

# ATL

*Take Control of your Helium Supply*



*The next generation  
of helium recycling*

## Helium – A Limited and Costly Resource

Cryogenic researchers and technicians around the world know that helium is an essential element in the operation of low-temperature instrumentation such as nuclear magnetic resonance (NMR) spectrometers, magnetic resonance imaging (MRI) scanners, magnetoencephalography (MEG) scanners, and other assorted research cryostats.

Although abundant in the observable universe, helium is relatively rare on earth. As a precious natural resource, it is non-regenerative, difficult to produce, and currently experiencing diminishing reserves. Once helium molecules escape into our atmosphere as gas they are gone forever.

Global increased demand for helium in recent years has led to frequent price jumps and supply shortages. Motivated by a potential lack of helium availability in the future, many researchers and laboratories are making helium independence a top priority in their facilities planning. Helium recycling systems ensure the stability of cryogenic operations and further the global goal of preserving the supply of helium for future cryogenic instrumentation.



## Next Generation Helium Liquefaction

Recent advancements in helium liquefaction technology allowed the development of a new type of compact liquefier, which provides an ideal solution for smaller cryogenic research labs and MRI/MEG medical facilities. Quantum Design's portable helium liquefiers utilize advanced cryo-cooler technology to reach a liquefaction rate of up to 30 Liters/Day with a power consumption of only 7 kW.

Next generation helium liquefiers are characterized by being smaller and much easier to operate, with little or no previous experience in using liquid cryogenics needed. Quantum Design's liquefiers and helium recycling systems have many of their functions completely automated, with all components fully integrated into self-monitoring systems.

Gone are the days when you would need dedicated staff to operate and maintain large helium recovery plants. Quantum Design's new advanced technology liquefiers and helium recycling systems are small, easy-to-use, portable and intuitively designed and operated. The ATL product line is a perfect helium recycling solution for labs and medical facilities large and small.



# Advanced Technology Liquefiers

## ATL80 & ATL160

Quantum Design's Advanced Technology Liquefiers were developed for use by general users, with friendly, touch-screen user interfaces and remote access available over the internet. Unlike other industrial liquefiers, the ATL's small, portable size is doorway and ramp friendly.



### ATL160

- **Average Liquefaction Rate:**  
22 - 27 liters/day (0.92 - 1.13 liters/hr)\*
- **Dewar Capacity:** 160 liters
- **System Dimensions (L x W x H):**  
104 x 76 x 153 cm (liquefier without compressor)
- **Available Compressor Types:**  
Split Air-Cooled or Water-Cooled
- **Typical Power Consumption and Voltage Range:**  
6.5 - 7.5 kW; High & Low Voltage Available
- **Gaseous Helium Requirement:**  
Flow Rate: 0 - 25 SLPM (0 - 0.88 SCFM);  
Industrial Quality He (99.999%); 0-10 psi
- **Fully Automated Touch Panel Control**

### ATL160+

- **30 liters/day** (1.25 liters/hr)\*
- **Perfect for labs needing frequent transfers**
- **Same small footprint as the standard ATL160 model**



### ATL80

- **Average Liquefaction Rate:**  
12 - 18 liters/day (0.50 - 0.75 liters/hr)\*
- **Dewar Capacity:** 80 liters
- **System Dimensions (L x W x H):**  
152 x 74 x 155 cm
- **Available Compressor Type:** Air-Cooled
- **Typical Power Consumption and Voltage Range:**  
3.8 - 5.4 kW; High & Low Voltage Available
- **Gaseous Helium Requirement:**  
Flow Rate: 0 - 25 SLPM (0 - 0.88 SCFM);  
Industrial Quality He (99.999%); 0-10 psi
- **Fully Automated Touch Panel Control**

\* Liquefaction rates vary based on transfer frequency, input helium quality and pressure.

## The Advanced Technology Purifier (ATP30)

When it comes to helium liquefaction, purity is key. In addition to providing better quality helium for optimum performance of your cryogenic instrument, higher purity helium also leads to more efficient liquefaction rates. The ATP30 is the world's first cryo-cooled low pressure helium purifier. It provides a helium gas stream with 5 ppm purity for optimal liquefaction performance and long term operation.



### Advantages of Quantum Design's ATP30 helium purifier:

- Purifies 30 liters of helium gas per minute\*
- Purifies helium gas to 99.9995% (better than UHP)
- Fail Safe Operation – Stops operation before "dirty" gas passes through system
- Full regeneration of system only takes 8 hours (with no filters or cartridges to replace)\*
- Regeneration easily accomplished through automated software
- Ensures highest liquefaction rates possible
- Virtually eliminates contamination causing blocked impedences

### ATP30

#### • System Dimensions (L x W x H):

78 x 70 x 160 cm (purifier without compressor)

#### • Available Compressor Types:

Split Air-Cooled or Water-Cooled

#### • Typical Power Consumption and Voltage Range:

5.0 kW; High & Low Voltage Available

*\* Purifier operation varies based on input helium quality.*

## Ease of Use

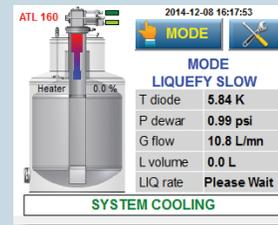
Quantum Design's Advanced Technology Liquefiers and purifiers were developed for general users with no prior experience in handling liquid cryogenics. All operations are fully automated and functions are easily accessed using an intuitive graphic user interface (GUI).



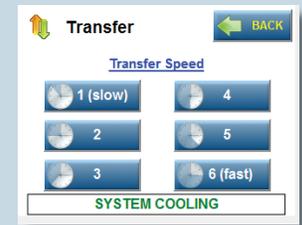
Mode Screen



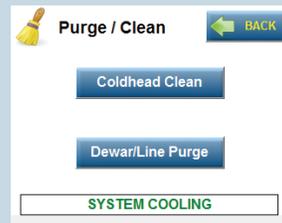
Liquefaction Screen



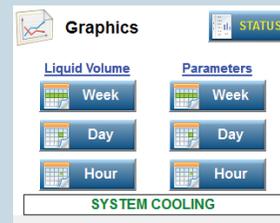
Liquefaction Status



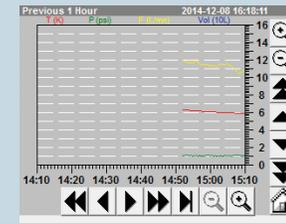
Transfer Screen



Purge Screen  
(Contamination clean)



Report Screen



Sample of operation reporting

## ATL Helium Recycling Systems – Automation, Integration & Connectivity

Quantum Design's ATL Helium Recycling Systems can be configured for laboratories and scanning rooms large and small, and for any number of cryogenic instruments. All recycling systems have fully integrated components with most functions being automated or very easily operated. Fail-safe protections are built into every stage of our recycling systems so that in the occurrence of an accident, the rest of the recycling system and your cryogenic instruments are protected from damage or contamination.

A variety of configurable recovery systems are available to suit recovery goals large and small.

Recycling systems can be used with a wide range of cryogenic instruments including MRI, MEG, NMR and other assorted cryostats. Custom fittings and connections are available for a wide range of instruments to allow for seamless integration into your laboratory or scanning center.

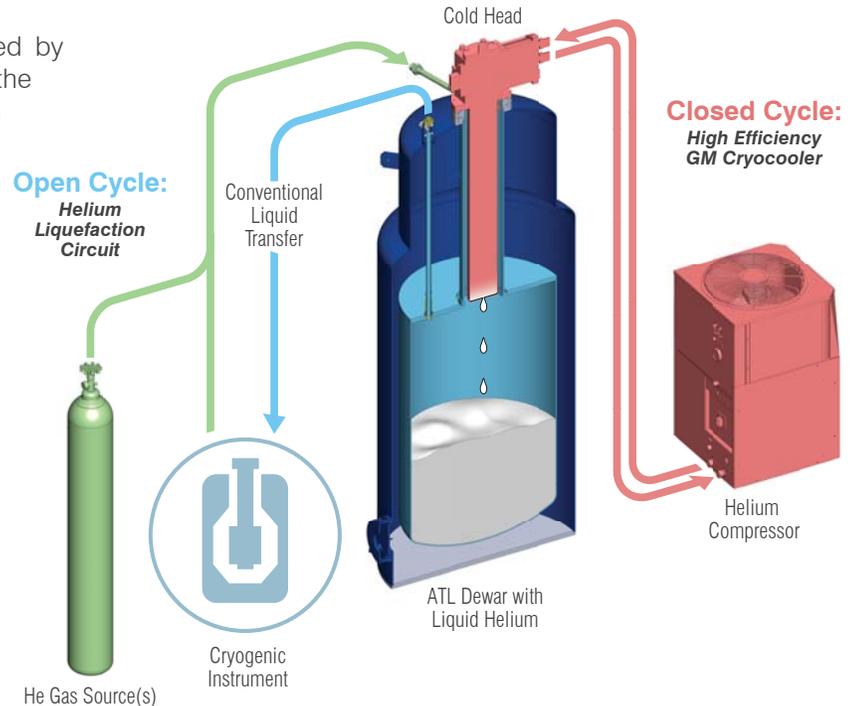
In addition, all systems and functions can be operated and monitored remotely through the web browser of your computer, tablet or smart phone.



## Helium Recycling Systems – Direct Recycling

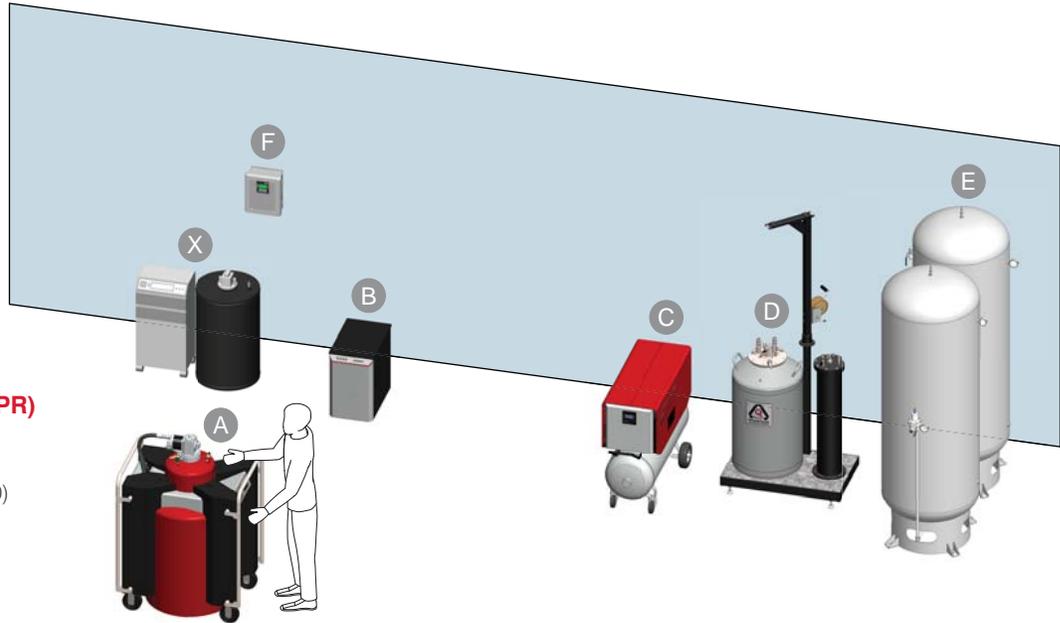
Quantum Design's Direct Recycling System is meant to serve single cryogenic instruments where space, convenience and limited expense are top concerns. Although transfer boil off of helium cannot be captured by this system, nearly all of the normal boil off from your cryogenic instrument can be recovered and recycled.

The working principle of the ATL is characterized by two cycles. The first "Closed Cycle," formed by the cold head and compressor, removes heat from the helium gas space and continues to cool the gas until precipitation and liquefaction take place. The second "Open Cycle," sends pure helium gas (either from user instruments or gas cylinders) to flow through the ATL dewar where it is turned into liquid helium which is then transferred back to user cryostats.



# Helium Recycling Systems – Medium Pressure Recycling

Quantum Design's Medium Pressure Recycling System is perfect for small laboratories requiring one or two ATs. It is also appropriate for laboratories with space limitations or restricted access to nearby outside areas. This system will capture most of the helium normally lost through daily and transfer boil off. In addition, this system is easy to install with no additional facilities plumbing required.

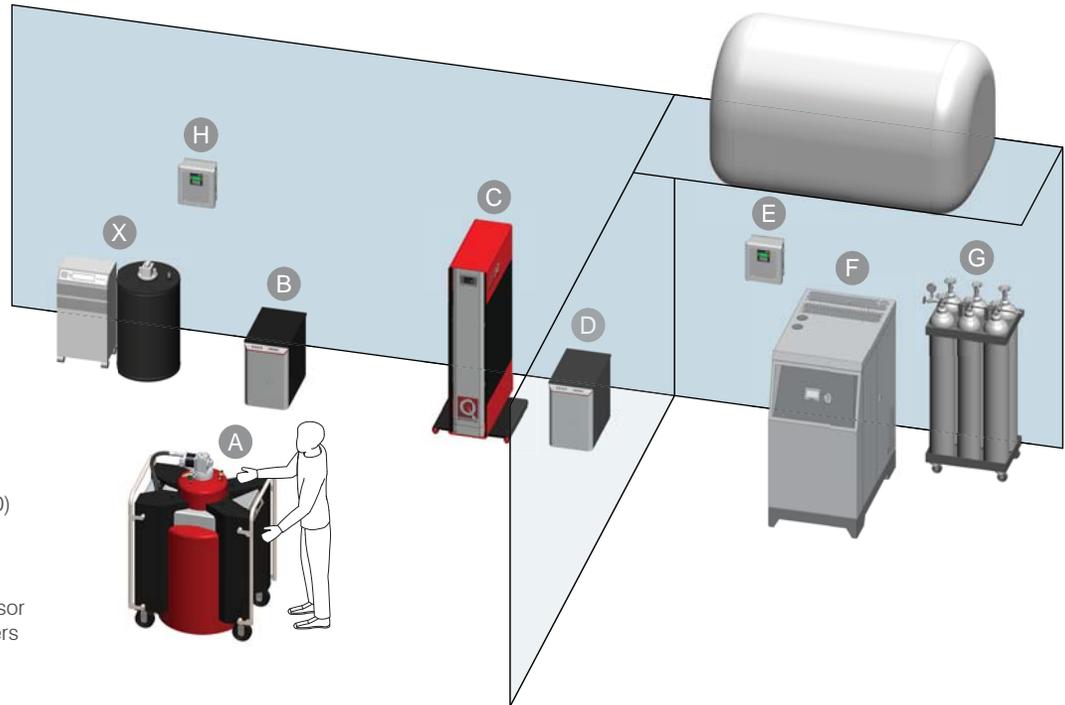


## Medium Pressure Recovery (MPR)

- A – Base ATL160 (or ATL80) Liquefier
- B – Compressor for ATL160  
(compressor integrated with ATL80)
- C – AT Recovery Hub – MP
- D – LN2 Helium Purifier
- E – Medium Pressure Storage Tank  
(900 liters)
- F – Back Pressure Controller
- X – Customer Instrument

## Helium Recycling Systems – High Pressure Recycling

Quantum Design's High Pressure Recycling System can be scaled for any size laboratory, or facilities where cryogenic instruments are located in distant rooms or buildings. The high pressure storage capability provided by helium cylinders also provides high capacity storage of recycled helium. This system will capture most of the helium normally lost through daily and transfer boil off.



### High Pressure Recovery (HPR)

- A – Base ATL160 (or ATL80) Liquefier
- B – Compressor for ATL160  
(compressor integrated with ATL80)
- C – ATP30 Purifier
- D – Compressor for ATP30 Purifier
- E – Helium Gas Bag and Controller
- F – High Pressure Recovery Compressor
- G – High Pressure Helium Gas Cylinders
- H – Back Pressure Controller
- X – Customer Instrument

# The Quantum Design Advantage

## ***A History of Cryogenic Research***

When you choose a liquefier or full recycling system from Quantum Design, you are gaining more than just a product. You are gaining 30+ years of experience in cryogenic innovation. Being a world leader in cryogenic instruments allows Quantum Design to know exactly what is needed when applying the science of helium recovery to a variety of cryostats. Our expertise in scientific instrumentation, along with a proven history of problem solving for scientific and industrial researchers around the world, provide a solid foundation for solving your low-temperature instrumentation needs.

## ***We're There, Where You Are – Global, Local Service Support***

With offices and representatives located in technology centers around the world, Quantum Design is able to offer an international network of local offices ready to assist you with sales and service support.

## ***When you choose Quantum Design technology, you also receive:***

- Guaranteed Reliability
- Global Service and Technical Support
- Full Range of Helium Recycling Options
- Ideal Combination of Automation and User Control
- Award Winning Design

Product developed in collaboration with:



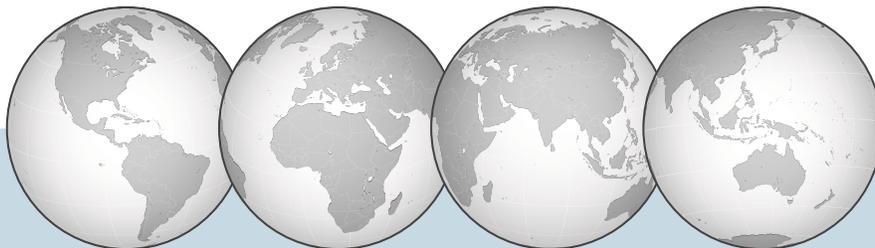
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# Quantum Design offers worldwide service and sales support

*“We’re there, where you are”*



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