Corex-Steel™ Overview

Introduction

Introducing the revolutionary Corex-Steel™ a new type of high strength steel, which is based on the steel-making know-how, and invention of Henrik Giflo and Henrik Giflo, Jr. It produces high strength, air-corrosion resistant, less expensive, energy-saving specific steels with the added environmental benefits of reduced CO₂ and dust emissions. The firm’s breakthrough in metallurgy radically lessens the current specific energy levels required for production, which will address and alleviate current CO₂ emission issues that plague the steel industry.

Corex-Steels are a revolutionary new type of steel which are high strength, air-corrosion resistant, less expensive and energy saving.

Depending on the type of Corex-Steel™, average specific cost savings in excess of 20–30%, as well as weight savings up to 300%, will be realised by end users who replace conventional steel with Corex-Steel™. In addition to major energy savings, Corex-Steel™ significantly reduce CO₂ and dust emissions as a result of significantly lower specific energy requirements during production. The total combined energy savings from manufacturing to product use exceed up to 50%. Corex-Steels have been in use for decades in various classified applications and have been successfully tested.

Although many lightweight and specialty steels exist, the Corex-Steel™ developed over the past decades has no true competitor. The reason Corex-Steel™ has no true competitor is due to the technology being based on a complex metallurgical theory whilst other steel producers focus on improving equipment to increase the quality of steel. Corex-Steeltm technology is based on the strengthening mechanism combination of the metal lattice structure and has a lot of room for further advancement to ensure Corex-Steel™ stays well ahead of its closest competitors.
Corex-Steel™ has six families of steel, with 25 grades of steel. The characteristic features of Corex-Steel™ are:
- High load bearing capacity of permanent strain,
- High usability strength level,
- High strength level that does not require quenching,
- Good weld ability in weldable range, even at high yield point,
- Wear-resistant,
- Several Corex-Steel™ grades are air corrosion resistant,
- High fatigue strength levels,
- Good ductility and machinability as compared to their strength levels,
- Fine-grained structure, good formability in hot or cold conditions.

Utilising Corex-Steel™ in a product design enables a reduction in the weight of the materials necessary for product production by up to 30% on average. The resultant effect on the whole product is not only an increase in the technical quality, but a significant decrease in the specific cost and energy requirements for product use. On top of the manufacturing savings, a manufacturer can realise further specific cost savings due to lower costs and energy associated with manpower, shipping, and warehousing smaller, lighter material. More of these savings can be realised by the end users of the various products produced by the Corex-Steel™ process. While major savings are derived from the Corex-Steel™ technology, additional savings can be realised since the steel manufacturer will not need to utilise expensive anti-pollution systems to the extent they do today. Such reductions in CO₂ emissions will assist the manufacturers in meeting Government pollution mandates as well as enable them to be better corporate citizens.

Corex-Steel™ technology enables users to enjoy energy and cost savings, as fewer raw materials are required to create the same amount of end product for the end user.

Corex-Steel™ technology enables The Company to use less specific raw material to create the same amount of end product, for the end user, giving The Company access to higher profit margins relative to its competitors. Corex-Steel™ will be formed as a 50/50 joint venture between Astra Resources (AR) and Corex-Steel™. The Company will be incorporated in Hong Kong and will have operations established in Europe, the location is to be determined but it will most likely be in Italy. The Company currently has a warehouse based in Miskolc, Hungary. Corex-Steel™ has aspirations to grow globally and develop a network of steel
production and manufacturing facilities within close proximity to the end users. Corex-Steel™ can be manufactured in any steel plant by adding a chemical formula, meaning a steel plant can be leased for the production period, hence reducing capital outlays required for manufacturing.

Mission Statement
The Company’s purpose is to establish a profitable, ethical, and well-managed company to commercialise Corex-Steel™ products globally to enable a reduction in energy consumption, which will result in environmental benefits of a reduction in CO₂ and dust emissions. Its main aim is to utilise its green (carbon-efficient) technology and bring it to the market as soon as possible so that the benefits for the planet can commence with immediate effect.

Corex-Steel’s goal is to fundamentally change the way steel is produced, creating a significant competitive advantage for manufacturers, while significantly lowering CO₂ emissions and decrease the energy consumption required to produce and operation steel products.

The Company’s philosophy is based on mutual respect for all contributions made by participating partners, joint venture partners, investors, consultants, and employees regardless of position.

Corex-Steel’s goal is to fundamentally change the way steel is produced and help the environment by reducing CO₂ and dust emissions and providing energy savings

History and Current Status
The Corex-Steel™ technology was invented and developed by Henrik Giflo Snr, metallurgical engineer, following his 50 plus years of experience in the steel industry. He invented and developed the theory in the late 1970s that created a new type of high strength steel based on Corex technology. Henrik Giflo, Jnr. joined his father in inventing and developing Corex-Steel™ in the early 1980s, also as a metallurgical engineer. The Corex-Steel™ know-how was further developed over 20 years and was commercialised within Hungary in 2007. Corex-Steel™ know-how is fully developed and is ready to be commercialised on a global scale.
Corex-Steel™ is in the process of forming its 50/50 JV structure where the inventors and owners of Corex-Steel™ will provide the know-how and the licence right to the technology, manufacturing, selling and distributing Corex-Steel™ products, as well as technical assistance. AR will contribute the financing, marketing, and commercial aspects to the joint venture. Upon formation of The Company and receiving initial funding, the business has many prospects and opportunities, which are at an advanced stage of negotiations to begin the commercialisation of Corex-Steel™ straight away.

Corex-Steel™ currently has connections with the market and has received enquiries for many different end products. There are multiple opportunities, which are at such an advanced stage that production can commence almost immediately. Furthermore, Corex-Steel™ has the ability to redesign certain end products for the end user to further increase the benefits received by the end users through a further reduction in energy required to operate.

Objectives, Goals, and Target

The Company’s objective is to introduce Corex-Steel™ and its revolutionary new type of high strength steel grades around the world. Specifically, to a result of significantly higher usability strength of the Corex-Steel™ to ensure Corex-Steel™ technology is the preferred method of manufacturing steel and by doing so, significantly lowering both specific manufacturing costs, CO₂ and dust emissions and provide a significant energy savings during Corex-Steel™ end product production. While accomplishing these tasks the goal is to establish a company, which produces and maintains a high margin of profitability for its shareholders.

The business aspires to be the largest supplier of steel to the mining, oil and gas industry (pipelines), vehicle (passenger car, buses, heavy vehicles, trains, aircraft) industry, ship building (vessels and tanks), shipping containers, construction, stainless steel (for food and medical industries). Initially, The Company will focus on three major industries and target the largest customers in the mining and oil and gas, vehicle and military (armoured plates) industries, as these are the industries with the highest potential demand.

Corex-Steel™ aspires to be the largest supplier of steel to the mining, oil & gas, shipping containers, construction and stainless steel industries
Products

Features

The technology of Corex-Steel™ is based on a combination of chemistry, thermo-dynamics, and metal physics concerning metal lattice structures.

**Corex-Steel™ technology is based on Corextechnology**

Corex-Steel™, by omitting quenching and without controlled rolling, have significantly higher usability strength without permanent deformation compared to conventional steels, they offer new real added-value generating benefits. Among others, for instance, in the weld able range, without quenching, the yield point is over 1000 MPa, while another type of Corex-Steel™ enables over 2000 MPa tensile strength in the non-weld able range, also without quenching.

The new types of high strength Corex-Steel™ have a fine-grained structure that they keep in the hot-forming temperature range, have a high fatigue strength level, high abrasion resistance and certain types also show well utilisable resistance to air corrosion. The inventions, compared to conventional steels, considerably increase, among others, one of the most important real utilised added-value generating properties of steels, namely the usability strength of the load-bearing capacity without permanent deformation.

These new types of high strength Corex-Steel™ cover a wide area of the steel application industry and in the long-run insure the industry’s demand for modern and profitable steel materials, as well as provide a basis for the development of new types of steels and steel products.

**The Corex-Steel™ know-how is very simple to implement and involves adding a specific chemical formula to current steelmaking processes**

The Corex-Steel™ know-how, though a huge step forward technologically, is in fact very simple to implement. The process itself involves adding a specific chemical formula to the current steelmaking process. These formulas are environmentally safe, and create different compounds that are extremely difficult to reverse engineer. Introducing this chemical formula to the steelmaking process does not require any controlled parameters or capital investment from the existing steel companies to implement. This
process for the steel manufacturer is as simple as taking Corex-Steel™ Black Box formula, and placing it into the molten steel. The chemical process that takes effect triggers a change in the steel at an atomic level. Traditionally to make higher quality steels, the steel would have to be heated, quick cooled and then heated again, a process, which is called “quenching and tempering”. This process of quenching and tempering usually creates large amounts of CO₂ emissions that have far reaching implications economically, politically, and socially for the steel manufacturers. To make the high grade steels with Corex-Steel™ know-how requires no additional quenching so one would only produce a fraction of the greenhouse gases normally associated with steel production.

The usefulness of steel depends on its quality and its properties e.g. tensile strength, yield strength at permanent deformation, ductility, fatigue strength limit, weld ability, and wear resistance, etc.

One of the most important properties of steel is the stress it can withstand without permanent deformation (0% elongation). The value of 0% elongation stress limit determines the load that can be placed on structures or structural elements made of the steel without permanent deformation.

Another important property of steel is its ductility. In general with steels, an increase in strength is accompanied by a decrease in ductility. The development of presently used steels has concentrated on developing the processing method and equipment. Use of Corex-Steel™ know-how in iron-based metals; increase the load-bearing capability of the steel, in a purely metallurgical way.

Different methods are known for improving a single property of steel for a particular final use by alloying of suitable elements, by heat treatment or controlled rolling, thermo-mechanical process, or cold forming, in accordance with the intended final use.

In addition to steel production, with the production of the new type of Corex-Steel™, the omission of quenching will result in further energy savings as well as the loss of further irreversible environment pollution.

These new types of Corex-Steel™ together are a permanent source of the enhancement of the technological, technical standard of the steel industry’s semi-finished and finished products as well as that of the decrease of the expenditure of production.

The new type of Corex-Steel™ can be produced with any of the steel-producing equipment currently available and can be hot-formed to
the required profile size and profile, can be close-formed well and do not require complicated hot-forming process under controlled parameters. For new type-high strength Corex-Steel™ production, there is no need to invest in any new manufacturing equipment.

Corex-Steel™ has already received many enquiries about its new type of steel from mining, military, construction steel and vehicle industries.

Corex-Steel™ has provided the product inside Hungary for last few years and currently uses market contacts from The Company’s previous experience and referrals. The Company embarks on numerous marketing trips throughout the year to respond to enquiries from a broad range of sectors globally.

Corex-Steel™ currently has six families of steel but are continuously developing new products to increase the value of the technology. Theoretically, one ferrite type steel lattice can have a maximum load bearing capacity of 8,000 MPa. Conventional low-grade steel has a maximum load bearing capacity of 150 MPa, current Corex-Steel™ products have approximately 2,000 MPa and are only based on the metallurgical aspects rather than using quenching or controlled hot forming or other processes. The target is to continue to develop Corex-Steel™ by increasing the load bearing capacity to over 2,000 MPa.

Not only will Corex-Steel™ provide the steels for manufacturing or the end product, The Company will also provide all technical information to enable manufacturers to design new products. The Company also offers technical support and can act as advisor to manufacturers and end users. Corex-Steel™ aims to educate the market about this new knowledge and the possibility of using its new type of high strength Corex-Steel™ for several types of end products.

Some of the funding will be used for working capital purposes. The Company has to first purchase the raw materials required to produce the steel. Payment terms for customers depend on the contract negotiations however can range from 30–90 days after the delivery of the product. The business will sometimes require 20–30% upfront payment or a letter of credit.

The price of Corex-Steel™ metallurgical products is 5–8% higher relative to conventional low grade steel but has minimum 30% higher utilised added-value and is more comparable to the price of
alloyed quenched and tempered high grade steel. Almost all of the Corex-Steel™ grades have a 30–50% margin compared to the conventional high-grade steels. Due to the lower amount of raw materials required and the energy savings in manufacturing, Corex-Steel™ is able to produce high-grade steel at an approximate 50% operating profit margin (USD 2,000 / tonne). Depending on the industry this could be upwards of 100% operating profit margin. For example, in the airline industry, one tonne of ultra high strength steel can be sold for USD 7000 / tonne versus USD 2,500 / tonne average cost to produce Corex-Steel™.

Corex-Steel™ is unique and there is no real comparable product available. There is no other steel on the market, which has a load bearing capacity of over 2,000 MPa, which is made in a purely metallurgical way, and as such, The Company has no true competitors.

AR plan is to develop a network of supply chains such that the end product is produced close to end market to minimise transportation costs. The Company will develop a system of networks to service various geographic locations, e.g. Egypt, Taiwan, India, Canada, and USA, where a nearby steel plant is used to produce the steel, which will then be manufactured in close proximity to the end user.

Corex-Steel™ products offer a maximum weight reduction of 30%, however much higher is achievable

The Corex-Steel™ technology is fully developed and fully tested for all 25 grades of Corex-Steel™. Each Corex-Steel™ product offers a maximum weight reduction of 30% but the Corex-Steel™ technology is actually capable in several types of end products of reducing weight by over 50% however this was limited, as it was perceived to be too much. There is further upside available in producing grades of steels, which offer higher percentages of weight reductions, and The Company will address this in the future.
Corex-Steel™ has usability strength of approximately 250–300% over conventional shipping container steel.

The results below show the usability strength of Corex-Steel™ compared to conventional steel used for shipping containers.

**Advantage**
Corex-Steel™ advantage compared to St 37 and St 52 grade steel for containers:

**Significant difference**
Corex-Steel™ compared to the St 52 grade steel:

<table>
<thead>
<tr>
<th>Air Corrosion Resistance</th>
<th>Weldability:</th>
<th>Weight Reduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>GIFLO D-800</td>
<td>The same</td>
<td>min.30 %</td>
</tr>
<tr>
<td>GIFLO F-800</td>
<td>Very Good Weldable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Significantly Longer Life</td>
<td>Very Good Weldable</td>
</tr>
</tbody>
</table>

Currently used: St 37, St 52 grade steels
Corex-Steel™ has usability strength of approximately 50–70% over conventional pipeline steel

The results below show the usability strength of Corex-Steel™ compared to conventional steel used for pipelines.

**Advantage**

Corex-Steel™ advantage compared to API X-60 and X-70 grade steel for pipelines:

- **Significant difference**
  - Corex-Steel™ compared to the X-70 grade steel:

  For military / defense use, ballistic results show that the use of Corex-Steel™ for armoured plates enables the plate thickness to be reduced by 50% whilst maintaining the same level of protection, according to MIL-A-4677E specification. The results below indicate Corex-Steel™ armoured plates passed ballistic tests at varying bullet velocities.

### GIFLO M-1800 grade steel ballistic test results

<table>
<thead>
<tr>
<th>Front Material Grade</th>
<th>Front Material Thickness (mm)</th>
<th>Round</th>
<th>Velocity (fps)</th>
<th>Velocity (m/s)</th>
<th>Result</th>
<th>Diameter (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>21</td>
<td>7.5</td>
<td>M10</td>
<td>2705</td>
<td>819</td>
<td>pass</td>
<td>7.62</td>
</tr>
<tr>
<td>21</td>
<td>7.5</td>
<td>M10</td>
<td>2747</td>
<td>817</td>
<td>pass</td>
<td>7.62</td>
</tr>
<tr>
<td>21</td>
<td>7.5</td>
<td>M10</td>
<td>2659</td>
<td>814</td>
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<td>21</td>
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<td>2533</td>
<td>814</td>
<td>pass</td>
<td>7.62</td>
</tr>
<tr>
<td>21</td>
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<td>M10</td>
<td>2933</td>
<td>814</td>
<td>pass</td>
<td>7.62</td>
</tr>
</tbody>
</table>
Benefits
The benefits of six families of Corex-Steel™ products are outlined below:

Corex D-Grade
High-strength weldable structural steels Corex D-Grade steels characteristically have:
• High usability strength,
• Fined grain-size,
• Good weldability,
• Favourable heat affected zones,
• High fatigue strength limits.

Corex F-Grade
High-fatigue strength limit, air corrosion resistance, weldable structural steels Corex F-Grade steels characteristically have:
• High usability strength,
• Fined grain-size,
• Good weldability,
• Favourable heat affected zones,
• High fatigue strength limits,
• Air-corrosion resistance.

Corex M-Grade
Ultra high-strength, high fatigue strength limit structural steels Corex M-Grade steels characteristically have:
• Ultra-high strength,
• High usability strength,
• High fatigue strength limits,
• High abrasion resistance,
• Fined grain-size,
• Good hot formability,
• Air-corrosion resistance.

Corex S-Grade
High-strength, good machinability machine steels Corex S-Grade steels characteristically have:
• High usability strength,
• Good machinability,
• Fined grain-size,
• Good weldability,
• Surface hardening,
• Cold formability.
**Corex U-Grade**
High-strength, good machinability, free-cutting machine steels
Corex U-Grade steels characteristically have:
• High usability strength,
• Excellent surface, easily machinable,
• Fined grain-size,
• Surface hardening.

**Corex Z-Grade**
High-strength, easy polishing, ferrite, martensite stainless steels
Corex Z-Grade steels characteristically have:
• High usability strength,
• Are easy to polish,
• Fine grain-size,
• Acid resistance, good food corrosion resistance,
• Surface hardening.

*Corex-Steel™ enables users to produce better longer-life products at a lower cost*

There is evidence to suggest that these benefits are well understood by the target end users. The technical information and test results provided to the market have been well received. Furthermore, the demand for the product has been seen though the 15 years of production experience in Hungary. All end users would like to make better products at a lower expense and with a longer life. As an example, in terms of the air corrosion resistant Corex-Steel™ products, when conventional carbon steel is used, manufacturers are required to use a thickness of the design size plus several mm to increase the rusting time of the product. With the use of Corex-Steel air corrosion resistant products, the steel is required to be used at the designed size – resulting in the ability to save weight and energy and requiring less steel to produce the product also reduces the cost of production.
Corex M-type Steels

Corex M-type steels are ultra high-strength, high fatigue strength limit structural steels, with the following properties.

<table>
<thead>
<tr>
<th>Type of steel</th>
<th>C</th>
<th>Mn</th>
<th>Si</th>
<th>P</th>
<th>S</th>
<th>Cu</th>
<th>Ni</th>
<th>Fm MPa</th>
<th>Rp0.2 MPa mln.</th>
<th>AS % mln.</th>
<th>Z % mln</th>
</tr>
</thead>
<tbody>
<tr>
<td>GIFLO M-1400</td>
<td>0.20</td>
<td>1.20</td>
<td>0.20</td>
<td>max.</td>
<td>max.</td>
<td>1.80</td>
<td>1.0</td>
<td>1300</td>
<td>1500</td>
<td>1200</td>
<td>12</td>
</tr>
<tr>
<td>GIFLO M-1600</td>
<td>0.25</td>
<td>1.20</td>
<td>0.20</td>
<td>max.</td>
<td>max.</td>
<td>1.80</td>
<td>1.0</td>
<td>1500</td>
<td>1700</td>
<td>1300</td>
<td>10</td>
</tr>
<tr>
<td>GIFLO M-1800</td>
<td>0.30</td>
<td>1.20</td>
<td>0.20</td>
<td>max.</td>
<td>max.</td>
<td>1.80</td>
<td>1.0</td>
<td>1500</td>
<td>1700</td>
<td>1300</td>
<td>10</td>
</tr>
<tr>
<td>GIFLO M-2000</td>
<td>0.40</td>
<td>1.60</td>
<td>0.20</td>
<td>max.</td>
<td>max.</td>
<td>1.80</td>
<td>1.0</td>
<td>1800</td>
<td>2100</td>
<td>1600</td>
<td>7</td>
</tr>
</tbody>
</table>

The complex properties of Corex M-type ultra-high strength structural steels can be utilised economically in the following applications, among others:

- Leaf, torsion and coil springs and stabilizer bars,
- Caterpillar tracks, bogie wheels,
- Special stress, wear resistance vehicles, structural elements,
- Sliding and cutting edges and breaking teeth of tillers, earth-moving and groundwork machines,
- Structural elements of high wear resistance mining-machines, boring rods used in mining,
- Structural elements of chain-belts,
- Crushing hammers, wrecking bars, and crusher jaws,
- Oil industrial deep borer pipes,
- Grinding hammers and cutting blades for animal feed and fodder,
- Press rolls and pelleting dies,
- Agricultural dies, plough irons, breast boards, disk,
- Cutting, blanking and cold forming tools,
- Manual cutting and breaking tools,
- Blacksmith’s trimmer and puncher dies,
- Hot forming rolls,
- Railway wheel-sets, axles, trims, monoblocks production etc.

Over the course of a 4.5 year long experimental period, Corex-Steel™ showed no sign of cracks in rail wheel-set axles compared to conventional steel that suffered cracking under the same circumstances.
Test Results

Corex-Steel™ has been used for rail applications in Hungary, mainly for rail axles and wagon parts like pins, etc. The test results below compare Corex-Steel™ produced rail axles to conventional A5 steel rail axles in a rotating-bending test and show that Corex M-2000 has very good fatigue resistance.

The Hungarian State Railways has processed four experimental axles and applied as driven wheel-set axles in a Diesel railbus-series. Over the course of a 4.5 yearlong experimental application in normal operation scheduling, the Corex-Steel™ rail axle showed no sign of cracks at critical spots. In the same railbus series, the wheel-set axles made of traditional axle-material steel (A5) having the same dimensions, suffered crack damage under the same operation scheduling conditions.

Dr Ing carried out a study on 27 July 2009 at ISF – Welding and Joining Institute, RWTH – Aachen University in Germany. Ulrich Dilthey. Dr Dilthey tested the six types Corex-Steel™:
- Weldable Construction Steels
- Air Corrosion-Resistant Steels
- High Strength Steels
- Ultra-High Strength Steels
- Stainless Steels
- Heat-Resistant Steels
A study concluded that the steels had an excellent market potential and is capable of having a lasting influence and brings about permanent change.

As a conclusion, in his professional opinion, after the various studies and tests that were carried out, the Corex-Steel™ have “by virtue of their clear demarcation from classical steels, an excellent market potential in both technical and economic terms and hence an excellent chance of establishing and maintaining a solid place for themselves in many areas of the world steel market where they will have a lasting influence and bring about a permanent change.”

The study also supported the considerable potential savings on resources and environmental friendliness due to the greater utilisation strength of Corex-Steel™.

The table below shows the benefits of using Corex-Steel™ relative to conventional steel in shipbuilding applications. If required, Corex-Steel™ is also able to manufacture with the same level of strength with air corrosion resistant properties.

<table>
<thead>
<tr>
<th>Steel grade</th>
<th>ASTM A36</th>
<th>GIIFLO D-600</th>
<th>GIIFLO D-800</th>
<th>GIIFLO D-1000</th>
<th>GIIFLO D-1200</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>max. 0.25</td>
<td>0.02-0.12</td>
<td>0.04-0.15</td>
<td>0.04-0.15</td>
<td>0.09-0.25</td>
</tr>
<tr>
<td>Mn</td>
<td>max. 1.2</td>
<td>1.25-1.60</td>
<td>1.25-1.60</td>
<td>1.25-1.60</td>
<td>1.65-2.00</td>
</tr>
<tr>
<td>Si</td>
<td>max. 0.40</td>
<td>0.30-0.70</td>
<td>0.30-0.70</td>
<td>0.30-0.70</td>
<td>0.39-0.70</td>
</tr>
<tr>
<td>P</td>
<td>max. 0.04</td>
<td>max. 0.025</td>
<td>max. 0.025</td>
<td>max. 0.025</td>
<td>max. 0.025</td>
</tr>
<tr>
<td>S</td>
<td>max. 0.05</td>
<td>max. 0.020</td>
<td>max. 0.020</td>
<td>max. 0.020</td>
<td>max. 0.020</td>
</tr>
<tr>
<td>Tensile strength Rm (Mpa):</td>
<td>600-650</td>
<td>600-650</td>
<td>750-800</td>
<td>650-1150</td>
<td>1650-1200</td>
</tr>
<tr>
<td>Yield strength Rp 0.2 (Mpa):</td>
<td>250</td>
<td>550</td>
<td>700</td>
<td>900</td>
<td>1000</td>
</tr>
<tr>
<td>Elongation A5 (%) (min.)</td>
<td>20</td>
<td>18</td>
<td>16</td>
<td>15</td>
<td>14</td>
</tr>
<tr>
<td>Effective weight savings on yield strength base</td>
<td>0%</td>
<td>33%</td>
<td>40%</td>
<td>50%</td>
<td>60%</td>
</tr>
</tbody>
</table>

Welding tests show that Corex-Steel™ has yield strength of 600 MPa compared to conventional steel with 350MPa.

Corex-Steel™ has also received industrial sheet and plate production certifications, following welding tests that were recently conducted. The test results show that Corex D-600 and Corex D-800 have yield strength of approximately 600 MPa, whilst conventional weldable structured steel has maximum yield strength of 350MPa.
**Proprietary Rights**

Though the inventors have been awarded many patents pertaining to metallurgy, the existing 25 Corex-Steel™ grades will not seek protection through the patent process due to the fact that such patents are not normally recognised, for example, in the People’s Republic of China. Also the documentation required for the patent application would provide a competitor enough information to show the direction of the development to be able to attempt to replicate the know-how. Therefore, the inventors have chosen not to file for patents, because some of the main nations that produce steel would never recognize the patent rights in their court systems and the requirements of a patent being filed produces too much information for those who would try to something similar.

*The Company will adopt a method of protection similar to the Coca-Cola brand*

While there is always the risk that any chemical formula can be stolen and duplicated, Corex-Steel™ does have safeguards in place to minimise these risks. As an intellectual property protection strategy, the inventors and owners of Corex-Steel™ will closely hold the formulas as a trade secret like a Black-Box where only a few executives (partners) will know the secret, under the inventor’s control. In addition, software containing the formulas in encrypted format will be maintained in two secure off site undisclosed locations to ensure its safety for disaster recovery purposes. This is similar to the method of protection utilised for the formula for the Coca-Cola brand beverage.

**Stage of Development**

Corex-Steel™ is currently in the early stage of its development. The technology has been fully developed and tested and is ready for commercialisation. The only obstacles, which remain following the incorporation of the JV COMPANY, include securing financing for the future development of the business and for working capital purposes. Corex-Steel™ has already received a large number of enquiries regarding its product indicating a high level of demand.

*Corex-Steel™ is ready for commercialisation.*

*The Company has held a number of advanced discussions with a number of viable prospects*
The Company is in advanced discussions with many customers across a variety of sectors and geographic locations, which are ready to be brought into production as soon as the structure and funding for the business is in place. Corex-Steel™ estimates an implementation period of six months following financing since it is using tolling steel plants to produce steel for existing customers. Below is a list of discussions/negotiations, which are considered viable prospects for The Company to commence its operations, arranged by sector:

**Transport**
- Rail wheel-sets in India – The Company is in advanced negotiations to provide rail wheel-sets in India, with a capacity of 50,000 pcs/year. For this project, Corex-Steel™ intends to build a manufacturing plant in India. The Company will have an agreement with Indian Government to purchase all products produced from the wheel-set manufacturing plant. The Indian Government is investing over USD 1 billion to support the current rail system and to build 2 new rail lines running from North to South on either side of the country. The first stage of the contract will be the provision of wheel-sets, however this is expected to expand to boogies and coaches in the future.
- Freight and passenger trains in Germany – Germany is spending EUR 500 million over next three years to increase the capacity on its passenger and freight trains only.
- Truck wheels in Hungary – Corex-Steel™ has received a preliminary order for 20,000 tonnes of steel for the manufacture of heavy truck wheels in Hungary.
- Shipping Containers – The Company has had a number of discussions relating to the use of Corex-Steel™ for ocean shipping containers but will embark on a redesign of the product in the first instance.

**Military / Defence**
- USA – Late stage negotiations with 3 major defence contractors in the US for the provision of armoured plates and other heavy vehicle parts (The total volume of steel required is over several million tonnes).
- Discussions with defence contractor located in Egypt.
- Discussions with defence contractor located in India.

**Mining**
- Canada – advanced discussions for the provision of abrasion resistant and crushing balls.
- China – early discussions.
Oil & Gas
• Canada – discussions regarding the provision of drill bits and casing pipes. Have already delivered a test shipment of drill bit material to Canada.

Forestry
• Canada – Corex-Steel™ is currently producing steel blades for wood chipping to a customer in Canada and wire ropes to bind wood products together for transportation.

Shipping
• Canada – advanced discussions regarding steel for intermediate sized vessels. Corex-Steel™ also has contact with the Navy for the provision of coast guard ships in Canada and USA.
• Vietnam – under negotiations to provide steel for dockyards and deep sea ship ports.

Infrastructure
• Pipelines in Hungary – potential to supply steel for the Nord-Stream Pipeline located in Hungary, preliminary discussions held.

Construction
• Construction Steel – preliminary negotiations to provide construction steel for the building industry in USA.
• Cement – current negotiations to produce 1000 tonne of steel for crushing balls for the South African cement industry.
• Wind – turbine power plant construction welded structure, vertical type.

Medical
Stainless Steel – for use in the food and medical industry
• Corex-Steel™ has already received an order to provide injection needles to the medical industry in Hungary and Egypt.
Market and Industry Analysis

Market Size and Growth

Historically, global steel demand has shown consistent growth over the last 10 years.
- 2008: y-o-y % growth ~ 0%
- 2009: y-o-y % growth ~ −6.12%
- 10 year CAGR ~ 5.90%
- Emerging markets have shown strong and consistent growth y-o-y throughout the past 10 years
- Developed economics have become increasingly volatile

Global steel demand has shown consistent growth over the last 10 years

Source: Worldsteel  
Source: ABARE, Worldsteel Association, JPMorgan and Ernst & Young analysis

- The market typically falls in equilibrium, whilst maintaining substantial excess capacity.
- In recent years, production has exceeded consumption substantially.
- Steady growth in production despite downturns in market demand.
Corex-Steel™ will focus on providing steel to the Military, Mining & Resource, Transportation, Stainless, and Infrastructure sectors.

### Development of the main steel using sectors - EUROFER forecast April 2012

<table>
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<th>Year 2012</th>
<th>Q1'12</th>
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<tr>
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% share in total Consumption

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<th>Q2'13</th>
<th>Q3'13</th>
<th>Q4'13</th>
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<td>6.2%</td>
<td>3.0%</td>
</tr>
</tbody>
</table>

% year-on-year

### Industry Structure

- Corex-Steel™ is in the steel-making segment of the industry with plans to acquire manufacturer in the future
- The Company plans to supply steel for the production of many different end products
Competitive Environment
As previously mentioned, Corex-Steel™ has no true competitor due to its revolutionary technology and know-how which is kept as a well-guarded trade secret. No firms can compete in terms of product or price / benefit ratio.

Corex-Steel™ has no true competitor due to its revolutionary technology and well-guarded trade secret

Furthermore, The Company will continue to develop its product offering and will continue to remain 10–20 years ahead of its competitors. This represents a special opportunity as no one is using the same type knowledge to develop steel products. The base steel industry are focussed on developing equipment to improve the steel quality, as opposed to using Corextechnology to adjust the base structure of the steel, and use lattice / atoms to improve the steel quality. Corex-Steel™ know-how is purely metallurgical and is able to use the same equipment as any other steel producer. There is also potential for further advantages if Corex-Steel™ uses the newly developed equipment as it may improve the quality of Corex-Steel™ as well, which enables Corex-Steel™ to maintain its competitive advantage and always stay ahead of competitors.

New entrants face high barriers to entry given the know-how required to produce Corex-Steel™ products. Furthermore, Corex-Steel™ has good access to distribution channels and contacts within key government agencies, especially in Hungary, India, Taiwan, USA, and Egypt.

Corex-Steel™ sets prices on a contract-to-contract basis and depends on the industry or sector that requires the product. The Company is able to charge a premium in some industries; however, prices are normally comparable to conventional steel products or slightly lower enabling customers to enjoy the benefits of Corex-Steel™ without the higher price, especially for high grade Corex-Steel™. Corex-Steel™ is able to keep prices comparable to conventional steel products as The Company enjoys lower production costs and therefore higher profit margins relative to its competitors. Premium pricing can apply when a products lifetime is increased by 20–30% through the use of Corex-Steel™. For examples, in the mining industry there is a lot of added value when there are less production stoppages due to equipment maintenance and repairs. In the case of a steel-crushing ball used to crush iron ore or cement, the actual crushing ball is relatively inexpensive but
the cost of stopping production to replace the crushing ball is high. With the use of Corex-Steel™, the lifetime of the crushing ball is increased which enables the user to improve productivity and reduce the number of stoppages.

There are additional benefits for The Company when using its own Corex-Steel™ scrap in the steel making process. Not only is this environmentally friendly by recycling and reducing the amount of alloying material required, the Corex-Steel™ scrap retains the key elements and therefore there is no need to add it again.

**Competition**

Corex-Steel™ has no competitors who use the same theory to produce steel. There is some competition in the low grade segment however they’re pricing and costs are higher as they need to use equipment to improve the quality of the steel. These competitors need to use more energy at a higher cost to reach the same properties as Corex-Steel™ can achieve very easily, therefore Corex-Steel™ has a large competitive advantage.

**Opportunity**

The unique benefits of Corex-Steel™ and its trade secret technology represent a very attractive opportunity for The Company.

The unique benefits of Corex-Steel™ and its trade secret technology represent a very attractive opportunity for The Company. There is a proven and compelling need for the product, as it is stronger and lighter than conventional steel, which creates energy savings, and follow on environmental benefits. There is a proven market as Corex-Steel™ has been operating in Hungary for many years, is proven and The Company has already received numerous enquiries about their product. There is a clear competitive advantage as no other company can replicate or match the benefits in which the Corex-Steel™ products offer.
Marketing Plan

Target Market Strategy

The marketing plan is to go directly to the end users. The steel producers will fulfill the production and manufacturers are instruments to deliver the final end product to end-users. Corex-Steel™ will continue to demonstrate the benefits of its products to the end user market. This strategy makes a lot of sense as a large proportion of the benefits of Corex-Steel™ are focused on the end user.

The Company plans market directly to the end users

The customers who are being targeted to launch the Corex-Steel™ products are determined by sector. The difference between the sectors is in the specific form of metallurgical end product required. Some industries require steel in sheets, plates or long products, etc. The form in which the steel is required determines which steel producers are used to service the needs of each particular end user. Corex-Steel™ plans to focus initially on the following industries:

- Mining / Oil & Gas – the provision of mining equipment, grinders, drill bits, casing pipe
- Shipping Containers – including redesign
- Pipelines – producing pipelines that are approved by API (American Petrol Institute)
- Shipping – for ship and vessel building.
- Construction Steel – rebar for building structures. Corex-Steel™ will enable the structures to be heat resistant to up to 600 degrees Celsius, which will increase evacuation times
- Transport – railway wheel-sets in India, heavy truck, and automobile wheels in Hungary
- Military (Defence) – armoured plates. The use of Corex-Steel™ will enable up to 50% reduction in thickness however offer the same level of protection

The Company is targeting the end user market first as it is not difficult to find a steel producer who makes the required form of steel. Therefore the plan is to sign the end user customer first, before finding a steel producer who can fit that purpose within close proximity so as to minimise transportation costs. Furthermore, The Company does not anticipate difficulties in finding spare capacity at the steel producers as it is estimated that there is 1.5 billion tonnes of average capacity available at any one time. Many steel producers will have 3–4 times the capacity required as their own orders will only require approximately one third of the installed capacity. They
will therefore be very willing to lease the spare capacity at their plant to Corex-Steel™.

It is however important to differentiate between low and high-grade steel producers. The grade of the steel produced also depends on the capabilities within the steel producer. Corex-Steel™ is able to provide training at the selected steel producer to ensure the produced steel is to specification.

Positioning
Given the unique and new type of steel, which The Company brings to the market, the product will be positioned in its own segment. Any other products cannot replicate the benefits that the product brings to end-users. As such, the product will be positioned as a premium product however the price will be comparable to conventional steel products in most instances. There are some industries where the product will be priced at a premium to its competitors, depending on the extent to which the product life is extended by the use of Corex-Steel™.

*Corex-Steel™ will be positioned in its own segment given its uniqueness and lack of competitors*

Pricing Strategy
Two basic pricing strategies will be implemented; one tailored specifically towards the high grade steel users such as the military. Such pricing will be done on a project-by-project basis so as to guarantee the profitability of each design Corex-Steel™ are involved with.

*Pricing will be determined on a project by project basis or will be generally comparable to conventional steel prices*

The second general pricing strategy will be to determine the basic price for all grades of Corex-Steel™ metallurgical end product for different shape and form. The Company will compare the price to the currently used steels for metallurgical end products with same shape and form. Corex-Steel™ will charge the same price for the Corex-Steel™ metallurgical end product as is charged for the currently used steels. Based on this price and the redesigned end products, once it reaches the end user The Company will provide a minimum of 30% in weight savings.
Sales Strategy

Corex-Steel™ will employ a two-pronged sales strategy:

• Replace the original steel without product redesign – customers will be advantaged as production costs are lower compared to the use of conventional steel. Corex-Steel™ will charge the same price as conventional steel or 1-5% lower and still maintain its high profit margin. This pricing strategy will be used mainly for medium and high grade of Corex-Steel™.

• Provide redesigned product where the new product has higher performance properties when using Corex-Steel™ – the cost to manufacture the product is lower compared to conventional steel however Corex-Steel™ will be able to charge a premium per tonne of steel as the product requires minimum 30% less material.

The Company will employ a two-pronged sales strategy: replacing the original steel only or providing product redesign

Corex-Steel™ plans to hire a sales and marketing team to lead the sales charge. It will hire highly educated sales people with specific end user industry knowledge; it is not a requirement for the sales person to have knowledge of the steel industry. The sales team will use marketing and help The Company expand into new markets covering a diverse range of sectors and geographies.

Corex-Steel™ currently does not actively market its product and relies mainly on word of mouth and referrals. As it is already experiencing high levels of demand for its product, one can only imagine what is achievable with a fully-fledged sales and marketing team in place.
Operations Plan

Operations Strategy

Corex-Steel™ basic implementation strategy will be to target the end users. The Company’s plan will involve the current approach of producing specialty steels (lightweight, high-strength, stronger than current steels) for specialty end users such as the, railroads and mining industries etc. The implementation plan will involve building strategic connections with several steel manufacturers in various locations around the globe (e.g. North America, Brazil, India and Europe) to be used as a manufacturing base in that region. This segment of the plan is the most important to fulfill end user’s product orders. These strategies will have a specific implementation initiative and plan and The Company will work closely with specific industry consultants to exceed these initiatives.

Corex-Steel™ will utilise existing steel producers and manufacturers in a variety of locations, close to the end user

The Company has begun implementing this operations strategy and has signed a Co-operation Frame Agreement with a steel producer located in Cairo, Egypt. The steel producer does not have access to the Corex-Steel™ know-how however its facilities are being used to produce Corex-Steel™ to fulfil customer orders or to produce test products. The Egyptian and Hungarian governments back the agreement, which offers Corex-Steel™ full protection. The agreement is ongoing however Corex-Steel™ has paused production in Egypt until the situation of political unrest has settled.

Corex-Steel™ is looking to make similar agreements with similar steel producers around the world, and has already commenced discussions, thereby creating a network of steel product manufacturing globally and within close proximity to all end user markets. Similarly, Corex-Steel™ currently has an agreement with a steel plant located in Taiwan to produce Corex-Steel™ for the Far East market.

The Company requires financing to fund future steel production, testing, and product development. All end users need to be able to
try the steel before signing an agreement for large amounts of production, so Corex-Steel™ needs to make steel for test purposes. The future operations plan will extend to potentially acquiring the steel manufacturers and producers to fully control the entire supply chain. This is a part of The Company’s future aspirations however the current focus is on targeting the end users.

As described the short-term operations plan involves targeting the end users, which can commence straight away due to the advanced discussions and negotiations that have taken place with future customers. The Company feels that this can commence immediately following the implementation of the JV structure and rising of funds.

**The medium term plan is to focus on product redesign, starting with shipping containers**

The medium term plan is to expand its focus to the redesign products using Corex-Steel™ products as the products. The first industry in which The Company will focus on is shipping containers. Current shipping containers are prone to rust, are heavy, costly to transport back to its origin and can often only be used once. With the use of the Corex-Steel™ products that are resistant to air corrosion, container ships will be lighter and therefore will save energy when transported, rust resistant and able to bear a heavier load for a longer period of time as compared with current shipping containers. The Company envisages that the process to redesign shipping containers will only take a few months with the benefits to follow shortly afterwards. This is especially timely with the current state of the container shipping industry, companies will welcome the cost and energy savings benefits brought by Corex-Steel™ manufactured and redesigned shipping containers.

The long-term operations plan involves targeting the airline and other special industries. Steel supply contracts to the airline industry are normally valid for 20 years or so, equally, once Corex-Steel™ has secured the supply contract to the airline industry, it will be a long term supply contract which locks in revenues for 20 years.

In addition, there is option to sell the licence to the technology in the future; however, The Company is only interested in selling the licence for Corex-Steel™ if customer orders exceed far beyond the level in which The Company can sensibly manage.
Scope of Operations

Corex-Steel™ currently does not own any of the operations in which it uses to produce steel and steel products. Corex-Steel™ uses steel producers and manufacturers on a lease basis but may consider acquiring certain steel producers and manufacturers at a later date. The current scope of operations is:

- Steel and steel product production.
- Product development – for testing and development (end product made by Corex-Steel™).
- Order fulfillment.
- Customer service and technology support.
- Warehouse and shipping – Corex-Steel™ currently owns a warehouse located in Miskolc, Hungary, to store products and inventory for testing. In the future The Company would like to build a warehouse to store Corex-Steel™ in several forms and grades to enable The Company to fulfill orders very quickly and therefore increase profits by charging a premium for the speed in which the product is available.
- Product shipping.
- Warranty service and repairs – all contracts include a product warranty. Depending on the industry and the product the warranty period can range from 6 months (e.g. the mining industry) or up to five years (the rail industry).
- Product Follow-ups – Corex-Steel™ has a policy of following the product and making regular checks to ensure the stated quality and benefits are maintained.
- Staff training at selected steel producers and manufacturers.
Ongoing Operations

Corex-Steel™ intends to maintain the current operations plan with the exception of potentially acquiring steel producers and manufacturers at a later date.

The Company intends to acquire a steel producer or manufacturer at a later date

It is anticipated that the personnel requirements to produce and deliver the product will depend on the production quantity, however, it is initially estimated that 5 engineers will be able to manage up to 1 million tonnes of steel production capacity. The Company will be established with 12 people with a view to add sales, marketing, accounting functions.

The diagrams below outline the steel making process:
Development Plan

Development Strategy

The Company considers the following items key factors to the success of the business:

• Protecting the intellectual property and trade secrets of the 25 types of Corex-Steel™ that currently exist.
• Working closely with specific end users in various previously identified industries.
• Partnering with an organisation that has established distribution channels in the steel, military, shipping and automotive industries, high performance industries etc.
• Alliances with organisations in various locations around the world who can assist the implementation of Corex-Steel™ to their regional steel industries.
• Training engineering personnel to fully understand how to use Corex-Steel™ for end product.
• Lobby political groups and specific politicians in areas that have been impacted negatively by currently perceived failures in the steel industry. This lobbying could lead to the potential reopening of closed plants that could be operated by Corex-Steel™ with major tax and lease incentives so that The Company may provide an employment base in these economically devastated areas.
• Identifying and utilizing industry experts.
• Expanding the current relationships with many firms so that Corex-Steel™ is not used only in their manufacturing but other projects, which can be used as a springboard to entrench Corex-Steel™ products in the worldwide mainstream steel industry.
• Continued product and process development.
• Raising the required funding to operate and further develop the business.
Management Plan

Company Organisation

A Board of Directors will run the Company with an equal number of representatives from both Corex-Steel™ and AR. The preliminary organisation structure is as follows:

The founders and principal managers of Corex-Steel™ are Henrik Giflo Snr and Henrik Giflo Jnr, who will maintain significant involvement in the operations and future development of the business and Corex-Steel™ products.

- Henrik Giflo, Snr is an inventor, holder of eight international patents for new steel technologies, and recognized thought leader in Metallurgical Sciences field with a career spanning over 50 years. He has served as a metallurgical consultant in the former Soviet Union, Italy, Switzerland, France, Great Britain, Romania, Hungary, and the Middle East, regarding high yield strength and high tensile strength steels. He was making discoveries and innovations in Corex technology in the early 1980s before the phrase was ever coined or anyone else knew what Corex technology was. He remains actively involved in Metallurgical research and development on a full-time basis. Mr. Giflo holds Engineering, Economics, and Metallurgical Degrees from the Miskolc Heavy Industrial University.
- Henrik Giflo, Jr. is a Metallurgical Engineer, holder of international patents, inventor and innovator, with over thirty years experience in the field of developing proprietary methods of creating high usability strength steels. He has worked in steel industries in production, in metallurgy R&D and development of dozens of steels which are higher strength and lighter than any steel
available in the world today. He has served as a metallurgical consultant in Switzerland, Great Britain, Romania, and Hungary. He has perfected the chemical formulas and processes needed to affect the steel lattice and the atomic level, and produce metals, which reach the highest usability strengths for steels, without the quenching process, which requires large amounts of energy and releases massive amounts of CO₂ into the atmosphere. He is a graduate of the Miskolc Heavy Industrial University’s Metallurgical Engineering program.

Financial Plan

Operating Costs and Profit Comparison

Direct Costs
The direct costs below show the profit margin for the production of steel only. It does not include the profit margin for the manufacturing of steel products, which can be many times larger.

The Company will enjoy a healthy profit margin in steel production. The profit margin for the manufacture of steel products can be many times larger

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<th>Grade of Corex-Steel™</th>
<th>Material cost (USD/tonne steel)</th>
<th>Selling price (USD/tonne steel)</th>
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Profit Comparison
Steel mills can experience gains of approximately 280% when producing a product using Corex-Steel™ relative to conventional steel. End users can achieve cost savings of approximately 70%

The profit comparison table below demonstrates the potential gains to be made by producing a product using Corex-Steel™ relative to conventional steel. For a steel mill, gains of approximately 280% can be experienced based on value and approximately 480% on a per tonne basis.

At the same time, end users can achieve cost savings of approximately 70% due to less steel required to make the same end product when Corex-Steel™ is used in place of conventional steel.

![Profit Comparison Table]
Disclaimer

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