



Australia & New Zealand Green Star building certification program. (And how Javac can assist in controlling air conditioning equipment emissions)

WHILE THE AUSTRALIAN GREEN STAR building program is well under way, it will not be long before the New Zealand version starts to increase the influence on our designers and architects with environmentally challenging ways to preserve the planet. The following information has been prepared for the Australian market but is equally important to the New Zealand market and the refrigerant recovery product information discussed is available now from Javac New Zealand.

We are aware of just how important it is to recover refrigerant gases to help save our environment. JAVAC are known for environmentally sustainable products and have recently developed and released more products to assist in recovering refrigerants in buildings.

WHAT IS GREEN STAR CERTIFICATION?

The Green Building Council of Australia (GBCA) is a government endorsed initiative established in 2002. Created to develop a sustainable property industry in Australia, striving to drive the adoption of green building practices through market-based solutions.

The Green Star initiative - promoted and supported by GBCA - endorses sustainability within the commercial building industry through design, technology and operations. They also promote the integration of these "green" practices into mainstream design and construction.

WHY CHOOSE GREEN STAR?

If businesses choose to follow the Green Star certification they can benefit not just by being environmentally sound, but can also reap many other benefits in both the long and short term. Companies can enjoy such benefits as:

- Lower operation costs
- Reduction of carbon footprint
- Reduction of liability and risk
- Enhanced marketability through;
- Higher return on investment
- Increased tenant rental
- Healthier working and living environment
- Increased productivity

The long term benefits clearly outweigh the initial cost, which can be quite conservative after consulting with JAVAC's engineers to choose a product best suited to your building requirements.

WHAT ARE THE GREEN STAR CATEGORIES?

The Green Star initiative has nine categories in which the design and construction of a building can be assessed. Each Green Star category will earn the building "credits" towards certification. There are multiple levels of certification, giving the building owner and designer flexibility to earn credits under various categories towards certification. The categories defined by Green Star are as follows.

- Management
- Indoor Environment quality
- Energy
- Transport

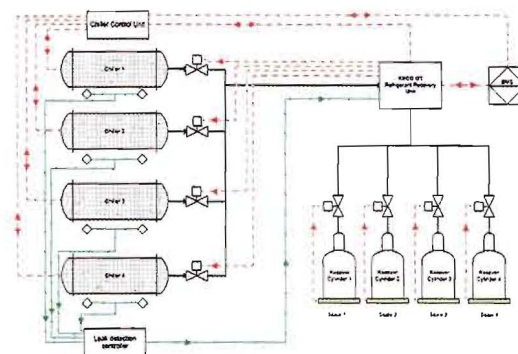
- Water
- Materials
- Land Use & Ecology
- Emissions
- Innovation

The latest Green Star Emi3 and Emi4 stipulates the use of building leak detection and refrigerant recovery in order to achieve one to two Green Star credits. As the leading manufacturer of refrigerant recovery equipment, JAVAC can help you achieve multiple credits for your green building certification with ease. Following the 1990 Montreal Protocol to reduce ozone depletion, JAVAC, a ISO:9001 quality endorsed company introduced the RECO range of Refrigerant, Recovery and Charging Equipment. Today JAVAC are Australia's leading manufacturer of refrigerant recovery machines. JAVAC have developed an automatic refrigerant recovery system which adheres to and exceeds Green Star compliance regulations for Refrigerant Leak Detection and Automatic Refrigerant Recovery. The JAVAC Reco GT has been specifically developed and designed to recover both liquid and vapour refrigerant from Chiller systems and transfer the refrigerant to suitable tanks, preventing loss into the atmosphere.

Just some of the advantages of implementing such a system include:

- Competitive system costs
- Retrofit able to existing systems
- Recovery of refrigerant that could have potentially been lost
- Ability to reuse recovered refrigerant
- Ability to earn Emi Green Star building credits
- Australian designed and manufactured
- Reduces carbon footprint

A typical plant layout designed to automatically recover refrigerant in the event of a refrigerant leak and shut down the plant is illustrated in Fig 1.



The Reco GT is an industry leading refrigerant recovery system specifically designed and manufactured to satisfy green building codes in multiple countries. JAVAC's Research and Development engineers worked closely with leading HVAC/R industry leaders, manufacturers and installers to determine the most appropriate and cost effective



solution to achieving an environmentally sound leak detection and recovery system. The Reco GT recovery system - designed and built by JAVAC - adheres to multiple environmental building codes in many countries, including Australia, New Zealand and the United Kingdom, to name a few. Currently the Reco GT adheres to the Green Building Council's "Green Star" leak detection and recovery requirements, able to earn the building Green Star credits in these areas of building design and functionality. The Reco GT can be fully customised. We consider multiple facets of your project during the design process including layout, air circulation, number of chillers, leakage sensitivity, refrigerant charge and blend; the list goes on.

In order to satisfy the "Green Star" emi3 rating completely, JAVAC offer a package system which includes three main components. These modules are; leak detection system, Reco GT recovery unit and refrigerant storage vessel with scales. Below we outline just some of the features offered in this package

Recovery System

- Capable of recovering up to 400kg of R134a per hour
- Suitable for a range of systems including; air conditioning and commercial refrigeration
- Suitable for plant room environment
- Suitable for most refrigerants in the CFC, HFC and HCFC families
- Integrated PLC can be customised to specifications
- Internal liquid/vapour pumps for recovery
- Integrated oil separator system
- 240 volt single phase power
- Standard output for BMS operation
- Refrigerant recharge module
- Designed specifically for Green Star building projects

Options

- Visual warning lights and audible alarm
- Multiple trigger inputs including; HP/LP gas leak and liquid level alarm
- Refrigerant tanks cleaned and dehydrated
- Leak detection sensors; infra red or heated diode

Leak Detection

- Integrated automatic heated diode
- Option of infra red leak detection
- Various sensor parameters
- Calibrated to specific refrigerant requirements
- Additional leak detection modules can be retrofitted

Scales

- Steel platform weighing scales
- Four (4) sensor points to accurately weigh refrigerants recovered to cylinders
- Capable of weighing up to 3 tonnes
- Easy to read LED display

BASIC MODES OF OPERATION

Automatic:

In the event that a gas leak detection system or fuzzy logic code in the chiller PLC detects a possible leak in progress, a signal will be sent

to the Reco GT, then a signal in the form of a dry contact closure will be sent to the chiller PLC. Once the chiller has readied itself for refrigerant recovery it sends a signal back confirming that refrigerant recovery may proceed. The Reco GT will allow refrigerant to flow from the chiller to the refrigerant storage vessels for one minute before its pumping unit begins. The Reco GT will recover the refrigerant until a nominal pressure of 25kPa is achieved. This value may be altered, however it is desirable to keep this pressure above 0kPa as air may be recovered which is undesirable.

The Reco GT will remain active until it is reset or switched off. This strategy has been chosen in the event liquid refrigerant remains "trapped" in the chiller unit after the Reco GT has recovered to a nominal pressure of 25kPa. At this pressure any liquid R134a is likely to be at -22° Celsius. It may be some time before its temperature/pressure increases and therefore the Reco GT will remain active.

Please note: The activation signal may come from any source. The HVAC architects, along with the Building Management System engineers will ultimately decide which configuration best suits their needs.

Manual:

Same as Automatic operation, except the start is initiated by a user at the control panel on the Reco GT.

Monitoring of Refrigerant

Integral to this system is the measurement of reclaimed refrigerant. Each reclaim cylinder has a measuring scale so the reclaimed refrigerant can be logged and the loss of refrigerant calculated.

On the charging cycle this system accurately measures the charge into the chiller allowing for any initial refrigerant loss to be added and logged.

Javac Reco GT Fig 2

