# Product Applications

Ambature has created a core set of IP around superconductive materials and related sets of IP for approximately 22 families of technical implementations of the core IP for specific product applications, each individually addressing multi-billion dollar markets. These families of product applications implementations include:

| **Product Applications** | **Description** |
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| Actuators | Actuators may potentially benefit from the efficiency, smaller size and lighter weight made possible through the use of Ambature’s patented ELR materials.  |
| Antennas | Antennas formed from Ambature’s modified ELR materials may help to reduce loss resistance and allow for smaller, more efficient antennas.  |
| Batteries | Batteries utilizing Ambature’s patented ELR material may permit battery manufactures to significantly reduce size and weight, as well as decrease resistive losses. |
| Bearing Assemblies | Using Ambature’s patented technology, it may be possible to levitate a rotor with respect a bearing in order to eliminate friction. |
| Capacitors | The efficiency, capacity, and rate of discharge of capacitors has the potential to be greatly increased through the use of Ambature’s superconducting materials. |
| Energy Storage Devices | Ambature’s patented technology can potentially help to make alternative energy sources more practical, as lossless or largely lossless energy storage is possible through superconducting currents.  |
| Fault Current Limiters (“FCLs”) | FCLs built with Ambature’s superconducting technology may have much faster reaction times and can potentially help to significantly reduce damage to the electrical grid. |
| Inductors | Ambature’s ELR materials may be used to create much more efficient inductors with air or metal cores to significantly reduce core losses, particularly at high frequencies. |
| Integrated Circuits | Ambature’s ELR materials may help to reduce latency and maximize the performance of integrated circuits within the speed of light, helping to increase computing power. |
| Interconnects for System in Package (“SIPs”) | A significant limiter in microprocessor speed is the resistance of interconnects.  Interconnects formed from Ambature’s ELR materials may increase microprocessor performance by up to five times while reducing power by up to 60%. |
| Interconnects for Microelectromechanical Systems (“MEMS”) | Through the use of Ambature’s ELR materials, the sensitivity of MEMS devices could be increased by 100 times, while power consumption of such devices may be reduced by up to 4 times. |
| Interconnects for RF Circuits | Use of interconnects formed from Ambature’s ELR materials may permit an RF antenna to be located in isolated locations without incurring the penalty of interconnect resistance, thereby potentially yielding higher Q capability with fewer active circuits and smaller semiconductor footprints.   |
| JJs | Ambature’s IP describes new ways of creating JJs in which the barrier separating superconductors could vary from as thin as 30 Angstroms to as thick as several microns, potentially allowing for more applications for the technology. |
| Medical Devices | Ambature’s ELR materials can be utilized in medical devices to potentially improve existing imaging technologies by making them more sensitive and much smaller. |
| Nanowires | Ambature’s patent portfolio describes how ELR material can be formed into nanowires that can be as thin as 40 nanometers, for use in quantum computing and integrated circuits in general. |
| Power Transmission Components | By utilizing Ambature’s patented ELR materials, power transmission wires and cables can potentially transmit, carry and transport power from one location to another with reduced resistive losses. |
| Superconducting Quantum Interface Components (“SQUID”) | Ambature’s IP describes a SQUID fabricated from ELR material, which may greatly increase sharpness and sensitivity. |
| Rotating Machines | Ambature’s patent portfolio describes how ELR materials can be used in the creation of coils for superconducting based rotating machines, resulting in potential efficiency improvements and smaller and lighter machines. |
| Sensors | Sensors can possibly be made using Ambature’s superconductive materials that are orders of magnitude more sensitive than conventional sensors. Superconductivity reduces noise, and thus the signal to noise ratio, enabling far greater sensitivity. |
| Transformers | Transformers utilizing inductor coils formed of modified, apertured and other new ELR films and materials, as described in Ambature’s patent portfolio, could potentially overcome most problems of existing transformers and thereby potentially approach that of an ideal transformer with close to 99% efficiency. |
| Transistors | ELR and captured ELR materials can potentially be used with semiconductors to create transistors that perform faster and more reliably than conventional transistors, and may require fewer components.  |
| Superconductive Powders | Composites of powder and resins that may produce the Meissner effect and other superconductive properties.  |