AIR FUTURE GROUP

ENERGY | TRANSPORT | STORAGE | INNOVATION

1 October 2019

AIR FUTURE GROUP

(In conjunction with MDI)

Compressed Air Home Energy Storage Project

(Demonstration of the MDI AirWall Unit)

- Manufactured within Australasian regional micro factories -

- The Project -

This project seeks to present and to demonstrate the MDI compressed air distributed energy storage product the AirWall. It seeks to use the home electricity environment to demonstrate both the technology and the economical scale benefits of the AirWall, not only in today's home storage circumstances but for those of the future including community virtual power plans, remote, and industry applications.

Rather than simply demonstrating we seek to establish a working team between third party field engineering related to local industry and system integration; MDI engineering related to technology, product, capability and future; and AFG to establish the markets, the channels, and the manufacture.

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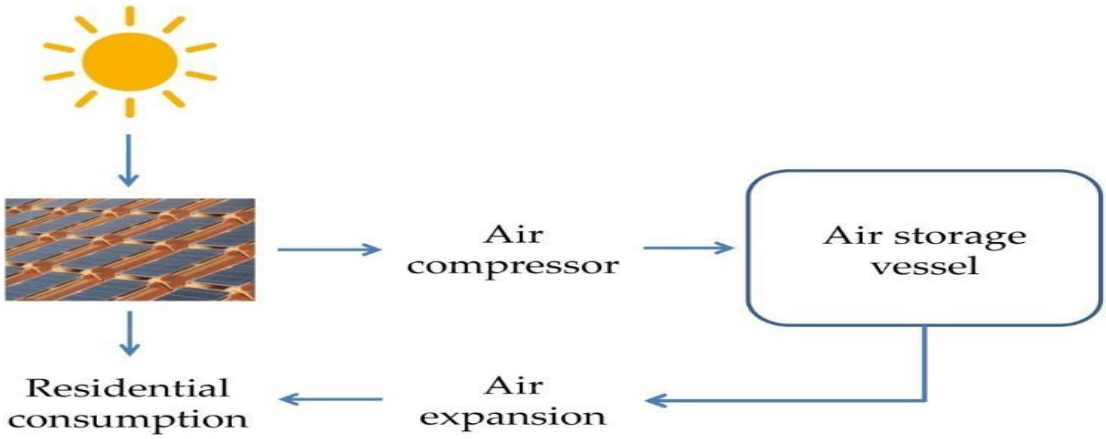
The simple concept below was converted by MDI in two decades into a potential world leading energy storage source plus vehicles; competing in affordability, economic scale, clean footprint, and user benefits, with the legacy chemical storage that has so far limited uptake globally. This project seeks to demonstrate the benefits and the markets, including manufacture within the local regions.



References:

- Air Future Group Business - Introduction
- Air Future Group Business - Overview
- Air Future Group - Website: www.airfuture.com.au
- MDI - Website: www.mdi.lu

INTRODUCTION

Who we are…

Air Future Group: Air Future Group (AFG) is an Australian private company with subsidiary operating companies in distributed energy Air To Energy (ATE) and in clean transport Air Volution Limited (AVL). AFG group has exclusive licences for Australasia for local turnkey manufacture and to market MDI compressed air products.

MDI technology partner: MDI based in France is a world leader in having developed patented compressed air distributed energy storage and clean light weight vehicles. Critical benefits for MDI products are their affordability and economical scaling, plus for vehicles lightweight construction and speedy new product development. MDI product manufacture is via local turnkey micro manufacture.

Australasian commercialisation: AFG group was established to manufacture and commercialise the MDI technology products throughout Australia, New Zealand and the Pacific Islands. As MDI do not themselves commercialise.

This project aims to demonstrate and prove the capabilities of the technology and products, their market acceptance, and be investor ready to construct factories and rollout product via key channels.

- Overleaf are project element explanatory pictures -

- Quotation -

BloombergNEF – 11 Sept 2019

(Week in review)

Global investment into renewable energy capacity over the decade – 2010 -2019 inclusive – is on course to hit USD 2.6 trillion, with more gigawatts of solar capacity installed than any other generation technology. According to the Global Trends in Renewable Energy Investment 2019 report, this investment is set to roughly quadruple renewable energy capacity (excluding large hydro) by when the decade closes at the end of this year.

And the biggest hurdle to cross is renewable energy intermittency.
And the way to cross it is affordable scalable energy storage.
MDI's solutions and products for that are presented in this project.

Project Pictures

(For larger pictures or greater explanation refer to references on Contents page)

One set of MDI technologies can produce multiple energy storage solutions via modular components.

Via five demonstrations it is intended in some cases to provide a demonstration on site, and in others to present the product specifications or operations from elsewhere. The focus is on the markets, regulations, integration and the channels.

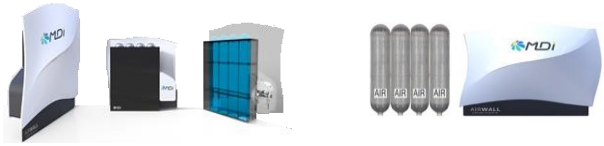
Demonstration 1: The AirWall, its components and its benefits

Traditional home energy storage units are of fixed capacity when they leave the manufacturer. If you seek more capacity you add more units. If the base unit is already expensive, or already has environmental or operational shortcomings, then these are simply multiplied. There are no decreasing marginal scale costs.

In MDI home energy storage the AirWall unit is the opposite. Capacity both as power and energy usage can be added to in a modular means by simply adding components, in each case either engine or tanks. This can be customised on site.

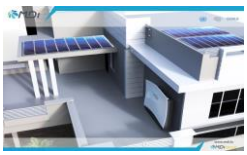
The AirWall unit, with patented thermodynamic and mechanically designed components, is a mini CAES (compressed air energy storage) system storing and generating electricity. It is readily scalable at the outset or retrospectively.

Efficient engines

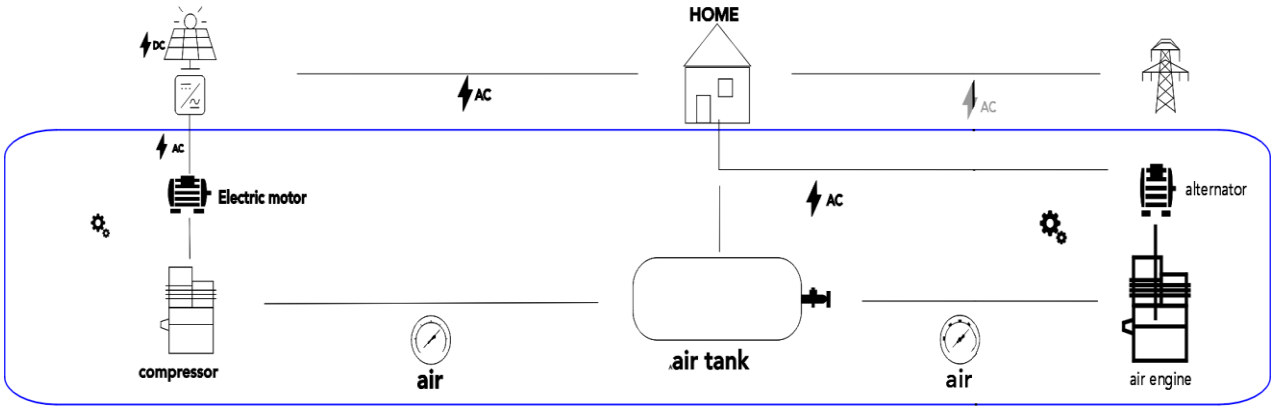


Packaged unit with engine and tank components

Fits nicely in chosen location



Can simply add tanks or solar for kWh's

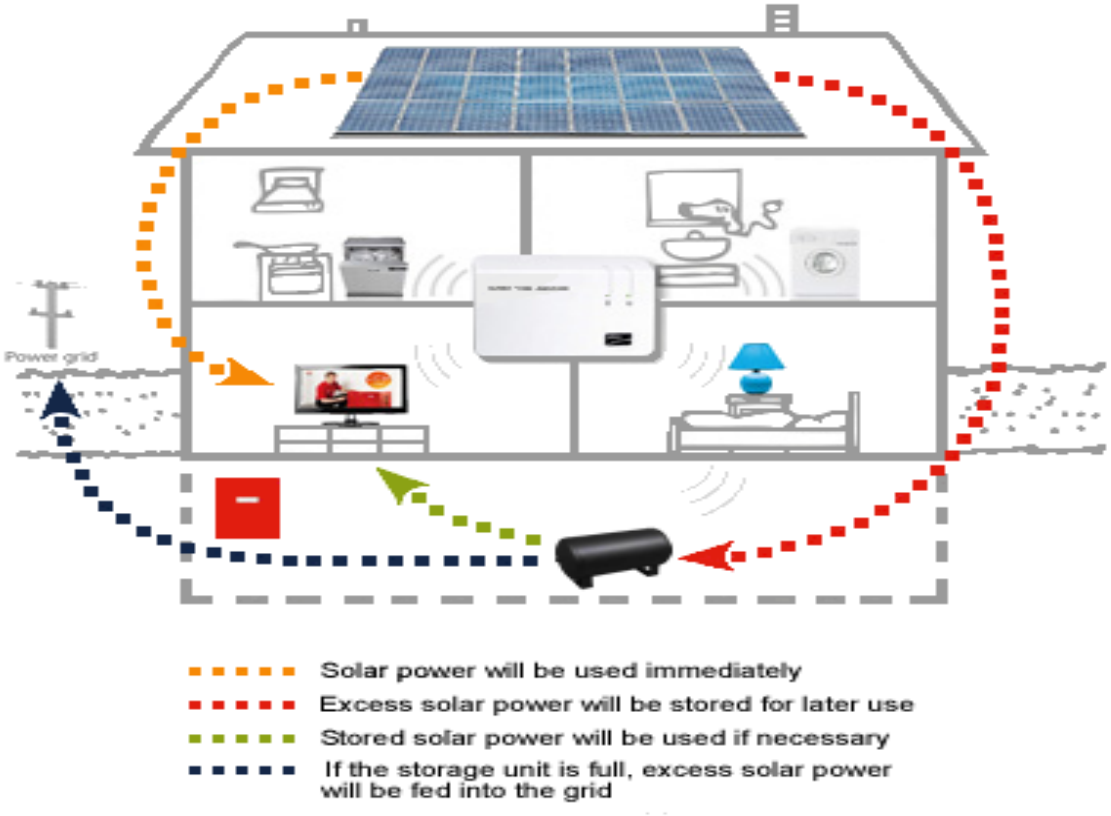


At the core is the MDI reversible engine that both compresses air storing it in tanks, and subsequently expands it generating electricity. Components can be added or increased independently of each other to the system.

<u>Demonstration 2</u>: Home energy storage: options solar or not; grid or not

Like traditional batteries the AirWall may come with its own components or integrate with others, ranging from solar to inverters, metering, demand management and sharing software and systems. AirWall forms the storage part.

As the solar is increased the AirWall kW capacity can be increased via the engine(s) or the kWh's via adding more tanks. All components of the energy system can be considered separately, either at the outset or retrospectively.



The home energy solar and storage concept is well known although it varies significantly via local circumstances, plus as yet, is of limited application and development. But that will change when storage becomes cheap and scalable.

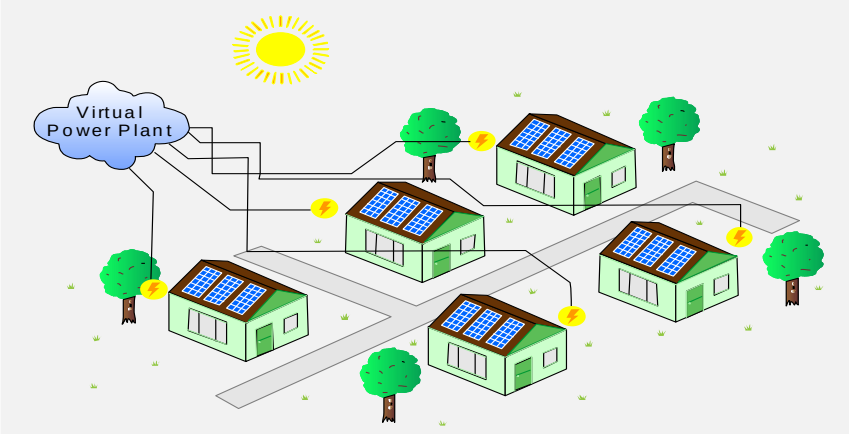
The AirWall will be more affordable and easily economically scalable providing the trigger for greater take up of home energy systems usage.

<u>Demonstration 3</u>: VPP micro grid (community): grid or off grid

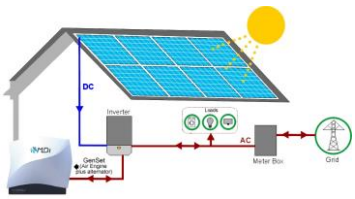
Following the basic home application the AirWall can ideally be adapted to virtual power plants (VPPs). There is much work being done globally and within Australasia on VPPs, including that of regulatory bodies and private enterprises.

The current traditional VPP seeks to provide solar and storage in homes and via interconnection and digitally intelligent electricity management interact with the grid. Intermittent energy however can play havoc with the grid, so it needs to be managed. And the optimum way to do that is via storage. Currently that is too expensive to do practically or economically, and current systems are heavily subsidised.

This demonstration seeks to explore a model that is both affordable and scalable, and where the community energy components (distributed energy resources) can all be considered as separately integrated components, managed via central software. The AirWall's as the storage component can provide the missing link.



Traditional virtual power plant with home solar and batteries connected together via an intelligently managed micro grid connected to the main grid.



Individual homes
(solar and storage)

Individual components
(added home storage)

Shared components
(underground tanks)

Via the ability to add lower cost storage capacity modularly, plus community sharing between distributed assets and user load management, overall integrated with grid coordination, such communities become an affordable reality. Potentially new propositions such as blockchain-enabled resource sharing between community participants can then become a practical reality.

But it needs the storage solutions.

Demonstration 4: Remote, industrial and specialist

With the reality of affordable and economically scalable storage the markets open up. Issues affecting the future of renewable energy such as storage affordability, intermittency, firming and peaking, uninterrupted power supply, and remoteness, are resolved. And that becomes an enabler for other new digital technologies. Diesel generators on farms can become a thing of the past. Electronic systems can maintain home energy readily even with grid blackout.

The AirWall seeks to target all these applications and none more so than remote areas without electricity access, or areas with potential for solar roof space.

Isolated farms or communities

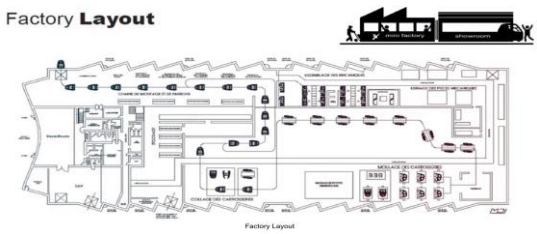
Industries become micro generators

With uninterrupted power supply included fuel generators are not needed.

Demonstration 5: Distributed manufacture

Legacy centralised manufacture comes at a huge cost. This is readily seen in the contributory costs of electricity transmission. And also in the centralised huge vehicle or battery manufacturing plants. It is not only about warehouse and distribution costs, but also about carbon footprint. The global carbon footprint of manufacture and processing cradle to grave for chemical batteries is not clean.

Distributed regional micro factor



MDI turnkey uniform factories

PROPOSITION

1. Current home battery & industry hurdles

The transitions in power markets away from fossil fuels thermal generation is well underway. The shift relies on batteries (generic term) making further progress on costs, technology, life cycle and overall pollution footprint. That still leaves the issues of manufacturing pollution and end of life disposal.

Essentially scale will add to all forms or renewable generation and storage, but for problems solved there will be problems created. On that basis diversification and fostering innovation is highly recommended. One of those is compressed air storage, with the potential to fully replicate the role of chemical batteries.

The benefits sought include affordability for everyone, maintaining price advantage based on manufacturing margins and future scale, plus on-site storage economies of scale by adding only components rather than whole units. In addition to seek a better cradle to grave pollution footprint, less end-of-life pollution challenges, and a longer and lower maintenance life cycle.

2. MDI AirWall compressed air storage solutions

Whilst there is some increasing awareness of large-scale compressed air energy storage (CAES) there is limited familiarity with medium CAES technology, where MDI is a world leader. MDI is demonstrating to the world what can be done for clean vehicles and distributed energy storage with its advanced thermodynamic and mechanical engineering designs, a holistic approach, and distributed manufacturing.

This project addresses the distributed energy storage for homes, businesses, and industry that have access to clean renewable energy, whether on or off grid.

Key four objectives of this project include the following:

(1) Transfer and demonstrate the MDI world leading compressed air technology applications for decentralised storage and confirm design capacity range for homes, businesses, communities and remote.

(2) Demonstrate rationale for affordable and scalable storage, and confirm the markets and production budget

(3) Establish delivery channels for the numerous markets that will take the product to market, carrying out sales, installation, and service. We would seek for compressed air batteries to be treated like other batteries.

(4) Initiate regional factory construction ranging from regulation to sponsors and partners to funders and land and recruitment.

Channels do not only relate to the obvious package providers such as home solar retail and install, but also other vested interest parties already identified, such as transmission line companies and energy retailers. We would seek to operate in partnership or synergy with distributors, channels, alliances, governments, investors, and customers. In other words in wholesale rather than retail mode.

THE PROJECT

3. Home, community & remote storage demonstrations

The home energy storage project is in 10 identifiable steps:

(1) Establish sponsors & partners
(2) Define the project team
(3) Design the demonstration field criteria
(4) Confirm the criteria with MDI or modify
(5) Procure home site
(6) Equipment shipping & storage
(7) Conduct tests, showcase & generate promotion
(8) Establish market channels & partners

Following completion of the above continue with the following:

(9) Define project for factory construction & operations
(10) Establish preliminary interest in funding & partners

The above will seek both to demonstrate the product operation in its own right, plus to explore integration with the overall home energy package, including software and metering goals, the grid firming & peaking connectivity goals, VPP expansion capabilities, turnkey and plug and play characteristics (e.g. grid power comparisons northern and southern hemisphere).

MDI also has an advanced mode engine using dual energy where the air can be heated at lower temperature to triple the capacity. An important application for vehicles and possibly in certain remote environments.

4. Manufacture of AirWall units in local turnkey factories

Progress to distributed manufacture requires the following goals of the project:

- Demonstrate the ten steps of the project
- Establish potential partners and land
- Plan the construction and regulations
- Establish the recruitment and operations
- Establish the funding and partners

This may be conducted in isolation by AFG or in joint venture partnerships. The benefits of regional manufacture will be presented to government and industry.

EXECUTION

5. Management & project resources

Based on the ten project steps the following will be the project team.

- AFG project team
- Site independent engineer
- MDI engineer (France)
- Industry & government regulatory
- Channel parties & specialists
- Sponsors or funding resources

Once the project is progressing satisfactorily activity can commence in the following areas in parallel with each other: factory management, MDI turnkey support, logistics & procurement, land, construction & utilities, recruitment, HR & regulatory, and sales & market channels. This will be carried out by the project team or in partnership with potential factory interests.

6. Timelines & resources

The following shows activities, responsibilities from the team, and timeline.

Project Steps	Responsibility	Timeline
1. Establish sponsors & partners 2. Define the project team	* AFG project team	Dec - Jan
3. Design the demonstration field criteria 4. Confirm the criteria with MDI or modify	* Site independent engineer * MDI engineer (France)	Feb - Mar
5. Procure home site 6. Equipment shipping & storage	*Industry & government regulatory	Apr - May
7. Conduct tests, showcase & generate promotion 8. Establish market channel & partners	*Site independent engineer *MDI engineer (France) *Industry & government *Channel parties & specialists	Jun-Jul
9. Define project for factory construction & operations 10. Establish preliminary interest in funding & partners	*Sponsors or funding resources *Industry & government regulatory	Jul-Aug

Whilst the above allows 10 months for full project completion to factory ready, in reality it is anticipated there is much overlap. The real timeframe will depend largely on items 1, 3&4, and 7&8. The others will function in parallel.

OUTCOMES

7. Project proofs and funding

The project seeks to demonstrate MDI and industry matching and sought after technology, substantiate markets and sales budgets, distribution and service channel support, confirm the distributed turnkey factory construction and present the factory financials. It is intended for the project to demonstrate investor ready for small start factory.

In conducting this project AFG will seek some project and working capital funding. The project financial budget and separate AFG working capital will be confirmed with participants during steps 1&2 or prior.

Local manufacturing seeks to provide the following benefits:

- Political*:* Regions can better control their own energy
- Manufacturing*:* Generating employment and suppliers
- Communities: Benefit from energy price and capacity
- Financial: Funding of micro factories is profitable

The goals of the Air Future Group commercialisation of the MDI compressed air vehicles and energy storage are to enable communities to use multiple MDI products directly or indirectly with a cleaner and affordable lifestyle.