

Press Summary

621
Colby
Drive
Ste. 5

Waterloo
Ontario
N2V
1B4
Canada

T.
519
885
9993

F.
519
884
8452

[www.
terepac.
com](http://www.terepac.com)

**Terepac gives you
the computing power
of the first PC
in the space of
the period at the
end of a sentence.**

Not that sentence - this one.

About Terepac

Current methods for manufacturing electronics create products that are thick, heavy, rigid, and expensive, with a heavy environmental footprint.

Terepac was founded in 2004 to commercialize breakthrough innovations which overcome these limitations through an entirely new paradigm for assembly, integration and packaging of electronic products. **The company's revolutionary technologies enable sophisticated microelectronics to be printed on flexible substrates at a fraction of the size and cost of creating conventional circuits.** Entire devices with microprocessors, memory, and sensors can be reduced to less than a millimeter square, thinner than paper, and flexible enough to bend around a pencil - with no sacrifice in performance.

As a result, these tiny electronics can be used in ways previously not thought physically or economically feasible. They also allow existing devices, components and products to be transformed into small, flexible forms which were previously impractical or even impossible. **No other existing process can effectively handle, assemble and connect chips and devices of this size, flexibility and compactness.**

Terepac will play a critical role in making electronics truly ubiquitous by transforming both the form and process of their delivery. The company aims to define the standard for innovation in microelectronics.

Technology

Terepac's **Photoprinted Circuit Assembly™** overcomes the limitations of conventional mechanical circuit assembly by enabling the effective production and handling of circuits and components with an unprecedented reduction in size in all dimensions. This breakthrough transforms today's large, heavy, rigid and expensive circuits into smaller, lighter, thinner, flexible and more compact ones.

Terepac's photoprinted circuits can be combined into **Microscale Circuit Clusters™** using printed conductive inks to make the numerous interconnects between tightly arranged ultra-thinned circuit elements, thereby avoiding the size limitations imposed by conventional wirebonding or solder-bump technologies. As a result, components such as sensors, transmitters, and processors - even power and display - can be introduced into and onto everyday objects, transforming them into "smart devices," making them part of the burgeoning Internet of Things.

Terepac's difference – and why it matters

With component and assembly costs far below any competing technique and no sacrifice in performance, Terepac's technology introduces revolutionary advances in assembly and packaging of micro and nanoelectronics. Terepac enables:

- **The effective handling and connection of components and devices down to the nanoscale.** Whereas conventional mechanical circuit assembly begins to lose its effectiveness as objects dip below 0.5 millimeter in width or thickness, Terepac's method can effectively handle sub-micron sizes (as well as larger). As significantly, Terepac's technology allows these miniature components to be connected. No other existing process can offer these benefits.

- **The configuration of electronic components or end products in forms not previously possible.** Terepac's innovations replace large, rigid conventional circuits with tiny, flexible terechips™ – enabling the delivery of compact and elegant products which might be bendable, wearable, and unobtrusive. This represents an important competitive advantage in applications where a product's value to the end user is inversely related to its size – such as with mobile communication or medical devices.

- **The freedom to design new products more rapidly and with less expense.** Terepac's breakthroughs enable new products, such as sensors, microprocessors, or display drivers to be configured from stock subunits, allowing immediate fabrication without lengthy and costly design cycles through IC foundries. Once a new design is satisfactory, production can be scaled up rapidly. Any type of component (e.g. analog silicon, optoelectronics, MEMS or NEMS, even delicate organic sensors) can be used in any combination on any substrate.

Applications & market

The global demand for ubiquitous electronics, already strong, is poised for rapid growth.

Mike Nelson, the former director of Internet Policy at IBM, said: "Trying to determine the market size for the Internet of Things is like trying to calculate the market for plastics, circa 1940. At that time, it was difficult to imagine that plastics could be in everything. If you look at information processing the same way, you begin to see the vast range of objects into which logic, processors, or actuators could be embedded." ¹

Until now, chip size and device packaging methods have been two of the primary obstacles to making ubiquitous electronics feasible. Terepac's technologies remove those obstacles, making possible a vast range of made-to-order devices and end products which create new market and customer possibilities. The technology affects every market where electronics currently are, as well as applications, devices, and markets where electronics had not previously been feasible or imagined. Sensors which can gather and transmit vast amounts of information, creating value through their ability to detect, diagnose, measure, and warn, are an important application (although not the only one).

Terepac, deploying its unique methods, develops custom products for companies wishing to transform how their electronics are configured. Or for companies who wish to introduce electronics into objects or items of commerce where intelligence in the form of "on board" electronics had not been contemplated. Terepac is currently addressing global demand for embedded electronics with initial applications including smart cards and intelligent packaging, smart buildings, wearable medical devices, and novel form factor mobile communications.

Company history

Terepac is a privately-held company headquartered in Canada's Technology Triangle in Waterloo, Ontario. The company was founded in 2004 by Ric Asselstine and Dr. Jayna Sheats based on Dr. Sheats' patents and Mr. Asselstine's experience in the conventional printing industry and new venture formation. Both founders share a long-standing interest in printed electronics and ubiquitous computing.

Years of directed material, process, and product R&D have resulted in nearly two dozen patents and patent applications. The company has established numerous R&D relationships with academic, institutional, and corporate partners, and built a team which includes thought leaders in printed electronics, roll-to-roll processing, and flexible circuits and substrates, as well as engineers, scientists, and industry veterans of the most innovative traditional microelectronics.

In 2010, Terepac began pilot line production at its manufacturing facility near the University of Waterloo, and recently established a second facility in Dresden, Germany.

For additional information

Terepac Corporation
621 Colby Drive, Ste. 5
Waterloo, Ontario
N2V 1B4 Canada

T • 1 519.885.9993
F • 1 519.884.8452
www.terepac.com

Ric Asselstine, CEO
ric@terepac.com
T • 1 519.575.1819

Dr. Jayna Sheats, CTO
sheats@terepac.com
T • 1 650.255.3098

© 2010 Terepac Corporation. All rights reserved. Terepac Corporation and the Terepac logo are trademarks of Terepac Corporation.

Disclaimer: The forward-looking statements contained herein involve important risks and uncertainties that could significantly affect anticipated results in the future and, accordingly, such results may vary materially from those expressed in any forward-looking statements made by or on behalf of Terepac Corporation.