of various semiconductor, photonics and alternative energy technologies; the time taken to develop various technologies; the development of competing technologies; the potential for third party claims against the Company's ownership of Intellectual Property associated with its numerous technologies; the potential impact of government regulations or policies; and the outcomes of various commercialisation strategies undertaken by the Company*