HOWLETT RESEARCH Corp.

RESEARCH REPORT

Universal Ice Blast, Inc.

(UIBI – OTCBB)

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Jeff Howlett is a financial analyst who for over the past 9 years has provided research services to companies lacking adequate coverage. Mr. Howlett was previously affiliated with a major Canadian investment firm specializing in Mergers & Acquisitions and has received a B.Sc. in Economics from the Wharton School of the University of Pennsylvania..

Commercializing unique, patented ice blast cleaning technology. Successes with a range of early adopters now expected to lead to ramp up in sales and licensing revenue streams through 2002+.

The Technology

- Ice blast is a cleaning technology which is essentially a hybrid between abrasive (i.e. sand) and non-abrasive (i.e. water) types. Because ice is a phase change material, it cleans as a solid, then deforms on impact and performs a scrubbing and rinsing action. No other blast cleaning material can work in this fashion.
- Ice blast has several advantages – there is ***no damage to the substrate***, there is a ***high degree of cleaning*** with ***no residue***, it is ***environmentally benign***, ***generates little waste,*** and is ***dust free***.

Markets

- Because the process is also highly reliable and has low costs, it can be used in a wide variety of industrial applications. Extensive market research and testing has resulted in several high value markets being identified, including: ❶ ***precision cleaning*** (particularly auto parts), ❷ ***industrial cleaning*** (plants and equipment), ❸ ***environmental*** (particularly lead paint removal and asbestos abatement). It has wide applicability in other areas as well (*marine*, *nuclear*, *aerospace*, etc.).
- Ice blast has the potential to displace existing technologies worldwide in several applications, with global unit sales of well over 10,000 possible. Assuming an average price of $150,000 per unit, ***there is potential for a multi-billion dollar market.***

Ford Motor Company Announces Adoption of Ice Blast Technology

- UIBI's Ice Blast recently passed Ford's rigorous "Implementation Readiness" evaluation process conducted by a 6-Sigma Black belt.
- The future for UIBI has very significant upside potential as this success can have industry-wide and worldwide impact. It would not be unreasonable for numerous Fortune 25 and other companies to become major customers.

Share Data ($US):

Recent Price:	$0.13
52-week Price Range:	$0.09 - $0.35
Shares Outstanding:	34.16 million
Fully Diluted Shares (1):	34.13 million

(1) Incl.1.02 million options & warrants @ US $0.143.

Capitalization ($US):

Market Capitalization:	$4.4 million
Total Debt:	$0.43 million

Corporate Information:

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WE BELIEVE UIBI HAS SIGNIFICANT POTENTIAL FOR SEVERAL REASONS:

❶ **The Technology.** Ice blast clearly works well, it is reliable, and it has wide applicability across a range of high value applications.

❷ **The Potential.** Markets are very large with a currently estimated potential of $2 - $4 billion.

❸ **Patents.** UIBI has successfully patented the key, core innovations associated with the technology as well as specific applications that extend and broaden protections.

❹ **Management.** Very knowledgeable, spending several years creating, testing, and commercializing ice blast.

❺ **The Metamorphosis.** UIBI is now changing from an R&D company to a sales driven company. Work with early adopters in key markets is proving successful.

❻ **Lack of Competition.** There are no known technologies which possess similar attributes worldwide.

We believe the revenue potential for UIBI is very significant and could begin in the near term. We also believe that should UIBI begin to experience larger scale successes, the company could represent a highly attractive takeover candidate . The stock clearly offers potential for much higher than normal returns, but should be seen as speculative.

THE COMPANY

Following years of ice blast research and development, UIBI was founded in **1995** by its current senior management to further develop and market this technology. In **1996**, UIBI had developed its first truly reliable machine and by **2000** ice blast had processed over 10 million individual parts. All this has proven successful – since 1997 UIBI has sold more than 25 units to various early adopters. Two patents were granted in **1999** with a third granted in 2001 which cover the method and apparatus of ice blast. There are also 3 patents pending which cover various improvements to the technology, and will continue as additional applications are covered. In 1997, UIBI went public on the OTCBB.

CLEANING TECHNOLOGIES

Alternative Technologies

Industrial blast cleaning processes all have one thing in common: a projectile (blast media) hitting a target (part to be cleaned), which displaces contaminants from the part. There are essentially two different types of blasting technologies, abrasive and non-abrasive. ❶ **Abrasive** technologies include *sand*, *plastic chips*, *walnut shell*, *glass beads* , *baking soda*, and *steel shot*, which are efficient but normally cause some damage to the underlying surface. ❷ **Non-abrasive** techniques cause an elastic impact to the surface and are used when *light surface cleaning* is required and no damage to the underlying part is a requirement. Typically, *water blast* is utilized because it does not damage parts and in combination with a chemical additive, water is effective in removing grease and oil in production parts but generates large volumes of waste water and often leaves residues on the parts.

Ice as a Hybrid

Near room temperature, *ice is a phase-change material* – during blasting it is transformed from solid to liquid form. This facilitates a unique form of cleaning: ❶ ice particles ***displace surface contamination*** by colliding with the contaminant; ❷ ***mechanical scrubbing*** results from the lateral deformation of the ice particle as it changes from solid ice to liquid water, and ❸ the ***contaminant is flushed away*** by the liquid water created as the ice particle melts.

Importantly, there are several critical benefits associated with ice blast:

- There is **no damage** to the surface of the substrate,
- A **high degree of cleaning** is possible with **little waste** generated;
- After blasting, the resulting substrate is **free of residue** (unlike water blast), and
- It is **environmentally benign** – no chemicals are used and the process generates no dust.

Only crystalline ice crystals can offer this type of cleaning which sets it apart from abrasive and other non-abrasive cleaning methods. Ice blast is ideally suited to stringent cleaning applications where quality is an issue.

Additional characteristics which lend ice blast to use in industrial settings include:

- Ice blast products are **highly reliable** and **operation is simple**.
- Very **low operating, maintenance, and disposal costs.**
- The equipment can be **modularized** (i.e. it is inherently smaller than water blast systems and can be compact, portable, or made into large units).

Competitive Advantages

We believe that based on the extensive testing to date, ice blast possesses several unique advantages over other cleaning technologies.

Cleaning Type	Advantages	Disadvantages
Abrasive	• Efficient, low cost, can clean difficult situations (i.e. heavy rust).	• Dust, damage to substrate, high waste disposal costs, parts covered with dust.
Water Blast	• Lower capital cost.	• Lack of scrubbing leads to residue, large amount of waste water, chemical additives require monitoring and disposal.
Dry Ice (CO2)	• Has the advantages of ice. Works very well in special situations (i.e. it sublimates from a solid to gas – no water is generated – ideal for cleaning computer components).	• Uptime estimated to be under 80%. Higher operating costs (CO2, dry ice costs). CO2 displaces air, necessitating special precautions in enclosed areas.

Ice Blast Niche Markets

Basically, ice blast can replace the more abrasive technologies where cleanliness, the condition of the substrate, or the environment are issues. It can replace water blast in virtually all cases, but has a higher capital cost, so the utilization of ice will depend on cost and quality issues. Management has identified several uses where ice blast could replace existing methods.

Cleaning Type	Examples of Potential Applications	Competition	Rationale for Adoption
Precision Cleaning	Involves removing surface contaminants and/or light deburring to defined tolerances, typically in a repetitive production setting where quality controls are closely measured and monitored. **Includes a range of auto components** (transmission components & cases, valve bodies and housings, engine and cylinder head cast parts, armatures, magnesium castings, etc.)	Water, glass bead, manual labor & chemicals.	Superior cleaning, fewer rejects, dustless, highly reliable, reduced floor space, environmentally benign, lower maintenance, monitoring, and operating costs.
Industrial Cleaning	Manufacturing equipment, industrial plants of all kinds (petro-chemical, food & beverage, power station, pulp & paper, etc.), plastic molds and dunnage, turbines, yard equipment.	Water, dry ice, soda, abrasives, manual labor & chemicals.	Superior cleaning, reduced waste and cleanup, dustless, low operating costs, no damage to fiberglass or other materials, simple field implementation
Environmental Cleaning	Building structures, in particular lead paint removal from steel bridges and asbestos abatement in building structures.	Manual labor, chemicals, water, dry ice, abrasives	Minimal waste, no dust (no need for Class A containment areas), improved worker health, simple implementation.
Other	Nuclear decontamination, aerospace, marine, food and other services.		

COMMERCIALIZATION STRATEGY

Work With Early Adopters

Since cleaning parameters vary from industry to industry, there is no "one market" for UIBI. ***Ice blast can be used in multiple settings and UIBI has narrowed its focus to markets that have the highest number of uses with the greatest revenue generating opportunities***. Several years of market research has resulted in an impressive list of current and future applications.

UIBI has already proven itself to be highly successful in the manufacturing industry, particularly in the areas of cost reduction, cleanliness, and the environment. As the technology becomes recognized under stringent and standardized requirements such as the *6-Sigma* process currently used by the *Ford Motor Co.*, the rate of adoption from competing companies (within the same sector) could increase rapidly. Management expects a "spill over" effect into other markets due to the high standards of cleaning that are an inherent part of ice blast technology and credibility afforded it through its use by large customers. Some of these customers have included:

- **Automotive parts cleaning.** *Ford*, *Bosch*, *Denso.*
- **Lead based paint removal** (*New York State DOT*, *Stanford University*, *U.S. Navy*).
- **Asbestos abatement**. *Wells Fargo Bank* (Portland), *House of Parliament*, U.K.
- **Nuclear**. *Hanford*, *Oak Ridge National Labs*, *Bruce Power*, *NB Power*, *OPG* (formerly Ontario Hydro).

Once the technology proves cost effective and the industry becomes aware that competitive advantages are being realized, a domino effect can occur ***UIBI can then implement its revenue strategy***, which includes: ❶ outright sales to initial customers, ❷ moving to a licensing model as unit sales increase, ❸ certain applications are also amenable to a rental revenue model (i.e. industrial cleaning), and ❹ leasing Ford style equipment on a per part cleaned basis.

On the Verge?

We are encouraged that UIBI appears to be nearing the end of this testing/early adopter cycle in several areas, particularly with precision cleaning of auto parts and lead based paint removal. For example, in 2001, efforts with a key customer, Ford, appear to be paying off, with that company having recently approved ice blast for use at its gear cleaning and deburring operations (see below). Successes such as this one could realistically lead to major breakthroughs throughout the entire range of auto component suppliers.

As sales begin to increasingly materialize, we expect UIBI to broaden its approach to several other high value areas, which it has not been able to do owing to its small size and limited capital.

WHAT IS THE POTENTIAL MARKET?

It is not difficult to imagine that markets for ice blast machines could run in the billions of dollars when several concrete examples are taken into account, as illustrated below.

A Bottom Up Approach to Market Estimation
The Case of Transmission Gears at Ford

The Problem. After machining, gears must be cleaned to precise specifications and contamination is a major issue faced by many suppliers. Water blast has been used for many years. However, many parts do no pass a "First Time Through" test and many are ultimately rejected. ***The direct costs associated with this often run in the tens of thousands of dollars per month for a given production line***.

UIBI has been working with Ford since mid-2001 to custom design and implement an inline production unit at its Sharonville, OH transmission gear facility. Over a 3 month test period, ice blast proved to be highly reliable, with ***99+%*** of parts passing the "First Time Through" test, which offers obvious benefits. Ford has now approved ice blast as a preferred process for gear cleaning..

Potential. UIBI estimates that there are over **300** key transmission gear washing units in the U.S., virtually all of which could have at least one water blast machines displaced. Including Europe and Asia as well, ***the potential market for transmission gears alone can be estimated to be a minimum of 1000 units***. At a price of $250,000 per unit, this equates to ***potential revenue stream of $250,000,000***.

Because ice blast has *potential application in many industries where stringent cleaning is required*, there is potential for billion dollar markets. Several key ones have been estimated by management.

Potential World Markets (Units)	US	Europe	Asia	Total
Industrial Cleaning – In Plant Maintenance	1,370	1,360	1,160	3,890
Precision Cleaning – Automotive	3,200	2,375	2,075	7,650
Environmental – Bridge	200			200
Environmental – Structural	350	250		600
Other – Marine	250	200	200	650
Other – Nuclear	100	30	15	145
Other – Food	250	200	200	650
Total	**5,720**	**4,415**	**3,650**	**13,785**
Total Revenue @ $150,000/unit ($ millions)	**$858**	**$662**	**$548**	**$2,068**

CONCLUSIONS

From an Industry Point of View

Our research indicates that ice blast as a technology has "company making" potential. It has been tested and works well, several high value, high volume niche markets have been identified. This appears to be particularly true in manufacturing settings where water blast is now utilized and in other situations where its environmental advantages can be exploited. The potential for **substantial sales volumes** combined with **high unit revenues** for machines creates high sales and profit potential.

From a Company Point of View

We see UIBI as being increasingly well positioned:

- It has a well considered market penetration strategy, focusing on key customers in the highest value applications.
- Management is beginning to experience a measure of success with its commercialization strategy.
- UIBI revenue streams could ramp up very quickly, particularly if additional financing is in place.

We also believe that given the nature of this technology and its potential wide application worldwide, with some additional commercial successes, UIBI could potentially represent a highly attractive takeover candidate for a variety of major industrial concerns.