Application Solutions

Soft Starters
Motor Protection
Control & Measurement
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**Cooperation**

![The Manufacturing Plant](image)

Soft-Starting AC Motors is what we do best.
Soft starters for the Power & Utility Company

Driving water pumps
Motor ratings: 4160V, 800A, 5MW
Empresa Generadora de Electricidad Haina SA

At the Dominican Republic, the power utility expansion was inevitable. The consulting engineers situated in Texas were looking for a heavy duty, ready for operation in harsh conditions of high temperature of 50°C, humid and salty environment, having the latest pump control features.

The ultimate solution was provided with the HRVS-DN, solcons’ high-end medium voltage soft-starter.

The HRVS-DN eliminates the mechanical shock as well as apply intricate pump-control software to eliminate the damaging effect of water hammer thus, protect water pipes, joints, check valves and other elements, while the built in Motor Protection package is providing comprehensive protection to both the motor and the soft-starter.

4.5MW at 4160V (800A) x 2 HRVS-DN for water pump at Electricidad Haina SA, Santo Domingo.
Soft starters for the Gold Mining Industry

Driving water pumps
1200 and 2100 meters below ground
Harmony Gold Mine, South Africa

The harsh environmental conditions and the high inrush current, directed the engineers at the Harmony Gold Mine towards a soft starting solution. When it came about to choose the correct soft-starter for a 2100 meters below ground level, the ultimate choice was Solcons’ HRVS-DN. Since the power grid was unstable, it was very important to eliminate the high inrush current and start-up torque on every start, and to ensure the ability to soft-stop these pumps to eliminate damaging water hammer that threatens the pipe joints and valves with every stop. Solcon soft-starters not only soft-start and soft-stop, but also provide start and stop curves that increase the life expectancy of both, the pumps and the piping infrastructure. The built in Motor Protection system and the additional motor protection relay provided comprehensive protection to both, the motor and the soft-starter.

4 x 6.6KV / 1.5MW at 2100 and 1200 meters underground

Soft-Starting AC Motors is what we do best.
Soft starters for Water Desalination

Driving water pumps  
Motor ratings: 6600V, 400A  
Desalination Plant, Ashkelon

The new desalination plant has six enormous pumps of over 3MW each, driving high pressure sea-water through its filtering system on its route to become drinking water.

The soft-starting process must be smooth and stepless due to the sensitive piping system involved in desalinating water.

The HRVS-DN medium voltage digital soft-starter, has a smooth and stepless acceleration and deceleration characteristics, thus, eliminating any excessive starting torque, pressure surges or hammer effect which can damage the piping system.

HRVS-DN 6600V / 250A x 6 desalination pumps
Soft starters for Industrial Applications

Air Compressor
Motor ratings: 3.3kV, 450A
Qantas, Australia

Jet engines must be tested in an air speed simulator, simulating high air pressure. The compressors used to increase pressure in the testing chamber for this application are of high quality and require a large amount of power, particularly on startup. Dealing with the high inrush current leading to site wide voltage drops typical of the largest of the compressors is Solcon's specialty. Solcon's world wide, long standing reputation for quality solutions in soft starting motors of all types made the Solcon HRVS-DN the only reliable choice for this application.

The Solcon HRVS-DN is the only choice for the largest of the air compressors
Soft starters for Mining Applications

Driving Critical Ventilation fan with MV Soft- Starter
Motor ratings: 6600V, 1MW
Kahama Gold Mine, Tanzania

Considered to be Tanzania’s largest underground mining investment, Vector Drive Contracting of Canada specified Solcons’ medium voltage soft-starters for the fresh air ventilation fans of this massive underground mining venture, employing close to 1000 people. Starting these four 1MW fans with the 6.6KV, 300A soft-starter not only eliminates the high inrush current that would disrupt the power grid on every start, but allows for constant monitoring of the fan’s “vital signs” to equip technicians with immediate access to vital information on possible malfunctions thanks to Solcon’s advanced Motor Protection system.

“All in One” version, including:
✓ Mains Switch
✓ Fuses
✓ Motor Protection Relay and Digital Power Meter.

One of the 3m diameter mine exhaust fans

Mobile electric room for exhaust fans.
The City of Monterrey is situated 2000 meters above sea level. Supplying water to the city requires many booster pumps operating randomly to keep the water pressure at a suitable level. It was very important to eliminate the high inrush current and start-up torque on every start, and to ensure the ability to *soft-stop* these pumps to eliminate damaging water hammer that threatens the pipe joints, valves, and instruments with every stop. Solcon soft-starters not only *soft-start* and *soft-stop*, but also provide start and stop curves that increase the life of both the pumps and the piping infrastructure. The built in Motor Protection system and the additional motor protection relay provides comprehensive protection to both, the motor and the soft-starter.
The bourgeoning city of Izmit was presented with the challenge of increasing water supply to the city for its growing populace. The plan called for adding 5 new medium voltage pumps to an existing pumping station only 11 meters wide.

Solcon's world renowned reputation for reliability and innovation was called upon to supply a complete and unique, "turn key solution" for this installation. Solcon solved the problem by incorporating withdrawable fusible vacuum contactor with the Solcon soft starter in each cabinet to allow for 5 pump control cabinets with power factor capacitor cabinets to be installed in only 9.7 meters instead of the standard 13-15 meters normally required.

Solcon innovation: Unique custom design for soft starting 5 medium voltage motors with limited space constraints.

Solcon soft starters reduce the input current, eliminating voltage drop on start up, while reducing harmful water hammer on motor stopping.
Soft starters for Mining Applications

Driving 4 Synchronous Slurry Pump Motors
Motor ratings: 6600V, 600A
Norilsk, Russia

The Solcon Soft-starter with its multistart application was the ideal solution for this application. The HRVS-DN line-up is built in a Multi-Start arrangement, starting each of the 4 synchronous Slurry Pump (Iron Ore Sludge) motors sequentially. One soft-starter for four motors saves precious space, engineering, construction, and installation costs.

One Multi-Start Solcon HRVS-DN starting 4 synchronous motors at 6600V / 600A – Cost effective with low spatial overhead

Soft-Starting AC Motors is what we do best.
Soft starters for Industrial Applications

Eliminating belt slippage
Motor ratings: 3kV, 320A
Incitec Pivot, Australia

The process producing fertilizer requires an array of heavy machinery, including the massive Hygiene Scrubber Blower shown below. This machine uses a medium voltage motor to turn a blower using a series of drive belts. The high start up torque of this motor would cause the drive belts to slip, causing undue wear on the whole system. The Solcon HRVS-DN soft starter for medium voltage motors enables the engineer to regulate the inrush current on startup, allowing the motor to slowly transfer the power to the blower via the drive belts, ensuring that all the power is efficiently used to start the blower turning with no slipping.

The Hygiene Scrubber Blower employed by Incitec Pivot uses the Solcon HRVS-DN soft starter to prevent drive belt slippage.
Soft starters for the Diamond Mining Industry

Driving conveyor in the world 4th largest
Diamond mining plant, Catoca, Angola
Motor ratings: 6600V, 140A
Catoca, Angola

When Diamond plant engineers in Angola needed to soft-start their main conveyors while reducing the current inrush, they contacted Solcon. The motor inrush current had to be limited since the plant is situated in a remote location and could not sustain the voltage drop subdued to the current inrush.

Implementing Solcon’s HRVS-DN digital soft-starters, with specialized starting curves, eliminated the high inrush current that would disrupt the already unstable power grid, and reduce the high starting torque that could have damaged the conveyor belt and would have shorten the life expectancy of the system.

The built in intelligent Motor Protection Package provides enhanced supervision for both the motor and soft-starter, further extending the life expectancy of the system.

Soft-Starting AC Motors is what we do best.
The city of Rosh Pina depends on subterranean aquifers for fresh water. Raising water from these aquifers deep below the earth’s surface requires the intervention of massive pumps driven by medium voltage motors totaling thousands of horsepower.

Solcon soft-starters, with specialized starting curves, eliminate the high inrush current that would disrupt the power grid, and the high starting torque that would shorten the life expectancy of pipes, valves and fittings. Destructive water hammer is eliminated by Solcon’s specialized pump control stop curves, ensuring fewer maintenance costs. The built in intelligent Motor Protection Package provides enhanced supervision for both the motor and soft-starter, further lengthening the useful life of the system.
In order to transport gas through a pipeline, it first must be liquefied.

At the Edson gas plant, the gas is pumped from underground, re-liquefied, and than transported via underground pipes to a distribution station. Due to the harsh environmental conditions, the consulting engineering prescribed the usage of soft-starters. Since solcon is worldly renown for its operation in harsh environmental conditions, the HRVS-DN was the ultimate choice for operating the gas pump. Nightly temperatures at the Edson plant could easily reach -40°C between November and March.

The soft starters, rated at 900 HP, reduce high inrush current on starting that could otherwise create system wide voltage drops until the motor revs up to speed.

Solcon’s state of the art digital technology keeps operators aware of motor and soft starter’s state, ensuring long term reliability at radical weather conditions, while the incorporated protection package provides safe operating boundaries.
Soft starters for
the Fertilizers and Chemical Industry

Driving Fan
Motor ratings: 3300V, 80A
Rotem Fertilizer Plant – Rotem Plateau

This industrial blower, drawing 1MW of power, keeps the process furnace hot. The fan was initially designed with a damper over the intake for start up. Starting the fan without a damper draws very high current at 3.3KV. When the damper malfunctioned and was no longer serviceable, the starting inrush current was so high that one of the motor’s rotor bars would crack every few months. For a fraction of the damper repair and downtime cost they installed Solcons’ HRVS-DN soft-starter which would not only eliminate the high inrush current without using the damper, but the mechanical system would benefit from many advanced features that combine to extend the life of the motor and all its peripherals. Over a decade has passed since the HRVS-DN was installed and the system has been operating flawlessly. The comprehensive Motor Protection system built into the soft-starter ensured that such damaging situations in the future would be identified and the proper pre-emptive action taken before any motor damage would occur.

Industrial Blower:
3.3 KV, 80A, 1 MW

MV Soft-Starter,
HRVS-DN 3300V-80A

Soft-Starting AC Motors is what we do best.
Soft starters for the Steel Industry

3 Fan Multi-start
Motor ratings: 10000V, 167A
Cherepovetz Russia- Severstahl Steel factory

Ventilation fans are vital to the operation of a steel factory. When the process is vital, engineers rely on the long term reliability and high standards of Solcon. The Solcon Soft-starter with its multi-start application was the ideal solution for this application. The HRVS-DN line-up is built in a Multi-Start arrangement, starting each of the 3 synchronous motors sequentially. One soft-starter for three motors saves precious space, engineering, construction, and installation costs.

Motor: Synchronous, 1000 RPM, 10KV, 167A, 2500KW.

MV Soft-Starter,
HRVS-DN 10KV-240A

Ventilation fans of the Severstahl Steel factory in Cherepovetz Russia, powered by 3 motors soft started by one Solcon Multi-start HRVS-DN soft-starter.

Soft-Starting AC Motors is what we do best.
Soft starters for the Water Industry

Driving 4 water pumps
Motor ratings: 4160V, 330A
Codelco Norte, Open copper plant, Chile

This copper mine is situated 3000 meters above sea level in the Calama desert. Supplying water in general and to this altitude in particular requires powerful pumping capability, derating multipliers, and the advanced soft-starting ability of Solcon with a reputation for high quality and long term reliability.

For this built-into-container application, Solcon supplied the HRVS-DN in an IP44 enclosure, and type tested the unit to the BIL60KV standards. The special 4160V construction by Solcon, was derated to withstand the creepage distances applied at this altitude. The starter was then stiffened according to the requirements in the UBC 3&4, and is ready for installation in seismic zone 3&4. The incorporated Motor Protection monitors the motor for signs of malfunction and communicates any anomalies through Profibus communication. Not only does the Solcon soft-starter eliminate the high inrush current and pressure surges on every start, but also has the ability to soft-stop these pumps, eliminating damaging water hammer that threatens the pipe joints, valves, and instruments.

Codelco Norte plant, Calama Desert, Chile

4 x 4.16KV, 400A
All in one solution, incorporating a load make fault break switch disconnector, earthing bar, fuse base, fuses, line and bypass contactors, profibus communications.

Soft-Starting AC Motors is what we do best.
The Blue Marlin, refurbished by HHI (Hyundai Heavy Industries), was designed to carry heavy loads such as drilling rigs and other static floating objects. The ship is equipped with 3 generators, rated at 3655KW, 6600V, 400A and 2 retractable thrusters rated at 4500KW, 6600V, 486A. The large power rating of the thrusters and the relationship between the 3 generators and the motor power required that special attention be paid to starting-current and voltage-drop issues.

Some of the critical requirements were:

a. Limiting the starting current and consequently the voltage drop to acceptable levels.
b. Enabling thruster starting when two of the three generators are running.

After comparing the various starting methods available such as auto-transformer starter, electronic soft starter and variable frequency drive, it was concluded that a medium voltage soft starter would offer the optimum solution both technically and economically.

Two HRVS-DN soft-starters were installed. Starting current is 360% of In and starting time is 12 Sec. Voltage drop when starting the thruster with only two generators running is less than 5%.
It is not surprising to find that the world's largest passenger ship is equipped with Solcon's soft starter for the 5MW bow thruster. The engineers designing the Royal Caribbean knew to depend on Solcon's long term reliability for supplying this important device. Passenger vessels spend a lot of time maneuvering at dock while simultaneously ensuring passenger comfort. The high inrush current associated with motor starting would require oversized generating capabilities. When the marine architects and engineers were designing the Royal Caribbean Genesis class passenger vessels, they turned to Solcon for the most dependable soft-starter available to ensure continuous performance under intensive and adverse conditions of constant vibrations, temperature variations and corrosive environmental conditions.

Soft-starters on the bow thrusters eliminate the initial torque surge on the shaft, the voltage drop associated with starting large motors and reduce wear and tear from the mechanical system.
Soft starters for Marine Applications

River dredging
Motor ratings: 4160V, 110A
Alabama, USA

Solcon HRVS-DN "All in One"
stainless steel Medium Voltage digital soft starter

Dredging a river is usually done far from a stiff electrical grid. The hydraulic system operating the dredging arm on this barge is designed to withstand the rigors of dredging under the most severe conditions. In some instances, the distance from the power supply is such that starting the hydraulic motor can cause damage even to a robustly designed hydraulic system due to high inrush currents that create voltage drops greatly exacerbated by long supply cables feeding the barge in the river. Solcon soft-starters eliminate the high inrush current, voltage drop and mechanical shock that would otherwise damage the system. Marine engineers know to depend on Solcon when high quality and long term reliability in adverse conditions are essential.

Dredging isolated locations demand the reliability of Solcon soft starters

Soft-Starting AC Motors is what we do best.
Soft starters for the Offshore Oil & Gas Industry

Driving seawater injection pumps, gas compressor etc.
Motor ratings: 6600-11000V, 80-400A
FPSO- Berge Helene

The Chinguetti oil field, off the west coast of Mauritania, will be developed by the converted tanker ship Berge Helene (owner: Bergessen Offshore). The gas compressors, seawater injection pumps, hot oil and emergency fire pumps will be soft started by Solcon’s HRVS-DN Medium Voltage Soft-Starters. This will ensure motor startup while eliminating high inrush current and damaging torque surge on start up.

- 3 x 11kV 400A gas injection compressors
- 2 x 11kV 300A water injection pumps
- 1 x 6.6 kV 80A hot oil pumps
- 1 x 6.6 kV 80A emergency fire pump

The Solcon Motor Protection package built in to each HRVS-DN starter ensures that above and beyond the advantages of a soft start, the motor is protected from a wide variety of damaging circumstances.
Soft starters for the Offshore Oil & Gas Industry

Driving seawater injection pumps, gas compressor etc.
Motor ratings: 6600V, 400A
FPSO- Fluminense

Off the coast of Brazil the FPSO Fluminense is developing the Bijupira oil field. Engineers designing the project and supplying the motors for the pumps knew to call on the vast experience and reliability of Solcon when designing applications such as this where artificial lift is required to raise the reservoir fluids and gas to the surface for processing. Reservoir pressure is maintained by the high-pressure injection of seawater using heavy duty MV motor driven pumps. Solcon was called upon to soft-start these seven 6.6KV motors. Solcon soft-starters eliminate the high inrush electric current that would otherwise interfere with the FPSO electrical system and the damaging mechanical torque that would otherwise jolt the motor shaft on every start.

Electrical contracting by Siemens
7 Medium voltage Soft-Starters:
• 3 x 6.6KV, 400A Soft Starters for gas injection compressors
• 3 x 6.6KV, 400A Soft Starters for sea water injection pumps
• 1 x 6.6KV, 400A Soft Starter for emergency fire pump

Soft-Starting AC Motors is what we do best.
Soft starters for the Oil & Gas Industry

Driving Centrifugal Booster Gas Compressors
Motor ratings: 11000V, 232A, 3.8MW
Mumbai South Platform, India

160Km off the coast of Bombay the Oil & Natural Gas Corporation of India is developing the Mumbai oil field. Engineers designing the project called on Solcon to soft-start these four 11KV 3.8MW motors powering Centrifugal Booster Gas Compressors. The motors drive the compressors through a gear unit allowing the compressors to turn at 9300 RPM. Solcon soft-starters eliminate the high mechanical starting torque that would otherwise jar the motor shaft and gear unit and also eliminates the high inrush electric current that would otherwise interfere with the electrical distribution system.

Motor: TEMIC (Toshiba & Mitsubishi) 11,000V, 232A, 3.8MW, 1480RPM, 50Hz
Load: Centrifugal Booster Gas Compressor driven by 6:1 gear unit. Compressor speed is 9300RPM

Soft-Starting AC Motors is what we do best.
Soft starters for the Oil & Gas Industry

Driving Crude Oil Pumps
Motor ratings: 2300-3300V, 160A,
North Sea, UNOCAL Helder-A Platform, Nederland

HRVS-DN, 2.3-3.3KV/160A

Of the coast of the Nederland in the cold water of the North Sea "UNOCAL 76" is pumping crude oil via 9 MV pumps (6 equipped with HRVS-DN mini height soft-starter).
The design engineers wanted to save the overworked pumps from excessive torque surges and the ideal solution for the 900 meters below sea bed pumps was Solcon Soft-starter. The first was installed and operated in 1997, and the sixth during 2005.
Solcon soft-starters eliminate the high mechanical torque surge that would otherwise damage the motor shaft and eliminates the high inrush current as well as being able to fit 1.5 meter and dual voltage operation, all in a delivery time of 5 days.

'Helder A’ Platform, North Sea, six units are installed and operating
Customer: UNOCAL 76 (United Oil of California)
Special requirements: Dual voltage at 2.3 & 3.3KV and Max. cabinet height - 1.5 meter
Unsurpassed delivery time of: 5 days

Soft-Starting AC Motors is what we do best.
Soft starters for the Offshore Oil & Gas Industry

Driving produced-water injection pumps
Motor ratings: 6600V, 1.8 MW
FPSO- Petrojarl 1

The Glitne oil field, in the Norwegian sector of the North Sea, is being developed by the Floating Production Storing and Offloading vessel designed by Golar Nor and built by NKK shipyards. (owner: Statoil).

The water injection pump is soft started by the HRVS-DN. Utilizing a current limiting curve at 1.8MW/6600V, the soft starter eliminates high current inrush and consequential voltage drop while starting the pump.

The enhanced Motor Protection package built into each HRVS-DN soft-starter ensures that above and beyond the elimination of high inrush current, mechanical torque and pressure surges, the motor and soft-starter will be protected from a wide variety of possible failures, such as shear-pin, under voltage and ground fault to name just a few.

Petrojarl I-FPSO designed by Golar Nor, built at NKK Shipyard

Soft-Starting AC Motors is what we do best.
Soft starters for the Oil & Gas Industry

Driving seawater injection pumps
Motor ratings: 11000V, 118A
FPSO- Santos, Australia

SIEMENS Motor 11KV, 118A
2600HP  3577 RPM,
Driving a Water Injection Pump

Extruding crude oil from under the ocean floor requires the pumping of vast amounts of seawater into the cavity under the ocean floor in order to create pressure to force the crude out and up towards the ocean’s surface. Thousands of horsepower are used for this type of application. The seawater injection pump is powered by the SIEMENS 11kV, 118A, 2600HP. Solcon’s expertise in producing highly reliable soft-starters is called upon to ensure a smooth step-less start while eliminating high inrush current and damaging torque surge during start up. The Motor Protection package built in to each HRVS-DN starter ensures that above and beyond the advantages of a soft start, the motor is protected from a wide variety of damaging circumstances.

Santos Modec Venture 11 in the Mutineer Exeteer field

Solcon’s HRVS-DN, 11KV
With an MPR-6/DGF

Soft-Starting AC Motors is what we do best.
Soft starters for the Offshore Oil & Gas Industry

Driving produced-water injection pumps
Motor ratings: 11000V, 300A
FPSO- PGS-Petrojarl II Foinhaven

The long time success of the Pertojarl I equipped with the Solcon soft-starter has spun off a new sister ship- the PGS Foinhaven. This FPSO is also being equipped with the HRVS-DN soft starter to drive the water injection pumps used to re-inject crude laden produced-water into the reservoir minimizing the environmental impact of the pumping process.

The produced-water injection pump is soft started by the HRVS-DN. Utilizing a current limiting curve at 300A/11000V, the soft starter eliminates high current inrush and consequential voltage drop allowing for ship wide voltage stability while starting the pump.

The Solcon Motor Protection package built in to each HRVS-DN soft-starter ensures that above and beyond the elimination of high inrush current, mechanical torque and pressure surges, the motor will be protected from shear-pin, under voltage and ground fault to name just a few.
Aker Floating Production ASA was contracted to operate the FPSO Aker Smart1 for the purpose of running an oil and gas field off the coast of India. The contractor turned to Solcon for the most dependable soft-starting solution available to ensure continuous performance under intensive and adverse conditions of constant vibrations, temperature variations and corrosive environmental conditions, eliminating the current inrush that causes severe voltage drops. The choice of Solcon soft starters for motors allows engineers to design with smaller generating capacity, since the inrush current is eliminated, reducing the total necessary installed capacity. Using Solcon soft starters to start and stop pumps earns acclaim coming and going, reducing the high inrush current on starting and eliminating harmful water hammer on stopping.
SBM commissioned the FPSO Kuito, named after the oil field it is to work some 50 miles of the coast of Angola. The contractor turned to Solcon for the most dependable soft-starting solution available to ensure continuous performance under intensive and adverse conditions of constant vibrations, temperature variations and corrosive environmental conditions, eliminating the current inrush that causes severe voltage drops. The choice of Solcon soft starters for motors allows engineers to design with smaller generating capacity, since the inrush current is eliminated, reducing the total necessary installed capacity.
Soft starters for the Offshore Oil & Gas Industry

Floating crane
Motor ratings: 6.0kV, 250A
Multi-Start- soft starting 3 thrusters

The 711 Institute of Shanghai was contracted by the Shanghai Salvage Bureau of the Ministry of Communication of the Peoples Republic of China to build a floating crane. With 3 medium voltage thrusters to start during complex operations, the contractor turned to Solcon for the most dependable soft-starting solution available to ensure continuous performance under intensive and adverse conditions of constant vibrations, temperature variations and corrosive environmental conditions, eliminating the current inrush that causes severe voltage drops.

The choice of Solcon soft starters for motors allows engineers to design with smaller generating capacity, since the inrush current is eliminated thereby reducing the necessary total installed power.

Soft-Starting AC Motors is what we do best.
Soft starters for the Offshore Oil & Gas Industry

Floating crane
Motor ratings: 6.3kV, 250A
Multi-Start-soft starting 2 thrusters

The Shanghai Zhenhua Port Machinery co. was contracted by the Shanghai Salvage Bureau of the Ministry of Communication of the Peoples Republic of China to build a floating crane. With 2 medium voltage thrusters to start during complex operations, the contractor turned to Solcon for the most dependable soft-starting solution available to ensure continuous performance under intensive and adverse conditions of constant vibrations, temperature variations and corrosive environmental conditions, eliminating the current inrush that causes severe voltage drops.

The choice of Solcon soft starters for motors allows engineers to design with smaller generating capacity, since the inrush current is eliminated thereby reducing the necessary total installed power.

Soft-Starting AC Motors is what we do best.
Drilling for oil is a rugged undertaking at the best of times; it is safe to say then, that drilling for oil on the ocean floor is a most unforgiving undertaking.

When the Theis company of Germany undertook to build a subsea drilling submersible crawler powered by an hydraulic power pack, they knew to call on Solcon for a solution to the problems inherent in starting motors due to high inrush current.

The relatively small scale electrical distribution system typical on board any ship combined with the long power lines energizing the subsea crawler in this application would create unforgiving voltage drops if Solcon soft starters were not installed to smoothly transform power the hydraulic pump.
Soft starters for the LNG Industry

Driving 8 cargo pumps and 2 chilling compressors
Motor ratings: 6600V, 2x105A & 8x52A
LNG – northwest Swan

Solcon’s HRVS-DN, 6.6KV, 105A & 4x52A in a multi-start configuration

The long time success of the multi-start design solution on board LNG carriers brought Samsung Heavy industries to continue their successful design. The Northwest Swan is equipped with the same multi-start design as all other SHI LNG carriers.

Cargo pumps circulate Liquid Natural Gas at -170°C. When starting, the initial friction at such temperatures cause hazardous starting conditions. The four cargo pumps are soft started by the HRVS-DN, thus, eliminating high inrush current and torque surge.

Utilizing a dual-adjust curve, the chiller compressor uses the same soft-starters' current limiting curve, to eliminate its high inrush current and the consequential voltage drop, thus, providing ship wide voltage stability.

The Motor Protection package built into the HRVS-DN ensures that beyond the elimination of high inrush current, mechanical torque and pressure surges, the motor will be protected from numerous failures such as shear-pin, under voltage and ground fault to name just a few.

Northwest Swan equipped with 2x6.6KV HRVS-DN soft-starter in a redundant multi-start configuration.

Soft-Starting AC Motors is what we do best.
Soft starters for Chiller Applications

Driving Trane air conditioning chiller
Motor ratings: 3.3KV 800KW
Nillit-nylon yarn, Israel

HRVS-DN 3.3KV 150A

Air-conditioning chillers require as long as 20 seconds to reach operating speed and nominal current. During this time, current draw can be 6 times the nominal current.

Nillit, a factory producing the world’s thinnest nylon yarn, requires massive cooling capacity. For this purpose 3 Medium Voltage 800KW Trane chillers were installed. Solcon soft starters were chosen to start these motors to eliminate the high inrush current, such that no detrimental voltage drop would be felt in the factory.

Solcon’s state of the art digital technology keeps operators aware of motor and soft starter’s state, ensuring long term reliability, and comprehensive motor protection.

Solcon soft starts 3 of these CVHE-W-8A 800KW Trane chillers

Soft-Starting AC Motors is what we do best.
In order to transport gas through a pipeline, the gas must first be liquefied in a process similar to that used by air conditioning compressors. The ChangQing Oil Pipeline Company liquefies the gas at its HuiAnPu oil transportation station using 4 Medium Voltage compressors soft started by Solcon’s HRVS-DN.

These soft starters, rated for 900-1250 KW, reduce high inrush current on starting that would otherwise create system-wide voltage drops until the motor revs up to speed.

Solcon’s state of the art digital technology keeps operators aware of motor and soft starter’s state, ensuring long term efficiency, and comprehensive motor protection.
In order to transport gas through a pipeline, the gas must first be liquefied in a process similar to that used by air conditioning compressors. The Kopalnia Nafty Gazu Pjnig Company liquefies the gas at its Barnowko oil transportation station using 2 Medium Voltage compressors soft started by Solcon’s HRVS-DN.

These 2 soft starters rated for 250A at 6KV, reduce high inrush current on starting that would otherwise create system wide voltage drops while the compressor revs up to speed.

Solcon’s state of the art digital technology soft starters allows for integral Motor Protection, ensuring that above and beyond the advantages of a soft start, the motor is protected from a wide variety of damaging faults such as phase loss, overload, under current, too many starts and voltage discrepancies to name just a few.

Operated by “Kopalnia Nafty Gazu Pjnig”. City of Barnowko, Poland.
GEC ALSTHOM motor driving Gas Compressors,
2 x 6000V, 250A, 3000RPM

Soft-Starting AC Motors is what we do best.