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This document comprises an admission document for the purposes of the AIM Rules. This document does not constitute and the Company is not making an offer of transferable securities to the public within the meaning of sections 85 and 102B of FSMA. Therefore this document is not an approved prospectus for the purposes of and as defined in section 85 of FSMA and has not been prepared in accordance with the Prospectus Rules and has not been approved by the FSA or by any other authority which could be a competent authority for the purposes of the Prospectus Directive. To the best of the knowledge and belief of the Directors (whose names appear on page 4 of this document and who have taken all reasonable care to ensure that such is the case), the information contained in this document is in accordance with the facts and does not omit anything likely to affect the import of such information. The Directors accept responsibility accordingly.

Application has been made to the London Stock Exchange for the issued Common Shares, including those to be issued pursuant to the Placing, to be admitted to trading on AIM. The Common Shares are not dealt on any other recognised investment exchange and no application has been or is being made for the Common Shares to be admitted to any such exchange. It is expected that the Common Shares will be admitted to trading on AIM and that dealings will commence on 31 May 2006.

AIM is a market designed primarily for emerging or smaller companies to which a higher investment risk tends to be attached than to larger or more established companies. AIM securities are not admitted to the Official List of the UK Listing Authority or any other investment exchange. A prospective investor should be aware of the risks of investing in such companies and should make the decision to invest only after careful consideration and, if appropriate, consultation with an independent financial adviser. The London Stock Exchange has not itself examined or approved the contents of this document.

The rules of AIM are less demanding than those of the Official List of the UK Listing Authority. Prospective investors should read the whole text of this document and should be aware that investment in the Company is speculative and involves a degree of risk. In particular, prospective investors should consider the section entitled "Risk Factors" set out in Part II of this document. All statements regarding the Company's business should be viewed in the light of these risk factors.

PowerFilm, Inc.

(Incorporated in the state of Delaware, U.S.A. under Delaware General Corporation Law with corporation number 4154406)

**Placing of 8,009,166 Common Shares at 120 pence per share
and
Admission to trading on AIM**

**Nomura Code Securities Limited
Nominated Adviser and Broker**

Share capital immediately following Admission and the Placing

Authorised Amount	Authorised Number		Issued and fully paid Amount	Issued and fully paid Number
\$600,000	60,000,000	Common Shares with a nominal value of \$0.01 each	\$330,091.66	33,009,166

The Placing is conditional, *inter alia*, on Admission taking place on or before 31 May 2006 (or such later date as the Company and Nomura Code Securities Limited may agree, being not later than 30 June 2006).

The Common Shares now being placed will, following issuance, rank *pari passu* in all respects with the issued common stock of the Company on Admission including the right to receive all dividends and other distributions declared made or paid on the Common Shares after Admission. 8,009,166 Common Shares are being offered by the Company (the "Placing Shares").

The Placing is not being made, directly or indirectly, to or for the account or benefit of any U.S. Person or in or into the United States, Canada, Australia, the Republic of Ireland, Japan or South Africa and this document must not be mailed or otherwise distributed or sent in or into the United States of America, Canada, Australia, the Republic of Ireland (unless the recipient is a qualified investor within the definition of "qualified investor" in the Prospectus (Directive 2003/71/EE), Regulations 2005 of Ireland) Japan or South Africa. Furthermore the Common Shares have not been, and will not be, registered under the securities legislation of any province of Canada, the Commonwealth of Australia, the Republic of Ireland, Japan or South Africa. Accordingly, unless an exemption under relevant securities laws is applicable, the Common Shares may not be offered, sold or delivered, directly or indirectly to, or for the account or benefit of any person in or into Canada, Australia, the Republic of Ireland, Japan and South Africa. This document does not constitute an offer to sell or the solicitation of an offer to buy shares in any jurisdiction in which such offer is unlawful.

In Germany, this document and its contents are only directed at persons who fall within the exemptions for "Qualified Investors" contained in Article 3(2) of the German Securities Prospectus Act (Wertpapierprospektgesetz). No action has been or will be taken in the Federal Republic of Germany that would permit a public offering of the securities of the Company or the possession, circulation or distribution of this document or any other offering material. Accordingly, the Common Shares may not be offered or sold, directly or indirectly in connection with a public offering in the Federal Republic of Germany and no sales prospectus within the meaning of the Securities Prospectus Act has been or will be published within the Federal Republic of Germany.

In Belgium, this document and its contents are only directed to a limited number of investors for the sole purpose of providing information about a subscription and offering of Common Shares for a minimum amount of EUR 250,000 per investor. This document should not be distributed, published or reproduced, in whole or in part, nor should its contents be disclosed by recipients to any person other than their professional advisers. This document may not be distributed in Belgium and the Common Shares may not be offered or sold in Belgium except in circumstances that do not constitute an offer to the public in Belgium for the purpose of the Royal Decree of 7 July 1999 concerning the public character of financial operations and of the law of 22 April 2003 concerning the public offering of securities.

In the Netherlands, this document is only addressed to and directed at (and the Common Shares will only be offered to) professional market parties within the meaning of Section 1a(3) of the Exemption Regulation pursuant to the Act on the Supervision of the Securities Trade 1995, as amended (Vrijstellingsregeling Wet toezicht effectenverkeer 1995).

In Switzerland, the Company has not been and will not be licensed or authorised by the Swiss Federal Banking Commission (the "SFBC") to publicly offer its shares in Switzerland and this document has not been and will not be submitted to the SFBC for approval. Accordingly, any offer or shares in the Company will be restricted to a private placement as defined in Circular Letter N° 2003/1 of the SFBC (the "Circular Letter"). As a result, shares in the Company may only be offered, and materials in respect of an investment in the Company may only be distributed in, or from Switzerland to (i) institutional investors (as defined in the Circular Letter) and (ii) a limited number of non-institutional investors per business year. The offer of shares and the distribution or disclosure of materials which relate to the Company to persons other than those listed above is strictly forbidden and may contravene Swiss law.

The Common Shares have not been, and will not be, registered under the United States Securities Act of 1933, as amended (the "Securities Act") or under any state securities laws and may not be offered or sold in the United States or to, or for the account or benefit of, U.S. persons (as defined in Regulation S promulgated under the Securities Act) except in certain transactions exempt from registration under the Securities Act. The Common Shares are being offered only to non-U.S. persons outside the United States in transactions exempt from the registration requirements of the Securities Act in reliance on Regulation S. PowerFilm, Inc. does not currently plan to register the Common Shares under the Securities Act.

Nomura Code Securities Limited, which is regulated in the UK by the Financial Services Authority, is acting as the Company's nominated adviser and broker in connection with the Placing and Admission. Its responsibilities as the Company's nominated adviser under the AIM Rules are owed solely to the London Stock Exchange and are not owed to the Company or to any Director or to any other person in respect of his decision to acquire shares in the Company in reliance on any part of this document. Nomura Code Securities Limited has not authorised the contents of any part of this document and (without limiting the statutory rights of any person to whom this document is issued) no liability whatsoever is accepted by Nomura Code Securities Limited for the accuracy of any information or opinions contained in this document or for the omission of any material information from this document for which the Company, the Directors are solely responsible. Nomura Code Securities Limited will not be offering advice and will not otherwise be responsible for providing customer protections to recipients of this document in respect of any acquisition of Common Shares in the Company.

The Company obtained market data and certain industry forecasts used in this document from internal surveys, reports and studies, where appropriate, as well as market research, publicly available information and industry publications. Industry publications generally state that the information they contain has been obtained from sources believed to be reliable, but that the accuracy and completeness of such information is not guaranteed and neither the Company nor Nomura Code Securities Limited has verified such information.

Copies of this document will be available free of charge during normal business hours on any weekday (except Saturdays, Sundays and public holidays) at the offices of Nomura Code Securities Limited, 1 Carey Lane, London EC2V 8AE from the date of this document and for a period of one month from Admission.

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EXPECTED TIMETABLE FOR ADMISSION¹

Publication of this document	25 May 2006
Admission and dealings in the Common Shares expected to commence on AIM	8.00 a.m. 31 May 2006
Despatch of definitive share certificates	by 7 June 2006

PLACING STATISTICS

Placing Price	120 pence
Gross proceeds raised pursuant to the Placing	£9.6 million
Estimated net proceeds receivable by the Company pursuant to the Placing	£8.6 million
Number of Common Shares in issue immediately following the Placing	33,009,166
Placing Shares as a percentage of the Enlarged Issued Share Capital of the Company immediately following Admission	24.3 per cent.
Market capitalisation following the Placing at the Placing Price	£39.6 million
Trading symbol for the Company	PFLM

¹ All references to times in this timetable are London times and each of the times and dates in the table is subject to change.

DIRECTORS, SECRETARY AND ADVISERS

Board of Directors (on Admission)	Merlin Hanson (Non-Executive Chairman) David Lindop (Non-Executive Director) Dr. Frank Jeffrey (Chief Executive Officer)
Registered Agent and Registered Office	The Corporation Trust Company The Corporation Trust Center 1209 Orange Street Wilmington New Castle Delaware 19810 U.S.A.
Principal place of Business	2337 230th Street Boone IA 50036 U.S.A.
Company Secretary	Michael Coon
Nominated Adviser and Broker	Nomura Code Securities Limited 1 Carey Lane London EC2V 8AE
U.K. and U.S. Legal Advisers to the Company	Dechert LLP 160 Queen Victoria Street London EC4V 4QQ
Legal Advisers to the Placing	Eversheds LLP Senator House 85 Queen Victoria Street London EC4V 4JL
Reporting Accountants	RSM Robson Rhodes LLP 30 Finsbury Square London EC2P 2YU
Auditors	McGladrey & Pullen, LLP 400 Locust Street Suite 640 Des Moines Iowa 50309 U.S.A.
Registrars	Computershare Investor Services (Channel Islands) Limited Ordnance House 31 Pier Road St Helier JE4 8PW Jersey
Bankers	First National Bank 405 5th Street Ames Iowa 50010 U.S.A.

KEY INFORMATION

The following information should be read in conjunction with the full text of this document, from which it is derived. You should read the whole of this document and not just rely on the key information set out below. In particular, your attention is drawn to the risk factors set out in Part II of this document.

- PowerFilm is a developer and manufacturer of thin, flexible solar panels based on a proprietary low cost production process. The Company's objective is to target the building integrated solar power market and to continue to supply products for selected portable and remote solar power applications. PowerFilm is based in Iowa, U.S.A. and has 37 employees.
- PowerFilm was founded in 1988 by Dr. Frank Jeffrey and Dr. Derrick Grimmer, both former 3M research physicists, with a combined 65 years of experience in semiconductor and solar energy research and development. Dr. Jeffrey and Dr. Grimmer first collaborated on thin film solar cell research whilst employed at 3M's research laboratories. When 3M made the strategic decision not to pursue thin film technology any further, Dr. Jeffrey and Dr. Grimmer resigned to establish PowerFilm and independently continue their research activities.
- Since 1988, the Company has focused on developing thin film solar panel technology and an industrial scale manufacturing process to produce low cost solar panels on a high volume basis. Elements of the Company's low cost technology and manufacturing process include the use of: a durable, flexible plastic substrate; roll-to-roll manufacturing to minimise handling costs; amorphous silicon to avoid dependence on the silicon wafer market cycle; and printed interconnection to automate the cell connection process.
- The Company's development since incorporation has largely been funded through approximately US\$14 million of development contracts and grants received from U.S. Government bodies. These have been provided to support the Company's development of a manufacturing process for low cost solar panels and specific product development for the U.S. Army. The Directors have asserted that the ownership of all resulting intellectual property is retained by the Company and there are no conditions under which these grants will become repayable.
- Having developed and commercialised an industrial scale production process for low cost thin, flexible solar panels, the Directors are seeking to expand production capacity to meet the rapidly growing demand for solar panels from the building integrated solar power market. The Directors believe that the Company is well positioned for this market where the low cost, durable, lightweight and ease of installation properties of its products are highly attractive.
- PowerFilm intends to enter the building integrated solar market via strategic partnerships with key building and roofing materials companies that are able to integrate the Company's solar panels into their roofing products prior to distribution to the construction industry. The Company has ongoing product development programmes to develop building integrated solar roofing products with one of the largest metal roofing manufacturers in the U.K. and Europe. The Company has also exchanged confidentiality undertakings and is engaged in product co-development with a leading distributor of roofing materials and supplies in the U.S.. The Company expects to ship solar panels to its strategic partners for the building integrated solar market in 2007.
- In parallel with entering the building integrated solar power market, the Company intends to continue to manufacture its products designed for portable and remote solar power applications. The Directors believe that the Company's relationship with the U.S. Army is expected to continue to provide a growing source of revenue from the supply of solar power-enabled field shelters and portable solar battery chargers. In addition, the Company intends to continue targeting specific high value opportunities to develop custom products for portable and remote solar applications in collaboration with commercial partners with specific vertical market expertise.
- The Company is proposing to raise £8.6 million (net of expenses) to invest in the manufacture and installation of proprietary capital equipment to expand production capacity and enter the building integrated solar power market. In addition, the Company will use the net proceeds of the Placing to increase its sales and marketing activities and to engage in ongoing research and development in thin film technology and continue manufacturing cost reduction initiatives.

PART I

INFORMATION ON THE COMPANY

Introduction

PowerFilm is a developer and manufacturer of thin, flexible solar panels based on a proprietary low cost production process. The Company's objective is to target the building integrated solar power market and to continue to supply products for selected portable and remote solar power applications. PowerFilm is based in Iowa, U.S.A., and currently has 37 employees.

PowerFilm was founded in 1988 by Dr. Frank Jeffrey and Dr. Derrick Grimmer, both former research physicists from 3M, the diversified global technology company, with a combined 65 years of experience in semiconductor and solar energy research and development. Dr. Jeffrey and Dr. Grimmer first collaborated on thin film solar cell research whilst employed at 3M's research laboratories. When 3M made the strategic decision not to pursue thin film technology any further, Dr. Jeffrey and Dr. Grimmer resigned to establish PowerFilm and independently continue their research activities.

The Company was founded to develop and manufacture thin film solar panels in high volume and at low cost. The Company's development since incorporation has largely been funded through approximately US\$14 million of development contracts and grants received from U.S. Government bodies. These contracts and grants have been provided to support the Company's development of a manufacturing process for low cost solar panels and specific product development for the U.S. Army. PowerFilm has been able to use the know-how gained when developing products for the U.S. military to launch portable and remote solar power products with commercial partners for outdoor and recreational applications. The revenues from the sale of these products have helped to support further the Company's growth to-date.

With a proven and industrial scale process for manufacturing thin, flexible, low cost solar panels and validation of the Company's solar cell technology through product shipments to the U.S. military and customers in the portable and remote solar power market, the Company is now seeking to expand production capacity to meet the rapidly growing demand from the building integrated solar power market. The Company has ongoing product development programmes to develop building integrated solar roofing products with one of the largest metal roofing manufacturers in the U.K. and Europe. The Company has also exchanged confidentiality undertakings and is engaged in product co-development with a leading distributor of roofing materials and supplies in the U.S.. The Directors believe that PowerFilm is well placed to take a strong position in the building integrated solar power market, whilst continuing to benefit from increasing demand from the portable and remote solar power market.

The Global Solar Power Market

Overview of the Global Solar Power Market

Power generated from solar panels, also termed as photovoltaics, currently accounts for a small proportion of total global primary energy supply and is experiencing a sustained period of rapid growth. According to the International Energy Agency, total global solar energy power supply has grown at a compound annual growth rate of 29% between 1971 and 2003. In 2005, solar power installations amounted to 1,460 MW, an increase of 34% compared to 2004. The European Photovoltaic Industry Association expects installed solar power generation to continue growing at a compound annual rate of 27% through to 2009, increasing to 34% year-on-year between 2009 and 2020.

In revenue terms, the global solar energy market grew from US\$7.2 billion in 2004 to more than US\$11 billion in 2005, an increase of approximately 50%. It is expected that the total market size will reach US\$51 billion by 2015. Compared to the market for fossil fuels, solar energy remains small, but it is widely recognised that solar power will play an important role in future energy generation. In terms of solar panel production, it is estimated that annual global solar cell production capacity grew from 1,146 MW in 2004 to 1,656 MW in 2005, an increase of 45%. With the current supply constrained nature of the solar panel market, it is expected that production capacity will continue to grow in the medium term to meet global demand.

There are a number of macro-economic and socio-political factors which underpin the expected continued growth of the solar energy industry:

- *Global energy demand is increasing:* Consumers in both developed and developing countries are increasing their energy consumption. The U.S. Department of Energy's *International Energy Outlook 2005* report estimates that global net electricity consumption will almost double over the next two decades;
- *Current primary energy sources are supply constrained:* The supply of traditional oil and gas-based energy is finite, of depleting reserves, and subject to the instability of geopolitics. In the short- to mid-term, the oil- and gas-based energy supply in the U.S. is also limited by down-stream processing capacity constraints.

Expansion of the supply of coal is expected to increase the cost of electricity generation as more challenging reserves will need to be tapped for additional supply and as higher standards for air quality require the adoption of expensive so-called "clean coal technology"; and

- *Prices of traditional energy sources are increasing:* As a result of the supply / demand disparity, oil and gas prices continue to rise, and are projected to continue doing so. As the prices of existing energy supplies increase, so will their substitution price – the price at which alternative energy sources will be acceptable.

In addition, the solar power industry is experiencing positive "push" factors which are enhancing its position within the global energy market:

- *Increased cost competitiveness:* The cost of electricity generation from solar energy sources has been reducing in recent years versus traditional electricity generating sources, driven by reduced manufacturing costs and improved economies of scale in production;
- *Changing outlook for the energy market:* There is a growing recognition that energy demand is increasing and traditional non-renewable energy supplies are decreasing at rates that will likely lead to continued energy price increases in the future. Desire for diversification of energy sources to reduce dependence on imports, constraints on transmission and distribution infrastructure, difficulty in site selection and public resistance to new central generation power plants underpin increasing demand for solar energy;
- *Growing governmental support:* Governments around the world have been supporting the rollout of solar power generation through subsidies and grants for solar panel manufacturers and consumers. The governments of Japan and Germany have historically been the leaders in this respect, providing subsidies for the installation of solar panels on roofs. More recently, the governments of Spain, Italy, China, Taiwan and the U.S.A. have followed suit and introduced various levels of subsidy for building integrated solar power programmes; and
- *Environmentally-friendly form of renewable energy:* Solar energy is one the most promising forms of producing electricity on-site. Solar panels generate electricity silently and without maintenance, pollution or depletion of materials. Solar energy technology is highly versatile – the same technology that can power water pumps and provide communications and village electrification in the developing world can produce electricity for the buildings and electricity distribution grids of industrialised countries.

Applications of Solar Power Generation

Solar panels are used in a number of electricity generation applications:

- *Building integrated power:* Use of solar energy to generate all or part of the electricity required by a building (residential, commercial or industrial) and its occupants. Solar panels are either fixed onto existing roofing structures, or integrated directly with metal, membrane or architectural fabric roofing material for new roofing structures. Building integrated products can be either on-grid (feeding power into a national electricity grid from which the consumer then receives their electricity supply) or off-grid (where the building integrated system is standalone, satisfying electricity needs directly, or storing electricity in local batteries which is converted to 110 AC or 240 AC for general wall outlet use);
- *Portable power:* Lightweight, portable power solutions for recharging consumer electronics products including laptops, mobile phones, portable GPS systems and portable multimedia products. In addition, military forces and law enforcement agencies have specific needs for portable power for communications and weapons systems. Portable solar panels can either be integrated directly with the target product or designed as stand alone battery chargers;
- *Remote power:* Consists of solar recharging applications such as remote data transmission, lighting, refrigeration, pumping and ventilation. Examples include solar power-enabled field shelters used by the military and emergency services, GPS asset tracking, oil and gas exploration seismic data collection, electricity generation for remote road signs, meters, water pumping and purification; and
- *Central power stations:* Generation of electricity by solar-powered central power stations feeding on-grid consumers.

Building Integrated Solar Power

According to the National Renewable Energy Laboratory, the U.S. Department of Energy's primary laboratory for renewable energy and energy efficiency research and development, there is a growing consensus that solar energy systems which provide electricity at the point of use (off-grid applications) will be the first to reach widespread commercialisation. The main application for this form of energy generation is solar power systems for individual buildings.

Market interest in the integration of solar power generation into building products, where the solar panels themselves become an integral part of the building's façade or roof, is growing worldwide. By simultaneously serving as outer-building material and power generator, a building integrated solar power (also known as building integrated photovoltaics or "BIPV") system can provide savings in materials and electricity costs and reduce the use of fossil fuels and emission of ozone depleting gases. Architects worldwide are increasingly using solar panels as part of their building designs.

There are two basic commercial solar panel technologies available on the market today for use in BIPV systems:

- *Rigid crystalline solar panels:* Panels which include solar cells made from crystalline silicon, typically encapsulated between sheets of glass for protection. Rigid crystalline solar panels, which are typically fixed on to existing roofing structures, currently account for approximately 90% of solar cells manufactured globally. The production of rigid crystalline solar panels is currently constrained by the availability of polysilicon, the key raw material, which is expected to remain in tight supply for the medium-term; and,
- *Thin film solar panels:* Panels which incorporate very thin layers of active material deposited directly on a substrate which can be plastic, metal or glass. For building integrated solar power generation, thin film solar panels are integrated as part of the metal, membrane or architectural fabric roofing material used for new roofing structures. Thin film technologies have the benefit of lower costs due to much lower requirements for active materials and energy in their production. Furthermore, the manufacturing process for thin film solar panels does not use polysilicon. Whilst thin film solar panels typically have lower wattage output per unit area than crystalline devices, they have a lower cost per watt of electricity output. In addition, thin film solar panels function better than rigid crystalline solar panels in low light or high temperature conditions so that energy production on an annual average basis can be higher than for an equivalent wattage of rigid crystalline solar panels. In the BIPV market, the low cost, durable, lightweight and ease of installation properties of thin film solar panels are highly attractive.

Portable and Remote Solar Power

Consumers are increasingly using solar battery chargers for emergency and back-up power for consumer electronics products as diverse as mobile phones, laptops and portable multimedia products. The U.S. military has emerged as an intensive user of portable and remote solar power products, as the use of power-consuming portable electronics for communications and weapons systems has increased in recent years. In addition, field shelters, such as tents and shades which incorporate solar power generation capabilities, are proving attractive to military users. The Directors believe that tents which incorporate solar power generation capabilities will also prove attractive for emergency and commercial applications.

PowerFilm's Thin, Flexible Solar Panels

Product Overview

PowerFilm has developed a range of thin, flexible solar panels in a variety of sizes and configurations. Operating voltages can range from 0.6 up to 150 volts for special applications. The operating current of the Company's solar panels ranges from a few milliamps in a single small panel up to an installation with a combined current of 650 amps to provide 10 KW of output.

The Company's solar panels are manufactured on a flexible, thin plastic substrate that is only 1/1000th of an inch thick. Its solar panels are much thinner and more lightweight, flexible and durable than rigid crystalline panels. This enables easier integration into roofing materials and allows for simple, robust, low cost building installations. To create its solar panel products, PowerFilm has pioneered the production of thin, flexible solar panels on plastic substrates through a proprietary roll-to-roll manufacturing process.

PowerFilm's primary long-term target market is the building integrated solar power market, in which the Directors believe that the Company's thin, flexible solar panel products are well positioned to benefit from the large and growing demand. The Company's solar panels are also well suited for the portable and remote market where the flexibility and lightweight and durable nature of the Company's products are strong differentiators. PowerFilm does not currently intend to focus on production of solar panels for use in solar-powered central power stations.

Technology and Manufacturing

PowerFilm has developed a proprietary thin film manufacturing process which consists of roll-to-roll manufacturing of solar cells using an amorphous silicon sunlight absorber layer deposited on a flexible plastic substrate. Individual solar cells are isolated by a laser scribing process. Full panels are formed from the isolated cells through the laser welding of interconnects which are printed onto the surface of the material and are encapsulated and combined with various backing materials to create solar panels. The roll-to-roll production line is composed of vacuum deposition, laser scribing and laser

welding machines custom-designed and assembled by PowerFilm. The design of this capital equipment remains proprietary to the Company. The Directors are not aware of any other company which is able to manufacture solar panels using this combination of technologies and processes.

The key elements of the Company's production process are:

- *Roll-to-roll manufacturing:* The Company's manufacturing process starts on a roll and ends on a roll. The resulting roll of solar panels is 13 inches wide and can be up to 2,400 feet long, so that material handling during production becomes closer to that of the printing industry rather than the smaller batch-based approach of rigid crystalline solar panel production. Handling one 2,400 sq ft roll as opposed to 4,800 individual crystalline wafers or 800, 2ft x 3ft, glass plates significantly reduces handling, storing and shipping costs. The Company is able to scale production capacity by reproducing the rate limiting equipment of the manufacturing process;
- *Plastic, flexible substrate:* PowerFilm has successfully developed the production of solar cells on a plastic substrate, ensuring durability, flexibility, thin profile and light weight. In addition, the use of an insulating plastic substrate allows for the laser welding of printed interconnects;
- *Amorphous silicon absorber layer:* PowerFilm's use of amorphous silicon as the sunlight absorber layer is a low cost, environmentally friendly (cadmium free) and commercially viable technology. The amount of silicon used in the production of PowerFilm's amorphous silicon solar panels is as low as 1% of the amount used in rigid crystalline solar panels. Furthermore, PowerFilm extracts the silicon required for its production process from silane gas and is therefore not subject to the current silicon wafer supply constraint of the crystalline solar industry;
- *Printed interconnects:* Laser scribing, printing and laser welding on-roll enables the automated interconnection of individual solar cells within the overall panel. This approach allows the conversion of individual solar cells into panels to be carried out in an automated process, handling up to 2,400 sq ft of material at a time as opposed to handling 4,800 individual cells which must be connected with external, mechanical interconnects in the traditional approach. This production step significantly reduces manufacturing costs, improves quality control and enhances the durability of the end product by eliminating the need to cut and connect solar cells manually;
- *Encapsulation:* PowerFilm solar panels are encapsulated in a variety of laminate materials to meet the requirements of diverse applications and usage environments. PowerFilm is able to choose from a variety of materials to provide the optimal protective coating for its solar panels depending on the required product functionality, level and type of protection (moisture / heat / UV), laminate lifetime and cost. PowerFilm's roll-to-roll manufacturing process using thin plastic film also allows the encapsulation step to be carried out roll-to-roll as opposed to the more commonly used vacuum-based lamination technology. The throughput differential between these two processes, which can be up to a factor of twelve, has a large impact on reducing manufacturing cost and time-to-market; and
- *Bonding and backing materials:* The Company has developed technology which enables the integration of PowerFilm solar panels with several different backing materials including metal, membrane and architectural fabric. Through its relationships with laminate, adhesive and backing material suppliers, PowerFilm is able to utilise new materials and optimal combinations of materials to enhance product functionality and reduce cost.

PowerFilm continues to develop and refine its manufacturing process with a focus on reducing production costs and improving the efficiency and durability of its solar panels. The Company is currently in the process of investigating and implementing a number of technology advances which will enable it to maintain and enhance the competitiveness of its products. In particular, the Company intends to complete development initiatives currently underway to introduce a next-generation, one metre wide roll-to-roll production line. As many of the current production costs relate to machinery time and handling costs driven by the throughput of rolls, it is anticipated that the increase in roll size from the current 13 inch width to one metre will provide a significant reduction in manufacturing costs and an increase in production capacity.

PowerFilm Products for the Building Integrated Solar Power Market

For the building integrated solar power market, PowerFilm's intention is to manufacture solar panels to be integrated with metal, membrane and architectural fabric roofing materials. The Company's solar panels have been extensively tested internally for the commonly accepted durability and lifetime criteria of the building materials industry. As part of its product development, PowerFilm has produced a 10 KW array of solar panels integrated with metal roofing for testing and development. The Company has now reached the final stages of development of solar panels for supply to the building roofing materials industry. The Company expects to ship solar panels to roofing material strategic partners for the building integrated solar power market in 2007.