

Cool Chips plc

Cool Chips™

Markets

Domestic Refrigeration



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Cool Chips™ Market Analysis

Domestic Refrigeration Benefits

Cool Chips are superior for use in White Goods. Benefits include:⁺□

- **Increased efficiency**
When compared to the best Embraco 115V compressor (COP of 2.09 at – 23.4° C, 40.5° C), Cool Chips™ reduce the estimated average annual energy cost by >30%.
- **Lowered initial costs**
Production cost for the cooling equipment within a full-size 18 ft³ refrigerator/freezer which meets U.S. DOE 2001 energy regulations represents a 53% savings



⁺ Based on 1998 work

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Domestic Refrigeration Benefits

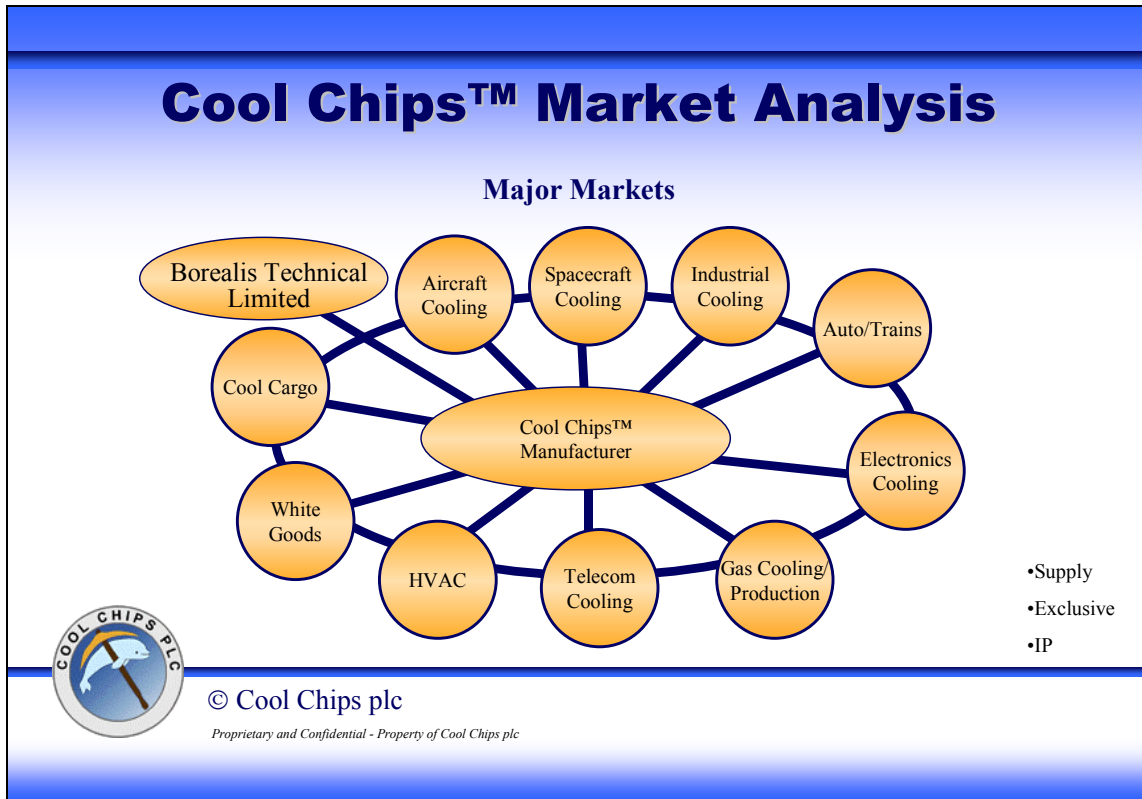
Cool Chips are superior for White Goods. Benefits include:

- Improved packaging
 - A Cool Chips refrigerator will be quieter, more spacious and lighter due to the lack of a compressor
 - A Cool Chips refrigerator will not cycle as much due to better temperature control
- Lessened environmental impact
 - Cool Chips do not use environmentally-suspect chemicals



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Each of the niches named above has present sales -- for cooling and thermal management -- in excess of \$1 billion yearly.

Borealis is contractually committed to exclusively licensing a given market niche to only one company, so that company retains worldwide exclusive rights to apply Cool Chips to their market. The company would have the right to sub-license the technology in turn.

In turn, that company will be supplied by a manufacturer. Since Cool Chips™ are designed to be compatible with existing semiconductor processes, the manufacturer is likely to be a major semiconductor company.

The manufacturer ships Cool Chips™ (either packaged or unpackaged) to the licensee for a given niche. That licensee then completes the packaging and integration necessary to fold the

Cool Chip™ component into the product, which is then sold into the marketplace.

In this way, every company is involved by doing what they already do best-- the manufacturer manufactures chips. The licensees assemble and sell product from delivered components.

At the same time, each licensee has an exclusive niche, and cannot, by definition, compete with any of the other companies in the Club. That means that sharing information within the Club presents no competitive disadvantage.

Borealis' role in the process is as a facilitator, to ensure that information flow remains for all the niches, and that intellectual property is shared between all the licensees, so that each can benefit from the pooled research efforts of the entire Club.

Fabrication Cost

Cool Chips™ is a chip-based technology, with precise, but simple construction.

- Non-exotic materials with moderate contamination tolerance
- No costly materials involved in processes
- Very small devices require small amounts of material

Marginal cost of Cool Chips™, in production, could be as low as pennies per watt capacity



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In addition to high efficiency, Cool Chips™ are expected to be very inexpensive to make.

A number of factors come into play when estimating the cost of a product like a turbine or a compressor. The marginal costs (the cost of making one more unit on an already-present assembly line), are heavily dependent on the following factors:

1: Materials quantity. No device can cost less than its parts. And big, heavy machines like turbines and compressors have a lot of steel, copper and iron in them. This is an unavoidable cost. Cool Chips™ use very little in the way of raw materials -- at least an order of magnitude less than the competition. A single chip, capable of 100 watts of cooling, will measure less than 1 cm on a side, and be only a few millimeters thick.

2: Material quality. As machines improve, the specifications for their components become ever-more demanding. If the components must be of very high materials purity, a significant cost is added. This cost, unlike, say economies of scale, is not reduced easily. The price of 99% pure iron is far less than 99.9999% pure iron. Cool Chips™ can use relatively impure materials.

3: Machining/assembly costs. The more welding, bonding, sealing, etc. which is required, the higher the costs as well. Cool Chips™ are extremely simple to manufacture -- much less complicated than an Intel 386 processor, for example.

4: Component costs. The more pieces have to be put together, the more it will cost. Cool Chips™ have a very small component count, much less than competing technologies.

The Big Picture

Cool Chips™ are projected to be a high margin, high volume product which is:

- ... In demand in dozens of industries
- ... Superior to all other existing and projected technologies
- ... Proprietary, allowing a 20 year head start
- ... Environmentally Friendly



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Cool Chips Corporate Overview

Cool Chips plc

- Gibraltar Company Number 57885
- Incorporated 23 April 1996
as Borealis Cool Manufacturing Limited
- Name change to Cool Chips Limited 1 June 2000
- Re-registered as public limited company 27 July 2000

Publicly traded (Pinksheets: COLCF)

- Capital Authorized and Outstanding: 10 million shares
- About 350 shareholders; >70% owned by Borealis Exploration Limited
- Fully audited reporting



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