

GMI
AERO

EXPERTISE & TECHNOLOGY for



Equipment
Engineering
Consulting
Consumables
Training

.....COMPOSITE REPAIR



2025

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TECHNOLOGY, SERVICES, CONSULTANCY
for

COMPOSITE FABRICATION & REPAIR

Our catalogue displays GMI Aero Products and Capabilities in terms of Equipment and Services for MROs and OEMs.

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(1) ANITA BONDING CONSOLE SERIES

The ANITA Hot Bonders are **recognized worldwide** by **MROs** and **aircraft manufacturers** as the most appropriate equipment for **bonding of composite aircraft structures**. Their design and process handling benefit of forty years of GMI AERO commitment in composite manufacturing and repair. They are conceived as portable systems, light, handy for field application and their operations have been optimized to be **extremely simple** to use by **shop technicians**, while including **several sophisticated features**.

In a small compact box, the ANITA **controls the heating process under vacuum** for a repair on **composites or metal structures**. It is specially conceived to reach **maximum performances on small or large surfaces**, on thin or thick structures and on structures with variable thermal reaction.

ANITA can drive various heating systems like **heating blankets, infra red systems, hot air blowers**, in order to reach the best **temperature homogeneity** using a variety of control modes.

The repair model family offers both capabilities for **workshop** use as well as for **flight line** operations.

For quality control, **USB** key data transfer and innovative **PDF** automatic **data reporting** are available.

In addition, capabilities of most recent **ANITA versions (4.0 and EZ)** are further enhanced through a number of **Network Applications** (NetApps) which support **preparation, implementation and monitoring** of repairs, while greatly facilitating **reporting**. Apart from standard USB, connectivity to GMI Cloud-based Applications is established by means of Wifi, LAN, Bluetooth and / or 5G Network.










Several models are now available with **1, 2, 4, 6 heating zones** according to the nature of the part to be repaired (simple, complex structure, Radome, engine reverser,...) .



See our comparative table in following page....

COMPARATIVE TABLE OF ANITA EQUIPMENT

1 COMPARATIVE TABLE OF ANITA EQUIPMENT

Characteristics	4.0	EZ	EZH	QS2Z	EZ4Z	QS	Combat	QSH	6Z40
Photo									
Number of Zones	2 zones	2 zones	2 zones	2 zones	4 zones	1 zone	1 zone	1 zone	6 zones
Zoning Control	Independent	Independent	Independent	Simultaneous	Independent	Independent	Independent	Independent	Independent
TC (J or K)	24 TC	12 TC	12 TC	12 TC	12 TC	6 TC	6 TC	6 TC	36 TC
Vacuum Sensing	2 lines	2 lines	2 lines	0 line	4 lines	1 line	1 line	1 line	6 lines
Venturi mounted	Optional	No	No	No	No	Yes	Yes	Yes	No
Printer	Optional	Yes	Yes	No	Yes	No	No	No	No
USB Ports	4	2	2	1	2	1	1	1	2
Voltage	120V/230V	120V/230V	120V/230V	120V/230V	120V/230V	120V/230V	120V/230V	120V/230V	3~ 380/415V
Power	32A	32A	32A	32A	32A	32A	32A	32A	60A
Touch Screen	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes
Remote terminal	Integrated	Optional	None	None	None	None	None	None	None
Remote tablet	Optional	Optional	Optional	None	Optional	None	None	None	None
TC Scanner	N/A	Optional	Optional	None	Optional	None	None	None	None
Accessory Case	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dimensions (cm)	38x26x27	35x26x27	38x26x27	35x26x22	36x28x27	38x26x18	38x30x21	38x26x27	150x70x165
Weight (kg)	9 kg	9 kg	9 kg	7.5 kg	10.5 kg	7 kg	7 kg	7.5 kg	~ 100 kg

2 ANITA MODELS OVERVIEW

We cover with the Anita Family the complete range of needs of an MRO.

	P/N	List of General Features
	GMIA4N21 Anita 4.0	<ul style="list-style-type: none"> • 2 zones • Cloud connectivity through Wifi, LAN or 5G USB Dongle; with NetApps • 24 Thermocouples • Large Touch Screen • Standard Remote Terminal • Vacuum sensing for each zone • In option Printer through Bluetooth • In option Venturi vacuum pump • Automatic switching 120V/230V - Power Max 32A
	GMI EZ0901 Anita EZ	<ul style="list-style-type: none"> • 2 zones • 12 Thermocouples • Extension possible to 24 or 36 Thermocouples with an external scanner • Printer mounted • Touch screen • Control at distance through a Mobile Tablet (optional) • Vacuum sensing for each zone • In option venturi vacuum pump on valve and electric vacuum pump • Automatic switching 120V/230V - Power Max 32A
	GMIEZ4Z01 Anita 4Z	<ul style="list-style-type: none"> • 4 zones • 4 Heating zones controlled simultaneously or independently • 12 Thermocouples J or K • Touch Screen • Printer mounted • 4 Vacuum sensing lines • Automatic switching 120V/230V - Power Max 32A
	GMIEZH1401 GMIEZH	<ul style="list-style-type: none"> • Bonding Console 2 zones Flight Line version • 2 Heating zones controlled simultaneously or independently • 12 Thermocouples J or K • Touch Screen • Printer mounted • 2 Vacuum sensing lines • Automatic switching 120V/230V - Power Max 32A

3 ANITA 4.0 - FOR AIRCRAFT DIGITAL MAINTENANCE

Item	P/N	Description
3001	GMIA4N21	Trade Name: ANITA 4.0

Hot Bonder New Generation designed to comply with the Industry **5G** era standards.

Hardware characteristics

- 2 Heating zones controlled simultaneously or independently
- 24 Thermocouples J or K (to be specified at the order)
- Enlarged Touch Screen (10.4")
- Environmental Sensors (Temp & Humidity)
- 2 Vacuum sensing lines
- Auto switching 120V/230V - Power Max 32A
- Easy programming and Quick set to run

Connectivity Features

- 1 Wireless Terminal
- 4 USB Ports to save reports of curing cycles
- 1 LAN Ethernet Port
- 2 WIFI Antennas
- Cloud connectivity through Wifi, LAN or 5G USB Dongle

Delivered complete with its accessory case



The Wireless Terminal allows you to:

- Take pictures of the Repair Installation,
- Follow the Cycle Progress with Data displayed,
- Scan Identification of Elements participating to the Repair: thermocouples, products

GMIANACXY-V Accessory Case with all necessary cables and sensors
 XY, V are according to configuration



The console is also available in the following delivery optional configurations as described in following chapter below

3.1 ANITA 4.0 OPTIONS PRINTER & VACUUM PUMP

Item P/N & DESCRIPTION

3101 GMIA4N21-P **OPTION PRINTER**

The printer is delivered as a separate unit. It is connected with the Anita through Bluetooth connection. Two rolls of thermal paper are delivered.



Item P/N & DESCRIPTION

3102 GMIA4N21-V **OPTION VACUUM PUMP**

The pump is of Venturi type mounted on the side. Two outputs are available.

The compressed air connector can be configured according to the configuration of type Staubli or US.

This option comes with two hoses 3 m long and two vacuum valves.



Item P/N & DESCRIPTION

3103 GMIA4N21-PV **OPTION PRINTER & VACUUM PUMP**

The two options Printer + Vacuum Pump can be combined under the P/N as above.



3.2 A RANGE OF SOFTWARE APPLICATIONS: NET APPS WITH ANITA 4.0

Description of all NetApps



PANOPTES is a Real-Time Console Supervision NetApp, enabling the simultaneous monitoring of several ANITA consoles, connected to the application via Wifi. PANOPTES allows the end-user to supervise **several Anita consoles** in his fleet, regardless of their work site and access. **Access to PANOPTES is established through** any computer / smart phone connected to **GMI cloud server**, via Internet. **Tailored projection solutions** can be developed: **PANOPTES** projection on large screens in Engineering / QA Department, **PANOPTES** connection to private-owned data clouds etc.



TMAp facilitates repair **Temperature Mapping** by overlaying T measurements “on” the parts, through projection of T/C measurements **over a photo of the repair after T/C installation, at the exact locations of the T/C**. Complex repairs or thermal mapping trials require efficient correlation of Temperature measurements versus T/C placements (i.e. **Topology of T/C**). While the cycle is running (**on-line**), or in quality control (**off-line**), the operator will take a picture, **drag-and-place** the predefined T/C symbols to see the evolution of the cycle on the picture.



The Versatile Reporting Tool is a multifunctional application, permitting the direct import of a variety of repair related data. Processing this data will lead to “**personalized**” **repair reports**, that are fully-modifiable and ready-to-print. The operator will thus establish a **complete and appropriately organized “curing” report**, including all data needed by its QA, namely **Pre-existing Repair Data** (Photos, Videos, Sketches, Manufacturing Plans, Repair Lay-Up) **Repair Preparation Data** through Remote Terminal and **Repair Curing Data**, projected Over Time.



Remote Calibration: Thanks to the connectivity features of the Anita 4.0, remote calibration will be available. Complying with **QA requirements** and safety measures, calibration coefficients (**Gain / Offset**) of thermocouples and vacuum sensors will be possible. In addition **Over-The-Air Software Upgrade** will be available for downloading through **OT’Ap**, enabling the operator to **update ANITA 4.0 software remotely, without the need to return the equipment to GMI**, thus saving time and money. **Remote Maintenance** is an additional feature offered thanks to advanced ANITA 4.0 connectivity.




Enhanced Training NetApps support **virtual training and e-learning**, using any web-based classroom platform, and **facilitate the performance of conventional instructor-led courses** in order to teach composite repair skills. **ANITA 4.0 Simulator NetApp** assists in autonomously replicating the experience of actual operations, either **through owned PC or by means of a virtual platform**, while **NetApps** already developed to facilitate the performance of actual composite repairs have **high training added value** (e.g. **TMAp**). **Interactive** composite repair related **Questionnaires** and **Games** will be also developed.



The **Digital-Physical Twin NetApp** enables connectivity of ANITA hot bonder(s) used for repair curing to the **Wifi or 5G network** at the repair area, in order to transmit in **real-time** all related data to the Engineering Centre of aircraft manufacturer / airline / MRO certification authorities (EASA, FAA etc.). This data could be used either to **create in real-time a “Replica” repair** through a second ANITA bonding console, identical to the “**Original**” repair (**Physical-Twin**) or for the calculation of the **Degree of Curing (DoC)** applying corresponding material curing equations (**Digital Twin**).

4 ANITA EZ0901 - 2 REPAIRS - 2 ZONES

Item	P/N	Description
4001	GMIEZ0901	Anita EZ - Bonding Console 2 zones
 <p>Hardware characteristics</p> <ul style="list-style-type: none"> - 2 Heating zones controlled simultaneously or independently - 12 Thermocouples J or K - Touch Screen - Printer - 2 Vacuum sensing lines - Automatic switching 120V/230V - Power Max 32A <p>Software Features</p> <ul style="list-style-type: none"> - USB Ports to save reports of curing cycles - Easy programming and Quick set to run - Automatic reporting of curing cycles - Remote control tablet as an option - Thermocouple Scanner for additional TC 12 or 24 channels as option <p>Delivered complete with its accessory case (see below)</p>		

4002 GMIEZAC0901-2

Accessory case delivered together with the Anita console as above;



Contains: its necessary electrical cables, valves, vacuum hoses, thermocouples.

Consumables for the printer

4003 GMIEZTI010-01 A box of 20 paper rolls for Anita printer

4004 GMIEZI010-02 A box of 10 ink ribbons for Anita printer

For Vacuum generation we offer various appropriate solutions, either through an electrical pump (several models) or by means of a compressed air venturi pump adapted for vacuum bag installation. See the specific chapter.

The Anita EZ09 is also available a) in a version for Field Application; b) in a Configuration 4 zones, and c) on a 6 zones Configuration.

See also a series of options for thermocouple sensing extensions.

4.0.1 OPTIONS FOR ANITA EZ0901

To enrich the use of the Anita EZ09 in several contexts of work: very large repairs, use in hangars, positioned with reduced access, GMI has developed two complementary instruments:

- An extension of thermocouple sensing capability**
- A tablet for remote control (using Wifi connection)**

4.1 SCANNERS - THERMOCOUPLE EXTENSION - 2 MODELS 12 OR 24 TC

Item	P/N	Description
4101	GMIEZS012- T*	<p>Scanner for TC extension + 12 Channels</p> <p>*T = J or K* according to the type of thermocouples</p> <ul style="list-style-type: none"> - To extend the capacity of temperature measurement by connecting a scanner of 12 TC - Wireless link to the Anita. - The scanner can easily be positioned close to the repair and this is useful in case of difficult access, the Anita being positioned at distance. - Automatically detected by the Anita. - Scanner capacity 12= 2 x 6 TC J or K. - Total capacity of TC (scanner + Anita) = 24 TC - Practical use: 12 TC per zone or 24 on 1 zone
4102	GMIEZS024-T*	<p>Scanner for TC extension + 24 Thermocouples C</p> <p>*T = J or K</p> <p>Description is the same as above, but the total number of TC: Anita + Scanner will be 36 TC</p>



4.2 TABLET FOR REMOTE CONTROL OF ANITA EZ0901

Item	P/N	Description
4201	GMIEZR010	<p>Touch Screen Tablet for Remote control</p> <p>We offer now the possibility to control the Anita EZ from distance with through a latest technology Wifi linking the Anita to a remote Tablet.</p> <p>The tablet will duplicate the Anita EZ screen.</p> <p>A field operator will be able to supervise the cycle remotely.</p> <p>Alarms are transferred by a speaker and on the tablet screen.</p>



5 ANITA GMIEZ4Z - 4 ZONES UP TO 4 INDEPENDENT REPAIRS

Item	P/N	Description
5001	GMIEZ4Z01	Anita EZ4Z - Bonding Console 4 zones

**Hardware characteristics**

- 4 Heating zones controlled simultaneously **or** independently
- 12 Thermocouples J or K
- Touch Screen
- Printer with standard paper
- 4 Vacuum sensing lines
- Automatic switching 120V/230V - Power Max 32A

Software Features

- 2 USB Ports to save reports of curing cycles
- Automatic reporting of curing cycles
- Easy programming and Quick set to run
- Remote control tablet as an option
- Scanner for additional TC as an option

Delivered complete with its accessory case

Useful for:

- **Intensive repair on parts with multiple impacts**
- **Radome Repair**
- **Big blankets of 3 to 4 zones**
- **Helicopter blade repair**

6 THE ANITA QS SERIES

The **QS Series is for Quick Start Procedures**. These consoles have been designed for a very short handling time; the set up procedures are configured for a quick start of a cycle. The workshop models exist in 1 or 2 zones. See also the chapter Flight Line for a model for this context.

6.1 ANITA QUICK START GMIQS1Z - 1 ZONE

Item	P/N	Description
6101	GMIQS1Z	Anita QS 1 Zone Bonder - Quick Start



Hardware characteristics

- 1 Heating zone
- 6 Thermocouples J or K
- Touch Screen
- Vacuum sensing Line
- Venturi Vacuum Pump installed
- Automatic switching 120V/230V - Power Max 32A

Software Features

- 1USB Port to save reports of curing cycles
- PC Anitalk Easy programming & pre-programming of **cycles**
- Automatic reporting of curing cycles
- Exclusive software for Fully Automatic Control of Temperature Cycle
- Delivered complete with its accessory case

6.2 ANITA QUICK START GMIQS2Z - 2 ZONES

Item	P/N	Description
6201	GMIQS2Z	Anita QS 2 Zone Bonder - Quick Start



Hardware characteristics

- 2 Heating zones controlled simultaneously
- 12 Thermocouples J or K
- Touch Screen
- Automatic switching 120V/230V - Power Max 32A / 230 V (or 120 V)

Software Features

- 1USB Port to save reports of curing cycles
- Anitalk Easy programming & pre-programming of **cycles**
- Automatic reporting of curing cycles
- Exclusive software for Fully Automatic Control of Temperature Cycle

Delivered complete with its accessory case

7 FLIGHT LINE ANITA MODELS

7.1 MODEL EZH - FOR 2 REPAIRS

Item	P/N	Description
7101	GMIEZH1401	Anita EZH Bonding Console - Flight Line version



Hardware characteristics


- 2 Heating zones controlled simultaneously **or** independently
- 12 Thermocouples J or K
- Touch Screen
- Printer
- 2 Vacuum sensing lines
- Automatic switching 120V/230V - Power Max 32A
- Easy programming and Quick set to run

Software Features

- 2 USB Ports to save reports of curing cycles
- Automatic reporting of curing cycles
- Remote control tablet as an option
- Scanner for additional TC as an option

Delivered complete with its accessory case

For conducting bonding on the aircraft if explosive proof conditions apply

7102	GMIOTPF022	Container for filter and filter against oil and water. Connects directly to the air source and to the Anita	
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7103	GMIOTPF022-1	Spare cartridge against water and oil for filter above
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7.2 ANITA QSH FLIGHT LINE MODEL - 1 ZONE

Item	P/N	Description
7201	GMIQSH1Z	Anita QSH Bonding Console 2 zones «Push Button» Flight Line



Hardware characteristics

- 1 Heating zone
- 6 Thermocouples J or K
- Touch Screen
- 1 Vacuum sensing line
- 1 Venturi pump mounted
- Automatic switching 120V/230V - Power Max 32A
- Easy programming and Quick set to run


Software Features


- USB port to program the cycles through a PC Software
- Automatic reporting of curing cycles

Delivered complete with its accessory case

8 ANITA BATTLE FIELD MODEL

Item	P/N	Description
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<p>8001 GMICC010</p> 	<p>Anita BATTLEFIELD Bonding Console 1 zone «Push Button»</p> <p>Hardware characteristics</p> <ul style="list-style-type: none"> - 1 Heating zone - 6 Thermocouples J or K - 1 Vacuum sensing line - 1 Venturi pump mounted - Automatic switching 120V/230V - Power Max 32A <p>Software Features</p> <ul style="list-style-type: none"> - USB port to <u>program</u> the cycles through a PC Software - Exclusive software for Fully Automatic Control of Temperature Cycle - Automatic reporting of curing cycles - Easy programming and Quick set to run <p>Delivered complete with its accessory case</p>
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<p>8002 GMIHBIS045-1Z-V</p> 	<p>Heating system for battle field context Specially designed for the ANITA BATTLE FIELD Model, but can be also used by any other ANITA version</p> <p>Seal dimensions: Diameter: Ø 45 cm Heating area diameter: Ø 35 cm 1 electrical zone 230 Volts or 120 Volts to, be specified at the order Please consult us for other dimensions</p>
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This blanket can also be useful for quick installation of relatively small damage in field intervention context

9 APPLICATIONS TO REVERSERS AND OTHER LARGE REPAIR WORKS

9.1 ANITA 6 ZONES - HIGH POWER - 6 REPAIRS

Item	P/N	Description
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9101 GMIEZ6Z40

Anita **6 zones** with **6 independent heating channels** for: 1 repair up to 6 zones **or 6 repairs** independent in program and time with various combination of zones. This bench is powered under 3 phases to offer a large power capacity of **40 kW total power**. Each zones has a capacity of **230 V x 30A single phase**.

- Intensive repair on parts with multiple impacts
- **Radome Repair**
 - Reverser repairs: **Transcowls and Corecowls**
 - Complex repair when blankets have 3 to 6 zones,
 - Helicopter blade repair
 - **36** Temperature measurements: through thermocouples (type J or K).
 - 6 Vacuum sensing lines

This equipment allows also to conduct **6 independent repairs** at different times according to different cycles.



9.2 ANITA 18 ZONES

To repair very large surfaces of structures of class I, GMI has designed a specific bonding control equipment with 18 zones. This equipment combines a sophisticated instrumentation with smart software for cycle programming and configuration of the repair parameters. A power system is specially designed to offer powering capabilities to the 18 zones covering several square meters.

Item	Description
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9201 Anita 18 Zones

System with **18 zones** capacity for 1 large repair. Power per zone **230 V x 20 A single phase**.

- Up to **80** Thermocouples
- Up to **7** vacuum sensing lines
- Measurement of autoclave pressure in case of using a vessel for pressure compaction
- Automatic report preparation

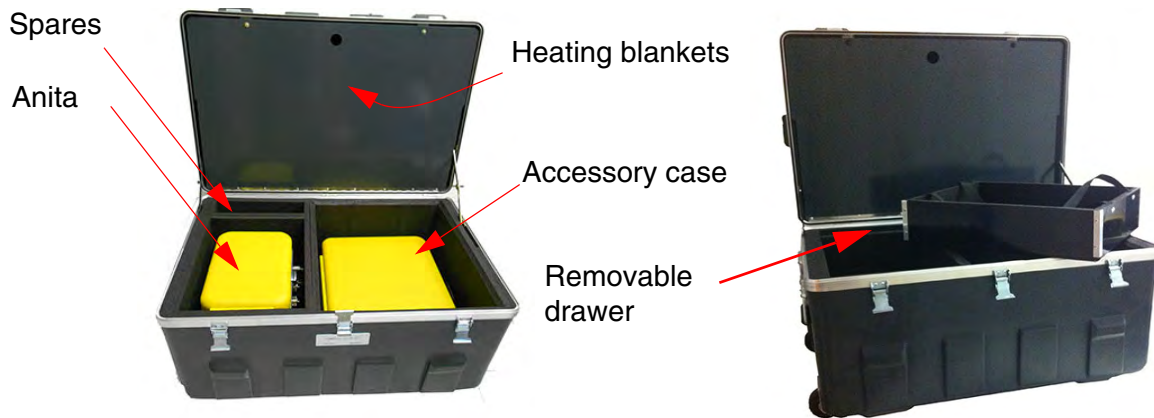


ANITA CONTAINERS FOR STORAGE AND TRANSPORT

10 ANITA CONTAINERS FOR STORAGE AND TRANSPORT

10.1 LARGE CONTAINER FOR STORAGE AND TRANSPORT

Item	P/N	Description
10101	GMIEZC012	Large container for storage and transport Any ANITA Model + its accessory case (and some blankets) Easy to handle, with rolls Dimensions: L x W x H: 82 x 58 x 50 cm Weight when empty: approx 17 Kg



10.2 SMALLER CONTAINER FOR EASY TRANSPORT OF ANITA

Item	P/N	Description
10201	GMIEZC011	Container for transport Any ANITA Model + some accessories Easy to handle container when travelling; can be registered as carry-on You can install one Anita and its cables and hoses Dimensions ext.: L x W x H: 50 x 45 x 40 cm Weight when empty: approx 8 Kg



11 ANITA SERIES RAPID

This model is designed to offer to the users a **quick and low cost** way to control heat sources. This Anita of the series **Rapid** will control for an immediate run after a quick and easy set up various heat applications: heat gun, radiant lamp, mould heaters... These models are useful for composite repair activities and composite part manufacturing processes.

Item	P/N	Description
11001	GMIAR010	<p>Anita RAPID Bonding Console 1 zone «Push Button» <u>Hardware characteristics</u></p> <ul style="list-style-type: none"> - 1 Heating zone - 2 Thermocouples J or K - Voltage 230V - Power Max 10A - Easy programming and Quick set to run <p>Software Features</p> <ul style="list-style-type: none"> - USB port to <u>program</u> a unique cycle through a PC Software <p>Delivered complete with its accessory case</p> <p>Various configuration possible for control of: Heat blanket; Infra red lamp, Heat gun</p>



11.1 APPLICATION: CONTROL OF A TACKING IRON

Illustration



The adhesive on a stringer is laid up and applied thanks to a controlled heat with the iron specially developed.

(2) HEATING BLANKETS & OTHER HEATING SYSTEMS

1 HEATING SILICONE BLANKETS - GENERAL OFFER

We give here a list of classes of heating blankets designed and produced according to their use:

- For **hot bonding of composite repair processes**
- For **general heat application** whenever it is useful to **improve productivity by heating** a resin, a sealant, etc.
- For heating parts in a **composite manufacturing process**: heating moulds, structures,...

To control these blankets GMI proposes several solutions with our **Bonding Consoles** please refer to Chapter (1) **ANITA BONDING CONSOLES**.

The following table presents the **various classes of blankets** used in the repair process. These classes differ because of **temperature limits, shapes** and **flexibility** when it is necessary to conform to a non developpable surfaces or to context of use like field services. Also, we have designed several heating blankets having a pre-determined shape for specific applications: Radome repair, reverser repair, etc. .

Standard / Flexible Blankets

They constitute the basic tools for composite repair as they are flexible and resistant to external aggressions. They are made with silicone reinforced with glass fibre. We can offer:

- Blankets rectangular or circular or ovals
- 120 or 230 Volts monophase
- 1 or 2 zones design or more
- From small to very large dimensions



Conformable or Stretchable Blankets

Those blankets are stretchable. They are designed in a way to adapt to double curvature structures.

- Blankets rectangular or circular: Maximum size: 60 x 60 cm
- 120 or 230 Volts monophase
- 1 or 2 zones design or more



Flight line applications Blankets

To be operated with our EZH or QSH Flight Line Bonders
Despite an extra silicone layer with grid mesh they are till applicable easily on curved surfaces



Radome Shaped Blankets

Several models available according to aircraft.
Zoning configurations in Concentric or Sectors



Very large blankets adapted to Specific Engine Structures: air inlet, Reversers....

Specific Applications for Reversers and Air inlets
Adapted to the shape of the structure, zoning defined with a template depending on the area



Autonomous blankets

Work with specific autonomous controllers for simple jobs: interiors, heating of moulds for lay up operations...



STANDARD FLEXIBLE BLANKETS

2 STANDARD FLEXIBLE BLANKETS

A standard list is proposed here.

Item	P/N	Dimensions in cm	Zones
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Larger dimensions are also available on request, Please consult us for technical details and quotation; P/N given below are for 230 Volts; for 120 Volts change the last figure of the P/N 2 to 1

RECTANGULAR SHAPES

2001	GMIHB015015-1Z-2	15 X 15	1 electrical zone
2002	GMIHB020020-1Z-2	20 X 20	1 electrical zone
2003	GMIHB020040-1Z-2	20 X 40	1 electrical zone
2004	GMIHB025025-1Z-2	25 X 25	1 electrical zone
2005	GMIHB025040-1Z-2	25 X 40	1 electrical zone
2006	GMIHB030030-1Z-2	30 X 30	1 electrical zone
2007	GMIHB030070-1Z-2	30 X 70	1 electrical zone
2008	GMIHB040040-1Z-2	40 X 40	1 electrical zone
2009	GMIHB040060-1Z-2	40 X 60	1 electrical zone
20010	GMIHB040080-2Z-2	40 X 80	2 electrical zones
20011	GMIHB050050-1Z-2	50 X 75	1 electrical zone
20012	GMIHB050090-2Z-2	50 X 90	2 electrical zones
20013	GMIHB060060-1Z-2	60 X 60	1 electrical zone
20014	GMIHB070090-2Z-2	70 X 90	2 electrical zones

CIRCULAR SHAPES

20015	GMIHB020-1Z-2	∅ 20	1 electrical zone
20016	GMIHB025-1Z-2	∅ 25	1 electrical zone
20017	GMIHB040-1Z-2	∅ 40	1 electrical zone
20018	GMIHB045-1Z-2	∅ 45	1 electrical zone
20019	GMIHB055-1Z-2	∅ 55	1 electrical zone

All blankets are available in 120V and 230V - Just specify what your needs are
P/N given are for 230 Volts; for 120 Volts change the last figure 2 to 1

3 BLANKETS STRETCHABLE OR CONFORMABLE

Item	P/N	Dimensions in cm	Zones
Larger dimensions are also available on request, Please consult us for technical details and quotation			
P/N given below are for 230 Volts; for 120 Volts change the last figure 2 to 1			

RECTANGULAR SHAPES		cm	Zone
3001	GMIHBC015015-1Z-2	15 X 15	1 electrical zone
3002	GMIHBC020020-1Z-2	20 X 20	1 electrical zone
3003	GMIHBC020040-1Z-2	20 X 40	1 electrical zone
3004	GMIHBC025025-1Z-2	25 X 25	1 electrical zone
3005	GMIHBC030030-1Z-2	30 X 30	1 electrical zone
3006	GMIHBC035035-1Z-2	35 X 35	1 electrical zone
3007	GMIHBC040040-1Z-2	40 X 40	1 electrical zone
3008	GMIHBC045045-1Z-2	45 X 45	1 electrical zone
3009	GMIHBC050050-1Z-2	50 X 50	1 electrical zone
30010	GMIHBC060060-1Z-2*	60 X 60	1 electrical zone
CIRCULAR SHAPES			
30011	GMIHBC020-1Z-2	∅ 20	1 electrical zone
30012	GMIHBC025-1Z-2	∅ 25	1 electrical zone
30013	GMIHBC035-1Z-2	∅ 35	1 electrical zone
30014	GMIHBC040-1Z-2	∅ 40	1 electrical zone
30015	GMIHBC045-1Z-2	∅ 45	1 electrical zone
30016	GMIHBC055-1Z-2	∅ 55	1 electrical zone

All blankets are available in 120V and 230V - Just specify what your needs are.

P/N given above are for 230 Volts; for 120 Volts change the last figure 2 to 1

For example, for a standard blanket 25 x 25 cm under 230 Volts, the P/N is: GMIHB025025-1Z-2 and under 120 Volts P/N: GMIHB025025-1Z-1

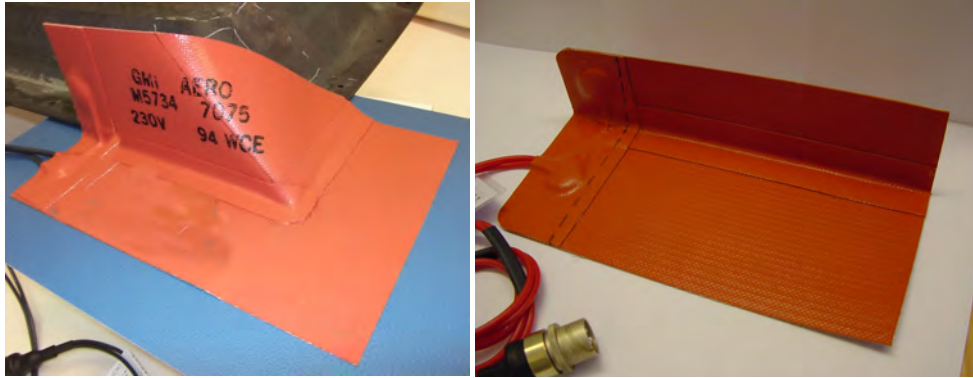
* The blanket P/N GMIHBC060060-1Z-2 is the largest possible to be manufactured in this category

BLANKETS SPECIALLY SHAPED

4 BLANKETS SPECIALLY SHAPED

To address the problem of blankets that must conform to a complex angular shapes, we are obliged to assemble elementary heating surfaces.

The following pictures illustrate the result in special cases: - of a blanket that fit the angle of a sandwich panel; - a 90 ° angled structure



Please submit us your project, our team will assist you to engineer the optimum solution.

5 HIGH TEMPERATURE (425 °C) GLASS FIBRE BLANKETS

Item	P/N	Dimensions in cm	Electrical Zone
Blankets with high density fibreglass for heating of thermoplastic structures up to 400°C. those blankets operate under 230 Volts. MAX Temp. EXPOSURE 425°C			
5001	GMIHBP015015-1Z-2	15 X 15	1 electrical zone
5002	GMIHBP025025-1Z-2	25 X 25	1 electrical zone
5003	GMIHBP030030-1Z-2	30 X 30	1 electrical zone
5004	GMIHBP040040-1Z-2	40 X 40	1 electrical zone



Other dimensions on request

All blankets are available in 120V and 230V - Just specify what your needs are.

P/N given are for 230 Volts; for 120 Volts change the last figure 2 to 1

** Consult us for adaptation of the ANITA Console to the range of temperature*

6 BLANKETS FOR HEATING MOULDING TOOLS

6.1 Adapted Shape

The operation of lay up during composite part manufacturing is greatly helped if the mould surface has been pre-heated. Here below an example of a **U** shaped blanket adapted to a mould. GMI Aero provides also appropriate controllers for this type of applications with a characteristics the ease of implementation.



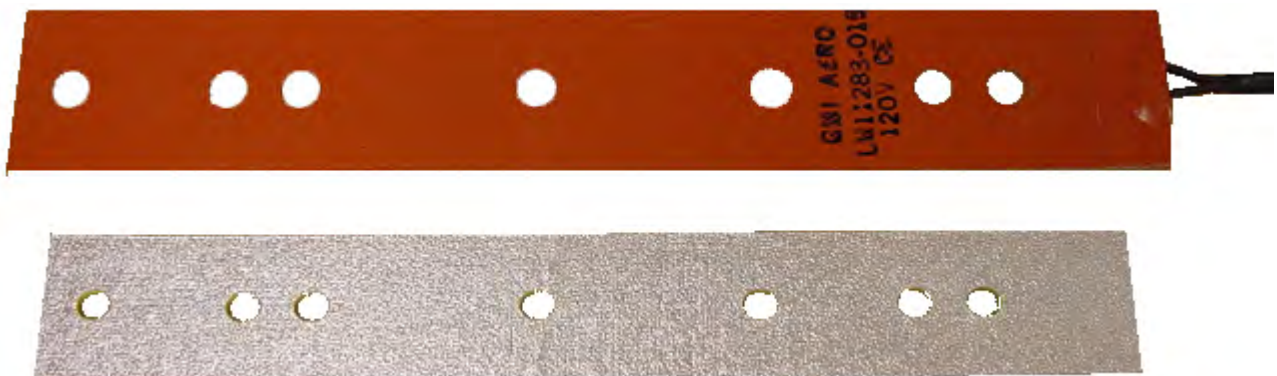
6.2 Wrapping Cover Blanket

As for the use described above, certain complex moulds may be heated by a mat as illustrated below by a wrapping blanket



6.3 Blankets for tool heating

When it is necessary to heat a mould surface, GMI Aero designs special heaters. Here a blanket to be installed flat with an insulator; holes are provided for bolts.



BLANKETS FOR FLIGHT LINE OPERATIONS

7 BLANKETS FOR FLIGHT LINE OPERATIONS

For our flight line models ANITA - GMIEZH OR GMIQSH

These blankets are embedded with ground mesh, in order to comply with this specific environment requirement rules.

They must be used with specific consoles for explosive atmosphere such Anita EZH or QSH.

Item	P/N	Dimensions in cm	Zones
Larger dimensions are also available on request, Please consult us for technical details and quotation			
P/N given below are for 230 Volts; for 120 Volts change the last figure 2 to 1			

RECTANGULAR SHAPE		CM	Zones
7001	GMIHBH015015-1Z-2	15 X 15	1 electrical zone
7002	GMIHBH020020-1Z-2	20 X 20	1 electrical zone
7003	GMIHBH025025-1Z-2	25 X 25	1 electrical zone
7004	GMIHBH030030-1Z-2	30 X 30	1 electrical zone
7005	GMIHBH040040-1Z-2	40 X 40	1 electrical zone
7006	GMIHBH050050-1Z-2	50 X 50	1 electrical zone
7007	GMIHBH015050-1Z-2	15 X 50	1 electrical zone
7008	GMIHB060060-1Z-2*	60 x 60	1 electrical zone

CIRCULAR SHAPE			
7009	GMIHBH025-1Z-2	∅ 25	1 electrical zone
70010	GMIHBH030-1Z-2	∅ 30	1 electrical zone
70011	GMIHBH035-1Z-2	∅ 35	1 electrical zone
70012	GMIHBH050-1Z-2	∅ 50	1 electrical zone
70013	GMIHBH055-1Z-2	∅ 55	1 electrical zone
70014	GMIHBH060-1Z-2	∅ 60	1 electrical zone

All blankets are available in 120V and 230V - Just specify what your needs are.

P/N given are for 230 Volts; for 120 Volts change the last figure 2 to 1

* The 60 x60 cm Blanket P/N : GMIHB0060060-1Z-2 is the largest to be manufactured in this Category

8 LARGE AND VERY LARGE (HIGH POWER) BLANKETS



8.1 BLANKETS HIGH POWER UNDER THREE PHASE DESIGN

The larger blankets are generally above **1 square meter**, and their total power is above 6000 watts. Blankets of very large power are designed under **3 Phases** (380 or 415 Volts). These blankets need the use of the Power Booster as listed below.



Item	P/N	Dimensions in cm	Zones
8101	GMIHB100150-2Z-3-V*	100 x 150	In 2 electrical zones 100 x 75 cm
8102	GMIHB100200-2Z-3-V*	100 x 200	In 2 electrical zones 100 x 100 cm

Item	P/N	Dimensions in cm	Zones
* where V= 380, 415 or 480 VAC or other to be specified. Many other models available, please consult us			

8.2 POWER AMPLIFIER 3 PHASES FOR BLANKETS 3 PHASES DESIGN

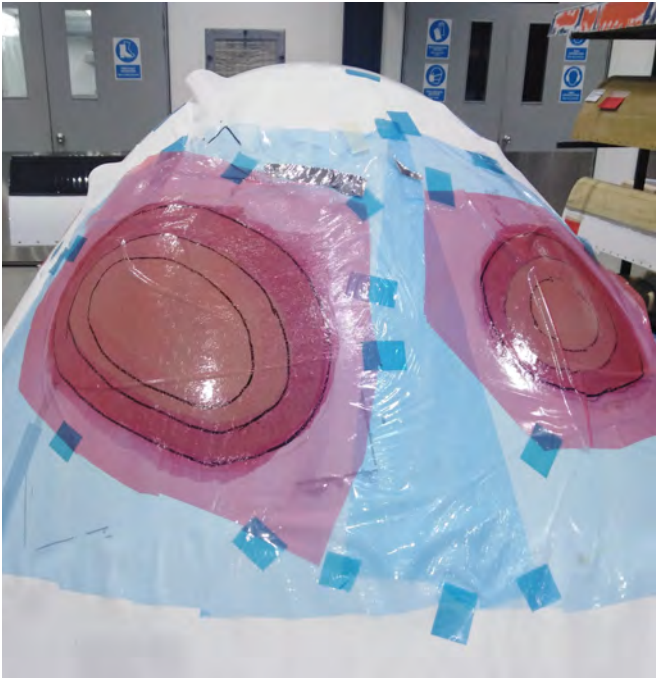
Item	P/N	Description
8201	GMIANB102-V*	<p>Power Amplifier 3 Phases - 2 outputs 3 blankets connected in parallel on each of the 2 outputs Connection to 3 Phase Voltage, Capacity: 32 kW 2 independent channels of 16 kW each *V=380 or 415 or 480 depending on VAC input to be specified at the order</p> 
8202	GMIANB302-V*	<p>Power Amplifier 3 Phases - 6 outputs <u>Same as above</u> - 2 independent zones with for each 3 possible connections in parallel</p> <p>*V=380, 410 or 480 depending on VAC input to be specified at the order</p> 

9 MULTIPLE BLANKET CONNECTION SOLUTIONS

Item	P/N	Description
9001	GMIEZE-Y	<p>Cable in Y to connect 2 blankets monophase in parallel Driving 2 blankets on each channel of an ANITA 3 m. total ; 2 branches of 1 m</p> 
9002	GMIEZE062-Y	<p>same but total length 0.5 m ; 2 branches of 25 cm</p>
9003	GMIANE104	<p>Box for connection of 4 blankets monophase in parallel Driving 4 blankets on each channel of an ANITA</p> 

10 RADOME SHAPED BLANKETS

GMI can offer a wide range of moulded blankets shaped to radomes of Airbus, Boeing, ATR Bombardier CRJ

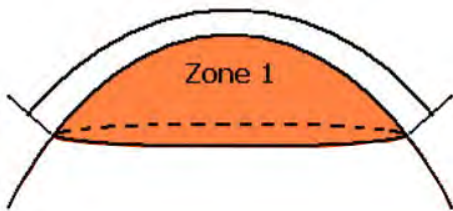


10.1 TYPES OF RADOME BLANKETS

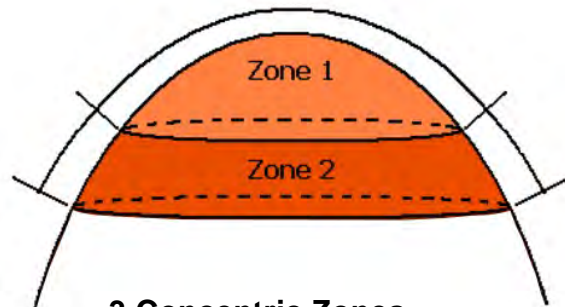
The Radome can be designed either with **concentric zoning** or **sector zoning**. They are available for internal or external skin repair.

They can be also designed in one electric zone covering only the tip of a flange area of the Radome.

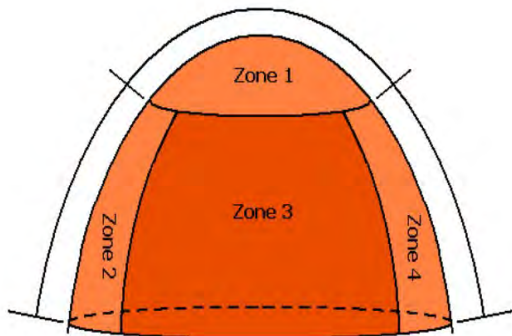
Tip Zone



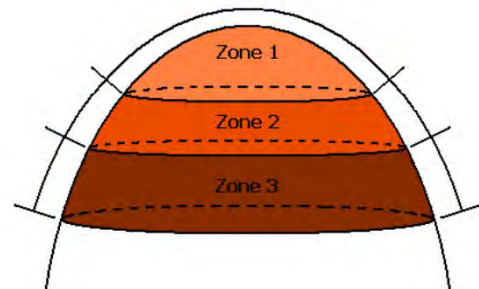
2 Concentric Zones



4 Sectors



3 Concentric Zones



10.2 AIRBUS MODELS

10.2.1 RADOME A320 - 230 Volts

Item	P/N	ZONES	DIMENSIONS	SKIN
10211	GMIHBR-320-R1Z-070-2	Tip 1 Zone	Overall length 70 cm	Reversible
10212	GMIHBR-320-E2C-125-2	2 Concentric	Overall length 125 cm - Ø 100 cm	External
10213	GMIHBR-320-I2C-125-2	2 Concentric	Overall length 125 cm - Ø 100 cm	Internal
10214	GMIHBR-320-E3C-170-2	3 Concentric	Overall length 170 cm - Ø 130 cm	External
10215	GMIHBR-320-I3C-170-2	3 Concentric	Overall length 170 cm - Ø 130 cm	Internal
10216	GMIHBR-320-E4S-170-2	4 Sectors	Overall length 170 cm - Ø 130 cm	External
10217	GMIHBR-320-I4S-170-2	4 Sectors	Overall length 170 cm - Ø 130 cm	Internal
10218	GMIHBR-320-E4C-200-2	4 Concentric	Overall length 200 cm	External
10219	GMIHBR-320-I4C-200-2	4 Concentric	Overall length 200 cm	Internal

10.2.2 RADOME A330 - 230 Volts

Item	P/N	ZONES	DIMENSIONS	SKIN
10221	GMIHBR-330-E1Z-065-2	Tip 1 Zone	Overall length 65cm	External
10222	GMIHBR-330-I1Z-065-2	Tip 1 Zone	Overall length 65cm	Internal

10.2.3 RADOME A340 - 230 Volts

Item	P/N	ZONES	DIMENSIONS	SKIN
10231	GMIHBR-340-E3C-115-2	3 Concentric	Overall length 115 cm	External
10232	GMIHBR-340-I3C-115-2	3 Concentric	Overall length 115 cm	Internal
10233	GMIHBR-340-E3C-170-2	3 Concentric	Overall length 170 cm	External
10234	GMIHBR-340-I3C-170-2	3 Concentric	Overall length 170 cm	Internal
10235	GMIHBR-340-E4S-170-2	4 Sectors	Overall length 170 cm	External
10236	GMIHBR-340-I4S-170-2	4 Sectors	Overall length 170 cm	Internal

10.2.4 RADOME A350 - 230 Volts

Item	P/N	ZONES	DIMENSIONS	SKIN
10241	GMIHBR-350-E3C-180-2	3 Concentric	Overall length 180 cm	External
10242	GMIHBR-350-I3C-180-2	3 Concentric	Overall length 180 cm	Internal

10.2.5 RADOME A380 - 230 Volts

Item	P/N	ZONES	DIMENSIONS	SKIN
10251	GMIHBR-380-E1Z-080-2	Tip 1 Zone	Overall length 80 cm	External
10252	GMIHBR-380-I1Z-080-2	Tip 1 Zone	Overall length 80 cm	Internal

BLANKETS FOR ENGINE REVERSERS

10.3 BOEING MODELS

Item	P/N	ZONES	DIMENSIONS	SKIN
10301	GMIHBR-737-R2C-110-2	2 Concentric	Overall length 110 cm	Reversible
10302	GMIHBR-747-I4S-125-2	4 Sectors	Overall length 125 cm	Internal
10303	GMIHBR-747-E4S-125-2	4 Sectors	Overall length 125 cm	External

10.4 ATR MODELS (ATR 42 & ATR 72) MODELS 230 VOLTS

Item	P/N	ZONES	DIMENSIONS	SKIN
10401	GMIHBR-72-R1Z-075-2	Tip 1 Zone	Overall length 75 cm	Reversible
10402	GMIHBR-72-I2C-100-2	2 Concentric	Overall length 100 cm	Internal
10403	GMIHBR-72-E2C-100-2	2 Concentric	Overall length 100 cm	External
10404	GMIHBR-72-I4S-100-2	4 Sectors	Overall length 100 cm	Internal
10405	GMIHBR-72-E4S-100-2	4 Sectors	Overall length 100 cm	External

10.5 BOMBARDIER CRJ RADOME MODELS UNDER 230 VOLTS

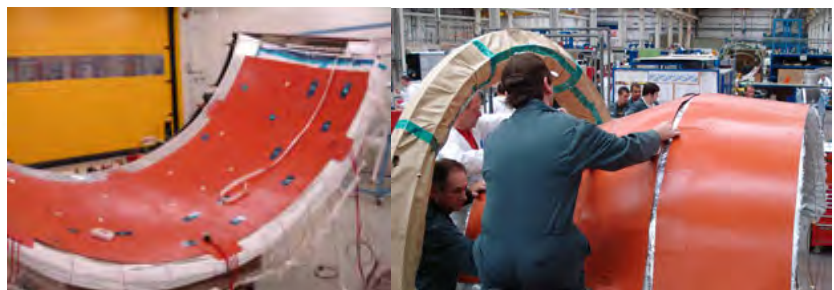
Item	P/N	ZONES	DIMENSIONS	SKIN
10501	GMIHBR-CRJ-E2C-046-2	2 Concentric	Overall length 46 cm	External
10502	GMIHBR-CRJ-I2C-046-2	2 Concentric	Overall length 46 cm	Internal

11 BLANKETS FOR ENGINE REVERSERS

We designed a Kit of Blankets to cover an Engine Reverser, Transcowl or Corecowl

For temperature Control, these blankets are designed in several zones, each one in 230 Volts monophase. They can be temperature controlled through Anita Bonding Consoles or optionally with our System Anita **6Z40** for Reverser Repair.

All blanket electrical circuits per zone described below are under 230 Volts monophase



11.1 GENERAL PROGRAM FOR COMPLETE TRASCOWLS AND CORECOWLS**CF6-80C2 - AIRBUS A300, A310 & BOIENG B747, B767**

FOR TRASCOWLS

11101	GMIHBTR-CF6-G-2	Set of 2 blankets for T/C Grumman Left or Right - each blanket in 3 zones - 230V Monophase
11102	GMIHBTR-CF6-MM-2	Set of 2 blankets for T/C Martin Marietta Left or Right - each blanket in 3 zones - 230V Monophase

FOR CORECOWLS

11103	GMIHBCR-CF6-1-2	Set of 2 Blankets of 5 zones in total for Corecowl Left Side - 230V Monophase
11104	GMIHBCR-CF6-2-2	Set of 2Blankets of 5 zones in total for Corecowl Right Side - 230V Monophase

CF6-80E1 - AIRBUS A330

FOR TRANCOWLS

11105	GMIHBTR-CF6-80E1-V2	Set of 2 blankets for Translating Sleeve CF6-80E1 for A330
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PW4000 - AIRBUS A310

FOR TRASCOWLS

11106	GMIHBTR-PW4000-310-2	Set of 2 blankets for Transcowl Left or Right - Each Blanket in 3 Zones 230V Monophase
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FOR CORECOWLS

11107	GMIHBCR-PW4000-310- 1-2	Set of 3 blankets for Corecowl Left - Each Blanket in 2 zones 230V Monophase
11108	GMIHBCR-PW4000-310-2-2	Set of 3 blankets for Corecowl Right - Each Blanket in 2 Zones 230V Monophase

PW4168 - AIRBUS A330

FOR TRASCOWLS

11109	GMIHBTR-PW4168-330-2	Set of 2 blankets for T/COWL Left or Right - Each Blanket in 2 Zones - 230V Monophase
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FOR CORECOWLS

111010	GMIHBCR-PW4168-330-1-2	Set of 3 blankets for Corecowl Left - A total of 8 zones 230V Monophase
111011	GMIHBCR-PW4168-330-2-2	Set of 3 blankets for Corecowl Right - A total of 8 zones 230V Monophase

BLANKET SPECIFIC FOR CFM56 ABRADABLE LINER BONDING

11.2 BLANKETS FOR TRANSCOWLS CF6-80C2 PER SEGMENT

Item P/N	Description
<p>In case the customer does not want to proceed to complete skin overhaul, we can propose blankets covering only the sectors.</p> <p>If we sketch the skin of the T/C with 6 sectors, the table below gives the P/N of the independent blankets. Those blankets operate under 230 Volts monophasic and can be controlled by our different Anita Consoles or by the 6 Zones Anita</p>	
11201 GMIHBTR06-01-1Z-2	1 Blanket for segment 1 - Left Rear side
11202 GMIHBTR06-02-1Z-2	1 Blanket for segment 2 - Central Rear side
11203 GMIHBTR06-03-1Z-2	1 Blanket for segment 3 - Right Rear side
11204 GMIHBTR06-04-1Z-2	1 Blanket for segment 4 - Left Front Side
11205 GMIHBTR06-05-1Z-2	1 Blanket for segment 5 - Central Front side
11206 GMIHBTR06-06 -1Z-2	1 Blanket for segment 6 - Right Front Side



12 BLANKET SPECIFIC FOR CFM56 ABRADABLE LINER BONDING

Item P/N	Description
<p>The blanket is in 2 electrical zones to be controlled by the ANITA Console. Two identical blankets are necessary to cover the complete circular ring of this engine.</p> <p>P/N are given for 230 Volts; for 120 Volts change the last figure 2 to 1</p>	
12001 GMIHBCFM56-B-2Z-2	CFM56-5B Airbus A320 family
12002 GMIHBCFM56-C-2Z-2	CFM56-5C Airbus A340
12003 GMIHBCFM56-3-2Z-2	CFM56-3 Boeing 737



All blankets are available in 120V and 230V - Just specify what your needs are. Consult us also for accessories and Dedicated Training.



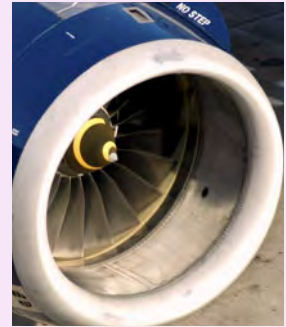
13 AIR INLET BLANKETS

We can supply the set of blankets used for the process of replacement of the wiremesh on the panels of the Air Inlet.

Note on the control: the blankets are large to cover the whole panel surfaces; so, it is recommended to use our 6 Zone Bonder due to the large electrical power necessary. Our system offers ease of implementation for such a process. **“ANITA 6 ZONES - HIGH POWER - 6 REPAIRS” on page 25**

13.1 FOR ENGINE V2500

Item	P/N	Description
		<p>The system is designed in 3 blankets:</p> <ul style="list-style-type: none"> - 1 to cover the upper segment; - 2 similar ones to cover respectively the lower left and lower right sides. <p>Each blanket is manufactured in 2 zones parallel in the length.</p> <p>Approximative dimensions:</p> <ul style="list-style-type: none"> - Blanket Upper: 1530 x 760 and 760 mm - Blanket Lower left: 1730 x 630 and 760 m - Blanket Lower right: 1850 x 760 and 630 mm



13101 **GMIHBAI-V25-2** Set of 3 blankets, each on monophase 230 V To connect to our 6 zones Bonder and Power system ANITA 6Z40 or with 3 ANITA EZ/4.0

13.2 FOR ENGINE A330 - PW4168

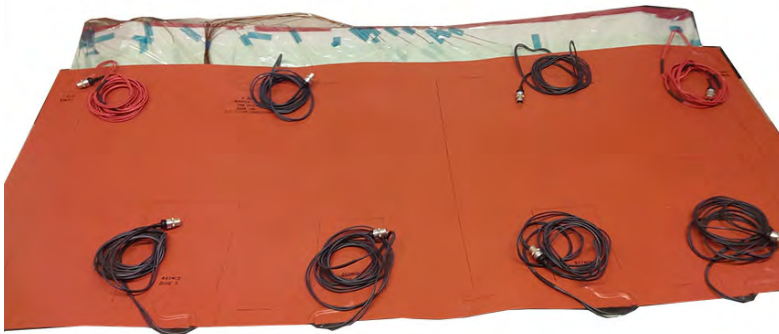
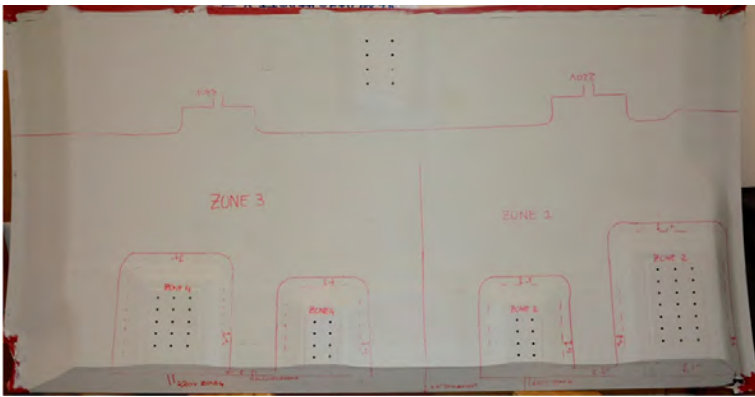
Item	P/N	Description
	GMIHBAI-4168-2	<p>The system is designed in 2 blankets.</p> <p>Each Blanket in 3 Electrical Zones</p> <p><u>Blanket 1:</u> Width 680 mm / Length: 1150 + 1200 + 1150 mm</p> <p><u>Blanket 2:</u> Width 620 mm / Length: 1220 + 1200 + 1220 mm</p>



BLANKET FOR GE90 COWLING REPAIR

14 BLANKET FOR GE90 COWLING REPAIR

Objective: Reconstruction After Water Ingress of Cowling Left or Right (2,15 x 0,9 m approx)



A multi zones blanket to cover the upper surface of right/left upper cowling area

The control of 6 zones can be done through:

- 3 Anita EZ 2 zones OR
- 1 system Anita 6 zones



This specific blanket has been designed after an actual series of trials including our services for engineering analysis and thermal transfer simulation; excellent results to match specifications of **180 °C +/- 5 °C** on the whole area (2,15 x 0,9 m approx.) are obtained with our heating blanket designed in **multi zones optimally**. Consult us to adapt the control solution with our Anita System.

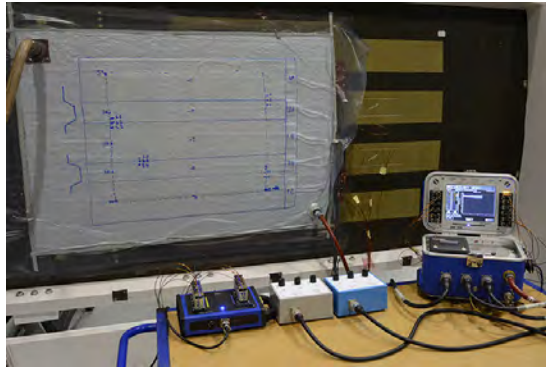
Item	P/N	Description
14001	GMIHBGE90-R-8-1805-2	Heating Blanket Right Cowling; 8 zones - 230 Volts
14002	GMIHBGE90-L-8-1805-2	Heating Blanket Left Cowling; 8 zones - 230 Volts

15 ADAPT HEAT® FOR STIFFENED PANEL REPAIR WITH ANITA

ADAPT HEAT™ IS A KIT DEVELOPED BY GMI.

Adapt Heat is an innovative heating circuit designed to achieve **even temperature distribution on a surface up to typically 80 x 80 cm of a fuselage stiffened panel**. The innovation consists in a specially designed heating circuit with a certain electrical zoning «adapted» in power to the geometry and thickness of the structure sub-areas to develop heat accordingly to their thermal reactions. It is made to be associated with the appropriate bonding console ANITA that implements its unique features for handling two zones heating control and its programmed strategy to handle the thermocouple sensor data.

Specially conceived to repair structures with Stringers.



SUPPORT & ASSISTANCE BY A SPECIALIZED TEAM.

GMI offers a **unique service** to customers who decide to implement this solution. We have trained a team of specialists for intervention in **Europe, Asia, America to assist you with:**

- Analysis of the repair
- Method for construction of the heating system
- Adaptation of the heating system in the field
- Implementation
- Training and transfer of technology

Please consult us for development and adaptation to your specific needs and application.

P/N of Basic Solution:

GMISRA080080-2



16 MATS FOR RECONDITIONING OF WINDOW AREA



When damages are to be repaired around a fuselage window, it is necessary to have the heating and temperature sensing system designed appropriately to the dimensions and to the type of damages. GMI can supply these specific parts together with vacuum generation and temperature control equipment. The vacuum and control through the Anita Console are described in previous chapters of the catalogue.

For A350, GMI can deliver a Kit of blanket and sensing mat as below

16.1 KIT FOR AIRBUS A350 WINDOWS



Item	P/N	Description
16101	GMIHBS2103-HUBA350-1Z-2*	Heating Blanket designed according to dimensions of the A350 window; 230 Volts
16102	GMISMS2103-HUBA350-1Z-J**	Sensing system with thermocouples Type J

* - 1, For 120 Volts
 ** -K for thermocouples type K

For other aircraft, thank you to consult us.

17 BLANKETS FOR HEATING FABRICATION METALLIC MOULDS

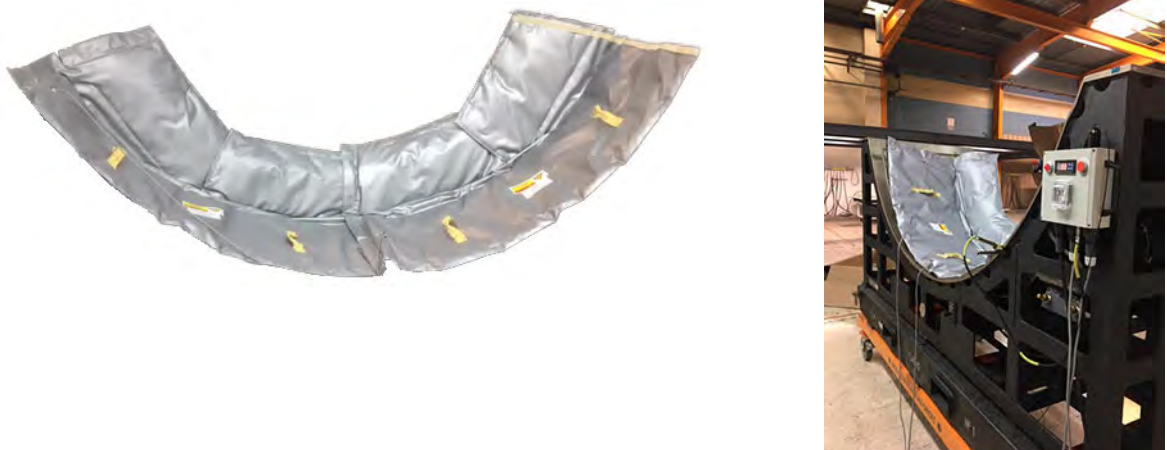
17.1 Adapted Shape

The operation of lay up during composite part manufacturing is greatly helped if the mould surface has been pre-heated. Here below an example of a U shaped blanket adapted to a mould. GMI Aero provides also appropriate controllers for this type of applications with a characteristics the ease of implementation.



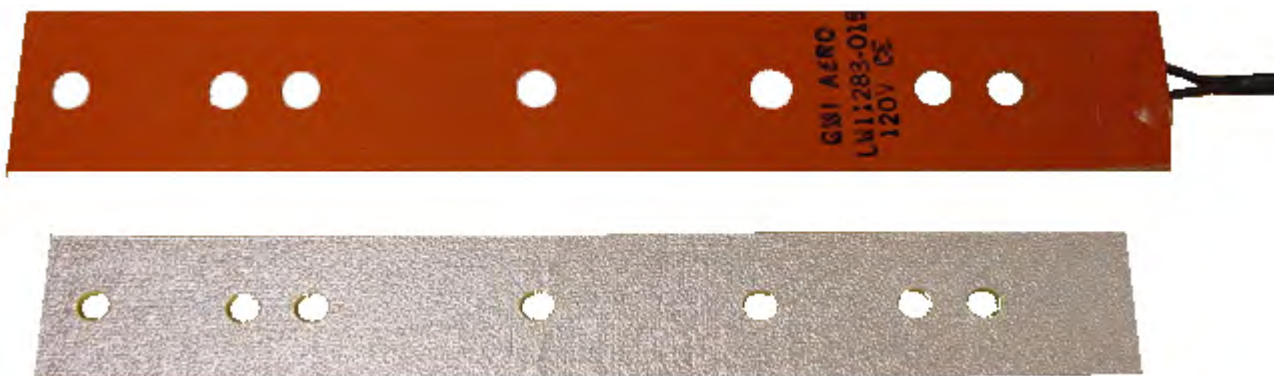
17.2 Conforming Cover Blanket

As for the use described above, certain complex metallic moulds may be heated by a mat as illustrated below by a Conforming Blanket .



17.3 Blankets for mould heating

When it is necessary to heat a mould surface, GMI Aero designs special heaters. Here a blanket to be installed flat with an insulator; holes are provided for bolts.



18 MOLDHEAT® A COMPLETE SOLUTION TO HEAT COMPOSITE MOULDS

For heating composite made moulds, GMI Aero has developed a technology, **MOLDHEAT**, to heat the carbon structure in order to facilitate the lay up of the pre-preg layers . Other applications are then also possible during the curing cycle .



On the picture above heating mats installed on the internal structure , while a techniques for connexion , powering and temperature control have also been developed. Consult us to engineer a solution according to specifications . GMI can design the heating system; the connecting set and the appropriate temperature control process and instruments .

19 INFRA RED LAMPS AND SYSTEMS

GMI Aero offers a selection of **INFRA RED** equipment to meet a certain variety of use in a composite repair workshop.

- Curing composite repair patch with epoxy resin
- Drying resin
- Polymerization of paint and/or primer



19.1 PANEL WITH AN ARTICULATED ARM

FOR A LARGE HEATING AREA 1 x 0,9 m (40 x 35 inches)

This family of radiant panels regroups models mounted on articulated arms to ease the positioning above complex and large parts.

They are mainly used for paint, primers and small area curing of epoxies at low temperature (typically 120°C/ 250°F).

They are proposed mounted on an articulated arm, itself on a rolling assembly.

Its design features provide a large surface coverage with good temperature distribution

- a. One cassette with 3 infra-red emitters
- b. High life duration of emitters due to permanent ventilation
- c. Ventilation provides high security for the user
- d. 10000 hours life duration of emitters

We offer several variations for **control**:

- a) The panel can be controlled by Anita Bonding Console through direct connection like a heating blanket
- b) Or as an alternative solution by a controller with a thermocouple scanner



Item	P/N	Description
		- IR system - 230 V ; 3kW - Large Curing area: 1 x 0,9 m (40 x 35 inches) - Typically for heat up to 120 °C.
19101	GMIWIR-MA-2	Control Mode: With interface to Anita for automatic control
19102	GMIWIR-MRS-2	Control Mode: Through a Controller. A scanner with a 4TC scanner to record temperature. Thermocouple Type J The system is mounted on the vertical strut Data are made available through a USB key ; a PC software is delivered to report from data
19103	GMIWIRL-2	Infra Red Spare Lamp 230 Volts
19104	GMIWIRL-1	Infra Red Spare Lamp 120 Volts
19105	GMIWIR-MF	Spare Filter



19.2 SPOTBOND 1 AND 2

The Family of IR Lamps **Spot Bond 1 & 2** are composed of an articulated head mounted on a vertical bar on a rolling base.

2 options for controlling these lamp are available:

- 1) Direct control through Our Hot Bonder family: ANITA
- 2) Through a Scanner and Controller in an independent console attached

Item	P/N	Description
		
		
		

MODELS SB1 1 LAMP, 1000W

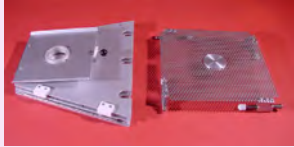




19201	GMIWIR-SB1-A-2	Controllable by a Bonding Console (ANITA or other)
19202	GMIWIR-SB1-RS-J*	Controllable by an autonomous Heating Controller and Temperature scanner (4 J-type T/C). *Type of T/C ; also available in type K; To be specified at the order Possibility to control with external Bonding Console ANITA

MODELS SB2 2 LAMPS, 2000W

19203	GMIWIR-SB2-A-2	Controllable by a Bonding Console (ANITA or other)
19204	GMIWIR-SB2-RS-J*	Controllable by an autonomous Heating Controller and Temperature scanner (4 J-type T/C). * Also available with K-type T/C. Possibility to control with external Bonding Console (ANITA or other)
19205	GMIWIR-SBL-1	Infra Red Spare Lamp 120V
19206	GMIWIR-SBL-2	Infra Red Spare Lamp 230V
19207	GMIWIR-SBH1-2	Infra red head support with 1 lamp - articulated - without its rolling base and without vertical strut - 230 Volts
19208	GMIWIR-SBC01	Transportation case for the Spot Bond lamp only

FOLDABLE OVEN WITH HOT AIR FOR ANITA CONSOLES

20 FOLDABLE OVEN WITH HOT AIR FOR ANITA CONSOLES

Item	P/N	Description	
20001	GMIET010	Foldable oven for drying the sandwich area after core removal and before core installation or potting. Useful to accelerate the potting curing or heat the adhesive up to 120°C. Base of the oven 40x 40 cm With Drying grid	 
20002	GMIET011-1 GMIET011-2	Heat Gun 120V Heat Gun 230V	
20003	GMIETE012-1 GMIETE012-2	Adaptor cable for Heat Gun on Anita bonding console -1 for 120V - US Plug -2 for 230V - CE Plug	
20004	GMIET110-1 (120 Volts) GMIET110-2 (230 Volts)	Set of 3 parts above: 1 - Foldable oven 2 - Heat Gun 230 Volts or 120 Volts 3 - Connector for Anita control Controlling: - By Anita Bonding Console	

21 AUTONOMOUS HEATING BLANKETS AND CONTROLLERS

This specific family of blankets is conceived and manufactured for use at low temperature: around 80°C according to specs. (it can exceptionally heat up to 100°C). They are driven in power by specific simple low cost instruments that we call **Autonomous** Controllers

21.1 AUTONOMOUS CONTROLLERS

The autonomous controllers have been designed to drive low-temperature «autonomous» blankets. They have a pre-set of 60°C or 80°C and are available in 1 or 2 outputs in parallel. The maximum power of those controller is: Voltage X 7 Amp or Voltage X 16 Amp for High Power

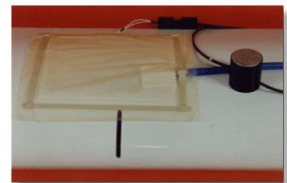
Item	P/N	Description	Outputs
21101	GMITH1-1-60 GMITH1-2-60	Autonomous Controller Pre-set at 60°C/140°F Volt: 1 for 120V / 2 for 230V	1 single output Power Max: Vx7A
21102	GMITH1-1-80 GMITH1-2-80	Autonomous Controller <u>Pre-set</u> at 80°C/176°F Volt: 1 for 120V / 2 for 230V	1 single output Power Max: Vx7A
21103	GMITH2-1-60 GMITH2-2-60	Autonomous Controller <u>Pre-set</u> at 60°C/140°F Volt: 1 for 120V / 2 for 230V	2 single output Power Max: Vx7A
21104	GMITH2B-1-60 GMITH2B-1-80 GMITH2B-2-60 GMITH2B-2-80	Autonomous Controller with High Power 230 Volts <u>Pre-set</u> at 60°C/140°F <u>OR</u> <u>Pre-set</u> at 80°C/176°F	2 single output Power Max: Vx16A



21.2 AUTONOMOUS BLANKETS FLEXIBLE AND STRETCHABLE

The autonomous blankets are used as classical blankets but are limited to low temperature of Max 80 °C. Volts: 230 or 120. They need to be driven by the autonomous controller, and various sizes are available.

Item	P/N	Dimensions (cm)	Zones
Flexible Autonomous Blankets			
21201	GMIHBA020020-2	20 X 20	1 electrical zone
21202	GMIHBA025025-2	25 X 25	1 electrical zone
21203	GMIHBA030030-2	30 X 30	1 electrical zone
21204	GMIHBA040040-2	40 X 40	1 electrical zone
21205	GMIHBA060060-2	60 X 60	1 electrical zone
Stretchable Autonomous Blankets			
21206	GMIHBAC020020-2	20 X 20	1 electrical zone
21207	GMIHBAC025025-2	25 X 25	1 electrical zone
21208	GMIHBAC030030-2	30 X 30	1 electrical zone
21209	GMIHBAC040040-2	40 X 40	1 electrical zone
212010	GMIHBAC030050-2	30 X 50	1 electrical zone

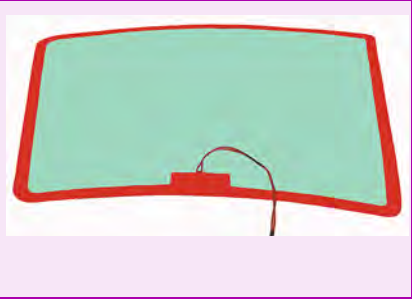


22 APPLICATIONS OF AUTONOMOUS SYSTEMS: DISBONDING OF WINDSCREEN

A wind screen shaped heat blanket can be used to soften the PR. Controlled by an autonomous controller, the blanket heats up the PR to easily dis-bond the wind screen.

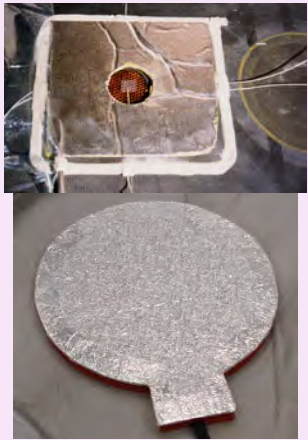
See an example of an application on a wind screen of an Embraer aircraft

Consult us for application details



23 HEAT FLEXIBLE INSULATOR

Item	P/N	Description
23001	GMITI010	<p>Flexible Insulator</p> <p>This is used to protect areas from being overheated. It is an excellent insulator against heat losses by radiation and convection.</p> <p><u>Typical applications:</u></p> <ul style="list-style-type: none">- Repair of elevator- Bonding an adhesive in bottom of hole in honeycomb. <p>Delivered in sheet of 45 x 75 cm</p> <p><u>Note:</u> Can easily be cut with a cutter</p>



24 CABLES & ADAPTORS

GMI proposes a wide range of cables and adaptors for all of its equipment to connect and interconnect equipment to heating elements such as blankets, IR Lamps or Heat Gun and other accessories.

24.1 ANITA POWER CABLES

Item	P/N	To Power	On	Type	Length
24101	GMIEZE050	With No plug on wall side	Anita EZ, 4.0, QS	32 A Cable	5 m
24102	GMIEZE0522	With European Power Plug (CEE/7)	Anita EZ, 4.0, QS	16A Cable	5 m
24103	GMIEZE0525	With UK Power Plug (BS1363)	Anita EZ, 4.0, QS	13A Cable	5 m
24104	GMIEZE0527	With European High Power Plug 230V 32A (Hypra 3 poles)	Anita EZ, 4.0, QS	32A Cable	5 m
24105	GMIEZE0528	With Power - Three phase sector Menekes Plug	Anita EZ, 4.0, QS	32A Cable	5 m
24106	GMIEZE0511	With US Power Plug 125V - 15A (Nema 5/15P straight blades)	Anita EZ, 4.0, QS	16A Cable	5 m
24107	GMIEZE0513	With US Power Plug 125V - 30A (Nema 5/30P twist lock)	Anita EZ, 4.0, QS,	32A Cable	5 m

24.2 ANITA BLANKET CABLES

Item	P/N	To Connect	On	Type	Length
24201	GMIEZE060	1 GMI Blanket	Anita EZ, 4.0, QS	20A Cable	3 m
24202	GMIEZE060-6	1 GMI Blanket	Anita EZ, 4.0, QS	20A Cable	5 m
24203	GMIEZE060-Y	1 GMI Blanket	Anita EZ, 4.0, QS	20A Y Cable	3 m
24204	GMIEZE102	2 GMI Blankets	Anita EZ, 4.0, QS	20A Y Cable	4.5 m
24205	GMIANE104	4 GMI Blankets	Anita EZ, 4.0, QS	Box	3.5 m
24206	GMIEZE560	1 ATEX GMI Blanket	Anita EZ, 4.0, QS	20A Cable	3 m
24207	GMIEZE460-6	1 GMI Blanket	Anita 18Z	20A Cable	6 m
24208	GMIEZHE063	1 GMI Blanket	Anita EZH	20A Cable	3 m
24209	GMIEZHE062	1 High Power Blanket (non ATEX)	Anita EZH	20A Cable	3 m
242010	GMIEZE063	1 High Power Blanket	Anita EZ, 4.0, QS	20A Cable	3 m

(3) THERMOCOUPLES & OTHERS

1 THERMOCOUPLE CABLE ROLLS

Item	P/N	Description
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Our thermocouple cable is of high quality and particularly suitable for the fabrication of individual cables for the sensing of temperature in composite vacuum bags. It is available in rolls and is sleeved with **Kapton** for easy manipulation and rolling. Its specifications are compatible with composite repair classes of measurement.



We propose also below rolls of Thermocouple with **Fibreglass sleeve** for higher Temperature Limit

Kapton Sleeve

1001	GMIANT150-J	A roll of 150 m of TC cable Type J with limits of error +/-1.1 °C Temp Limit 260°C
1002	GMIANT150-K	A roll of 150 m of TC cable Type K with limits of error +/-1.1 °C Temp Limit 260°C
1003	GMIANT300-J	A roll of 300 m of TC cable Type J with limits of error +/-1.1 °C Temp Limit 260°C
1004	GMIANT300-K	A roll of 300 m of TC cable Type K with limits of error +/-1.1 °C Temp Limit 260°C

Fibreglass Sleeve

1005	GMIANTG200-J	A roll of 200 m of TC cable Type J Fibreglass with limits of error +/-1.1 °C ; Temp Limit 480°C
1006	GMIANTG200-K	A roll of 200 m of TC cable Type K Fibreglass with limits of error +/-1.1 °C ; Temp Limit 480°C

2 FLAT THERMOCOUPLES EQUIPPED

These cables are sleeved By Kapton material; the plus is of high temperature 260 °C with error of +/- 1,2°C.

Item	P/N	Length	Type	Error
------	-----	--------	------	-------

2001	GMIEZTF010-J-12	12 feet/3,6 m	J	+/-1.2 °C
2002	GMIEZTF010-J-20	20 feet/6 m	J	+/-1.2 °C
2003	GMIEZTF010-K-12	12 feet/3,6 m	K	+/-1.2 °C
2004	GMIEZTF010-K-20	20 feet/6 m	K	+/-1.2 °C



For each item above you may additionally order a calibration certificate

INDIVIDUAL THERMOCOUPLE CABLES TYPE J OR K

3 INDIVIDUAL THERMOCOUPLE CABLES TYPE J OR K

Item	P/N	Length	Type
Temperature limit : - T/C Cable 260 °C - Plug mounted 200 °C Max Appropriate for Repair Bags Error: +/-1,2 °C			
3001	GMIEZT010-J-3	3 meters	J
3002	GMIEZT010-K-3	3 meters	K
3003	GMIEZT010-J-6	6 meters	J
3004	GMIEZT010-K-6	6 meters	K



With High Temperature Plug Mounted 260 °C Appropriate for Curing in Autoclave
Error: +/-1,2 °C

Item	P/N	Length	Type
3005	GMIEZT011-J-3	3 meters	J
3006	GMIEZT011-K-3	3 meters	K
3007	GMIEZT011-J-6	6 meters	J
3008	GMIEZT011-K-6	6 meters	K

Calibration Certificate

The cables are delivered with a conformance certificate. if you want also an individual certificate of calibration, we can supply at additional cost a certificate for each cable duly serialised. The cable is tested at 4 points: 50, 100, 150, 200 °C - see also below how to calibrate yourselves the thermocouple cables.

4 THERMOCOUPLE CABLES WITH 300 °C MOULDED PLUGS

This type of cable is made of thermocouple stranded rugged wires externally covered by an outer PFA jacket.

Item	P/N	Description
401	GMIEZT030-J-10	Thermocouple cables type J; 3 m /10 feet long. Max temperature of the wire 300 °C; Max temperature of the Plug: 300 °C
402	GMIEZT030-K-10	Thermocouple cables type K; 3 m /10 feet long. Max temperature of the wire 300 °C; Max temperature of the Plug: 300 °C



INDIVIDUAL THERMOCOUPLE PLUGS LOW AND HIGH TEMPERATURE

Item	P/N	Description
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For each item above you may additionally order a calibration certificate

5 INDIVIDUAL THERMOCOUPLE PLUGS LOW AND HIGH TEMPERATURE

Item	P/N	Description
Individual plugs to be mounted on cable; Max temperature 200 °C		
501	GMIEZT010-1-J	Type J; colour black
502	GMIEZT010-1-K	Type K; colour green
Individual plugs to be mounted on cable; Max temperature 260 °C		
503	GMIEZT011-1-J	Type J; colour black
504	GMIEZT011-1-K	Type K; colour green



THERMOCOUP

6 THERMOCOUPLES FOR OVENS AND AUTOCLAVES

Plugs for high temperature ambiance like in ovens and autoclaves are given above. Below we present some other elements useful appropriate for ovens and autoclaves.

Item	P/N	Description
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SOCKET PANELS TYPE J OR TYPE K

6001	GMIFBTP-H-6-J or GMIFBTP-H-6-K	Thermocouple socket panel - 6 sockets - 205 °C max temperature ; 260 °C in peak
6002	GMIFBTP-H-8-J or GMIFBTP-H-8-K	Thermocouple socket panel - 8 sockets - 205 °C max temperature ; 260 °C in peak
6003	GMIFBTP-H-12-J or GMIFBTP-H-12-K	Thermocouple socket panel - 12 sockets - 205 °C max temperature ; 260 °C in peak



EXTENSION THERMOCOUPLE PAIR CABLES

6004	GMIFBTEX-8-J or GMIFBTEX-8-K	Thermocouple cable of type J or K with pairs individually twisted; - Mylar internal for shield - Copper wire for ground connection for 8 pairs
6005	GMIFBTEX-12-J or GMIFBTEX-12-K	Thermocouple cable of type J or K with pairs individually twisted; - Mylar internal for shield - Copper wire for ground connection for 12 pairs




INSTRUMENTS

7 INSTRUMENTS

7.1 WELDER FOR THERMOCOUPLE CABLES

Item	P/N	Description
7101	GMIAT100-1 GMIAT100-2	Welder Portable instrument for welding thermocouple cables (type J or K) P/N with: - 1 for 120 V P/N with: - 2 for 230 V






7.2 CALIBRATION SYSTEM FOR THERMOCOUPLE CABLES

To verify and qualify the thermocouple cables of EMT = +/- 1,2°C a set of 3 parts . The set is composed of an **oven and instruments** according to the following list:

- the dry oven with heating source (thermowell)
- a temperature probe
- a thermometer of high precision

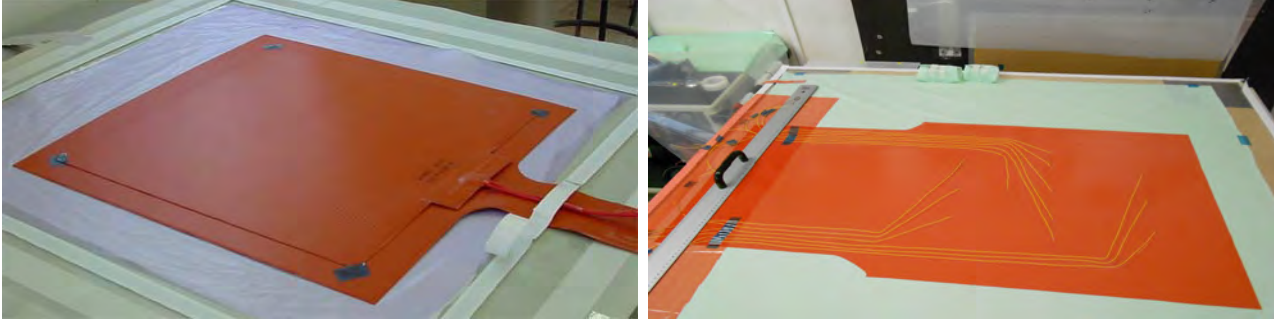
Item	P/N	Description
7201	GMIFC1000	1-The dry oven (or thermowell) alone with 6 holes adapted to various standard sizes of probes.
7202	GMINGT550	2 - A thermometer for reference with an error better than +/-0,5°C <u>To be used together with one of the probes below:</u>
7203	GMINGT550-J10	3- A Reference Probe Type J , Ø 3mm, length 100 mm, with mini connector - Not calibrated .. or ..
7204	GMINGT550-J10	3- A Reference Probe Type K , Ø 3mm, length 100 mm, with mini connector - Not calibrated



8 STSM - SMART TEMPERATURE SENSING MATS WITH THERMOCOUPLES

Our Sensing Mat (STSM) is an innovative tool that will answer to the operator question as to where to position thermocouples for temperature control when performing hot bonding. The STSM is a layer of silicone embedded with very thin thermocouples according to a pre-set lattice.

When laid between the patch and the blanket, the sensors will be in intimate contact with the optimized areas of the repair patch and will measure adequately the temperature of the patch to be bonded in place. According to the size and shape of the patch, the operator has the latitude to select the sensors that will participate to the control and to the monitoring of the cure cycle.



According to the size the mat can contain 3 to 12 thermocouples of type J or K to be selected at the order. The mat connects through a quick connector to a prolongator cable that is then connected to the Anita Bonding Console.

8.1 STANDARD SENSING MATS

Item	P/N	Description	Thermocouples
8101	GMISM-030030-6-T*	Smart Mat 30 x 30 cm	6 Thermocouples
8102	GMISM-040040-6-T*	Smart Mat 40 x 40 cm	6 Thermocouples
8103	GMISM-050050-6-T*	Smart Mat 50 x 50 cm	6 Thermocouples
8104	GMISM-060060-6-T*	Smart Mat 60 x 60 cm	6 Thermocouples
8105	GMISM-060060-12-T*	Smart Mat 60 x 60 cm	12 - 2 output of 6 Thermocouples
8106	GMISM-070070-12-T*	Smart Mat 70 x 70 cm	12 - 2 output of 6 Thermocouples
8107	GMISM-090090-12-T*	Smart Mat 90 x 90 cm	12 - 2 output of 6 Thermocouples

*T= J or K according to choice.

Note that the large mats of 12 thermocouples need two thermocouples prolongator cables of 6 thermocouples to connect to the Anita console

8.2 PROLONGATOR CABLES

Item	P/N	Description	Number of TC
8201	GMIHBSM-6-J-3	Prolongator cable of 6 couples of type J - 3 m 6 type J long	
8202	GMIHBSM-6-K-3	Prolongator cable of 6 couples of type K - 3 m 6 type K long	

THERMOCOUPLES

(4) VACUUM GENERATION

GMI Aero offers a selection of adapted equipment to generate vacuum for composite structure repair, for intervention **in the field or for works in shop.**

1 ELECTRICAL VACUUM PUMPS**1.1 LIGHT PORTABLE PUMPS**

Item	P/N	Description	
1101	GMIWVP011-2	Electrical Vacuum Pump Mono voltage 230 V - For 1 or 2 vacuum bags. - Small and light (9 Kg) - No oil; model with oscillating piston Delivered with a manometer and vacuum silicone hose	
1102	GMIWVP011-1	Electrical Vacuum Pump Mono voltage 120 V - For 1 or 2 vacuum bags. - Small and light (9 Kg) - No oil; model with oscillating piston Delivered with a manometer and vacuum silicone hose	
1103	GMIWVP021	Electrical Vacuum Pump Bi Voltage - For 1 or 2 vacuum bags. - Small and light (9 Kg) - No oil; model with oscillating piston - Switching from 120V to 230V (cable to change) Delivered with a manometer and vacuum silicone hose	
1104	GMI EZPV01	Electrical Vacuum Pump Mono-Voltage 230 Volts - For 1 vacuum bag only. - Small and light (3 Kg) - No oil - Can be integrated in the Anita accessory case Delivered with a manometer and vacuum silicone hose.	
1105	GMIWVPC011	Transportation case for the vacuum pumps above P/N:GMIWVP011	



VACUUM HOSES

1.2 MOBILE VACUUM CENTERS FOR WORKSHOP

Item	P/N	Description
1201	Vacuum Pump system with oil and a tank	<p>Mounted on rolls. Ready for simultaneous connection of 5 vacuum bags Ideal for workshops and clean rooms</p> <p>- Tank capacity: 100 litres - Pump flow: 25 M3/H</p>
1202	GMIWVR013	Capacity 25 M ³ /h- monophase 230 Volts
1203	GMIWVR014	Capacity 25 M ³ /h - 3 phases 380 Volts





2 VACUUM HOSES



Item	P/N	Description
2001	GMIOTP010 GMIOTP030	<p>Red silicone hose for vacuum bag; compatible with Anita connections Internal Ø 8mm A roll of 10 m A roll of 30 m</p>
2002	GMIEZP050	<p>Red silicone hose for vacuum bag 3 meters long Internal Ø 8 mm</p> <p>With 2 male Staubli GMIEZP060-1 mounted</p>
2003	GMIEZP150	<p>Red silicone hose for vacuum bag 3 meters long Internal Ø 8 mm</p> <p>With 1 male Staubli GMIEZP060-1 mounted and 1 Female Quick coupler (US style)</p>



3 COMPRESSED AIR PUMP - VENTURI

Item	P/N	Description	
3001	GMIOTPVV010	<p>Vacuum bag valve mounted with Venturi Pump To be easily mounted on the vacuum bag. Excellent flow. Delivered with: - Silencer - Standard Staubli connector Male (RBE06)</p>	
3002	GMIOTPVV110	Same as above, including a Tuning Valve	
3003	GMIOTPVV011	<p>Vacuum bag valve mounted with Venturi Pump To be easily mounted on the vacuum bag. Excellent flow. Delivered with: - Silencer - US connector Male Atlas Copco (ISO 6150 B)</p>	
3004	GMIOTPVV111	Same as above, including a Tuning Valve	

4 MANOMETERS

Item	P/N	Description	
4001	GMIOTPVS010	<p>Vacuum meter mounted on connector to mate the valve base GMIWVB010 (see below)</p>	
4002	GMIOTPVS012	<p>Vacuum meter mounted on connection to mate the valve base GMIWVB012 (see below)</p>	

VACUUM

5 VACUUM HOSE - VALVES - CONNECTIONS

All parts described in this chapter are for use with our bonding systems for composite repair. Thermocouple cables, vacuum hoses, valves to be used inside autoclaves and ovens are listed in the Workshop Chapter.

5.1 VACUUM VALVES

We can offer several types of valves according to standard of connection.

Item	P/N	Description	
5101	GMIWVB010	Vacuum Bag Valve with: - Valve Base Diameter 65 mm - Auto Closing Part with its nipple to receive the mobile part below - US Style	
5102	GMIWVB020	Vacuum Bag Valve with: - Base Diameter 50 mm - Auto Closing Part with its nipple to receive the mobile part below - US Style	
5103	GMIWVB011	Mating connector for valve above With connector for insertion in vacuum hose of internal diameter of 8 mm	
5104	GMIWVB010-01 GMIWVB010-02	Vacuum Bag Valve Base - Diam 65 mm - Diam 50 mm	
5105	GMIWVB010-03	Auto closing part To be mounted on Vacuum Bag Valve Base	
5106	GMIWVB010-04	Connection for insertion in flexible hose - Diameter 8 mm - Thread 1/4 Gas	
5107	GMIWVB012	Vacuum Bag Valve with: - Base Diameter 65 mm - Auto Closing Part when the tube is unplugged - Connector Staubli Type (GMIEZP121)	
5108	GMIWVB013	Vacuum Bag Valve with: - Base Diameter 50 mm - Auto Closing Part when the tube is unplugged - Connector Staubli Type (GMIEZP121)	
5109	GMIOTP060-02	Vacuum Sniffer to be inserted tangentially to the repair bag wherever this is useful and/or necessary Compatible with Anita vacuum hoses of internal diameter. of 8 mm	

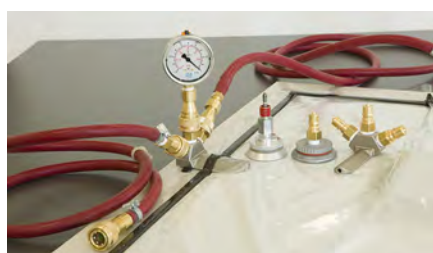
5.2 SMARTVALVES

Item	P/N	Description
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The Smart Valve principle is to **improve the vacuum bagging process** while saving time and cost.
 are made for **flat & curved surfaces** so that you can use them on every part, **no matter where the area to be repaired may be.**


5201	GMIWVB3F-S GMIWVB3F-U	Smart Valve 3 ports for flat surfaces Available in 2 configurations: -S for Staubli connection -U for US connection
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5202	GMIWVB3C-S GMIWVB3C-U	Smart Valve 3 ports for curved surfaces Available in 2 configurations: -S for Staubli connection -U for US connection
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5.3 VACUUM CONNECTIONS


Item	P/N	Description
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5301	GMIOE013	Y connection for supplying 2 bags by one vacuum pump: - Staubli output - Connection Staubli male for 6 mm tube	
------	-----------------	--	---


5302	GMIEZP060-1	Staubli Male connector - For insertion in hose of interior diam of 8 mm . Compatible with Anita connections or to the Y above	
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5303	GMIEZP060-2	Staubli Male connector - For insertion in hose of interior diam of 6 mm . Compatible with Anita connections or to the Y above	
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5304	GMIEZP021	Staubli Female connector - For insertion in hose of interior diam of 6 mm	
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5305	GMIEZP121	Staubli connector Female-Female Thread 1/4 NPT	
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5306	GMIEZP020-02	Staubli connector Male-Male Thread 1/4 Gas	
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5307	GMIEZP020-04	Staubli connector Male - Female Thread 1/4 Gas	
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VACUUM LEAK TESTER

Item	P/N	Description
5308	GMIEZP020-03	Atlas Copco connector Male - Male (ISO 6150B) Thread 1/4 NPT



6 VACUUM LEAK TESTER

Item	P/N	Description
6001	GMIWLD010	Vacuum Leak Tester To help locating the source of the leak in a vacuum bag.



(5) TOOLINGS

1 LESLIE KITS WITH GMI INNOVATIVE TOOLS

It is a unique equipment developed by GMI more than twenty years ago and sold regularly worldwide to all customers who want to machine the composite structures according to the state of the art rules. It includes innovative tools unequalled for performances in stepping, scarfing, milling, routing, edging, laminate or sandwich structures with flat, curved or multi curved surface skins.



Three models are proposed

WORKSHOP: Model with our innovative tools and a selection of accessories useful and necessary for an on-site operation. It's made so that ideally you have all necessary items to perform a repair within one box.

CRT: Model focusing on our innovative tools for development work in your entity. This model is more for constructors, schools etc.

KSS: Model restricted to 3 of our innovative tools for machining and sanding of part.

TOOLINGS



WORKSHOP AT

CRT



KSS



Item P/N	Description
<p>1001 GMIAT87B02-320</p>	<p>Leslie Workshop Model</p> <p>Mobile Workshop with innovative tools and attachments and useful accessories to prepare the structure before repair Contains all parts to conduct a repair from paint removal to patch installation. See specifications details in annexes</p> <p>The tools provided will allow you to do both stepping and scarfing.</p>
<p>1002 GMICRT9201</p>	<p>Leslie Model CRT</p> <p>Focused tool kit from above with innovative tools and attachments For manufacturers, repair centres, universities</p> <p>The tools provided will allow you to do both stepping and scarfing.</p>
<p>1003 GMIKSS010</p>	<p>Leslie Model KSS</p> <p>This restricted kit of Leslie contains only 3 innovative tools. This version is suitable for small workshops or customers working on non-complex structures.</p> <p>The tools provided will allow you to do both stepping and scarfing.</p>



Item P/N Description

1004 **GMIET110-1 120V** Set containing:
GMIET110-2 230V

- **Foldable oven.** Can heat up to 120°C.
- **Internal diffusion grid** for gun air break
- **Heating Gun**
- Adaptor cable to connect to the Anita Console is included



1005 **GMIETE010** **Foldable oven and diffusion grid** (40 x 40cm) to dry the sandwich area after core removal and before core installation or potting. The oven is useful to accelerate the potting curing.



1006 **GMIETE011-1** Heat gun 120V
GMIETE011-2 Heat gun 230V



1007 **GMIOTE012-V*** **Adaptor cable** to the standard cable of an Anita Bonding Console.
 *V = 1 for 120V - US Plug
 *V = 2 for 230V - CE Plug



TOOLINGS


2 DRILLING , ROUTING, ..

2.1 DRILLING MACHINE


Item	P/N	Description	
2101	GMIWTD010	Drilling Machine Straight for carbon skins to be used with our drill reamers below.	
2102	GMIWTD011	Drilling Machine In Angle for carbon skins to be used with our drill reamers below.	

2.2 DRILL REAMER HIGH QUALITY FOR CARBON SKINS

These drill perform 2 operations at the same time: drilling and reaming. They are conceived for a high quality operation on carbon skins - other dimensions in inches or mm are available.

Item	P/N	Diameter	
2201	GMICDR0396	3,96	
2202	GMICDR0410	4,10	
2203	GMICDR0475	4,75	
2204	GMICDR0480	4,80	
2205	GMICDR0490	4,90	
2206	GMICDR0508	5,08	
2207	GMICDR0520	5,20	
2208	GMICDR0627	6,27	
2209	GMICDR0635	6,35	
22010	GMICDR0650	6,50	
22011	GMICDR0667	6,67	

2.3 DRILL STOPS

Item	P/N	Description	
2301	GMIIRS02	Drill Stops #40	
2302	GMIIRS03	Drill Stops #30	
2303	GMIIRS04	Drill Stops #21	
2304	GMIIRS05	Drill Stops #11	
2305	GMIIRS06	Drill Stops #14	

2.7 TEETH COUNTERSINKS WITH REMOVABLE PILOT

2.7.1 FOR CARBON

Item	P/N	Diameter (mm)
Countersink with removable pilot (2 or 3 lips) at 100° for Carbon ; Thread M6 x 100		
2711	GMICSK0400	Ø 4,00
2712	GMICSK0476	Ø 4,76
2713	GMICSK0635	Ø 6,35
Other dimensions available, consult us		



2.7.2 FOR KEVLAR

Item	P/N	Diameter (mm)
Countersink with removable pilot (2 or 3 lips) at 100° for Kevlar according to diameters		
2721	GMIKSK0400	Ø 4,00
2722	GMIKSK0476	Ø 4,76
2723	GMIKSK0635	Ø 6,35
Other dimensions available, consult us		



MICROSTOP DRILL CAGES

Item	P/N	Description
To perform chamfer in metal or in carbon with great precision		
2724	GMIMDC06	Diameter 6 mm - M6 x 100
2725	GMIMDC08	Diameter 8 mm - M8 x 100
Other dimensions available, consult us		



3 DIAMOND CONES

Item	P/N	Description
3001	GMIOEDC060	Diamond cone 60° - axis 6 mm
3002	GMIOEDC100	Diamond cone 100°- axis 6 mm
3003	GMIOEDC120	Diamond cone 120°- axis 6 mm
3004	GMIOEDC130	Diamond cone 130°- axis 6 mm



3.1 DIAMOND FILES

Item	P/N	Description	Diamond Grit
3101	GMILID060	File length 150 mm - abrasive length 100 mm	Medium
3102	GMILID100	File length 150 mm - abrasive length 100 mm	Fine
3103	GMILID160	File length 250 mm - abrasive length 150 mm	Medium
3104	GMILID200	File length 250 mm - abrasive length 150 mm	Fine

SANDING

4 SANDING

4.1 SANDING DISCS



Item	P/N (box of 100 pieces)	Diameter in / mm	Grit	MOQ
4101	GMIAC041-080	1 in / 25 mm	80	1 box of 100
4102	GMIAC041-120	1 in / 25 mm	120	1 box of 100
4103	GMIAC041-180	1 in / 25 mm	180	1 box of 100
4104	GMIAC041-240	1 in / 25 mm	240	1 box of 100
4105	GMIAC041-320	1 in / 25 mm	320	1 box of 100
4106	GMIAC042-080	2 in / 50 mm	80	1 box of 100
4107	GMIAC042-120	2 in / 50 mm	120	1 box of 100
4108	GMIAC042-180	2 in / 50 mm	180	1 box of 100
4109	GMIAC042-240	2 in / 50 mm	240	1 box of 100
41010	GMIAC042-320	2 in / 50 mm	320	1 box of 100
41011	GMIAC043-080	3 in / 75 mm	80	1 box of 100
41012	GMIAC043-120	3 in / 75 mm	120	1 box of 100
41013	GMIAC043-180	3 in / 75 mm	180	1 box of 100
41014	GMIAC043-240	3 in / 75 mm	240	1 box of 100
41015	GMIAC043-320	3 in / 75 mm	320	1 box of 100

4.2 MANDRELS

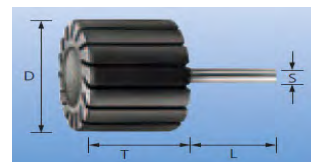
Item	P/N	Diameter
Mandrels for sanding discs above - medium hardness - see picture for principle of mounting		
4201	GMIAC041	1 in / 25mm
4202	GMIAC042	2 in / 50 mm
4203	GMIAC043	3 in / 75 mm



4.3 ABRASIVE CYLINDERS AND SUPPORTS

Mandrels

4301	GMIMA01510	15 x 10	6 x 35
4302	GMIMA01530	15 x 30	6 x 35
4303	GMIMA01925	19 x 25	6 x 35
4304	GMIMA02220	22 x 20	6 x 35
4305	GMIMA02525	25 x 25	6 x 35
4306	GMIMA03020	30 x 20	6 x 35
4307	GMIMA03030	30 x 30	6 x 35






	With Grit 80	With Grit 150	D x T (mm)	Grit 240
4308	GMICA1510-080	GMICA1510-150	15 x 10	GMICA1530-240
4309	GMICA1530-080	GMICA1530-150	15 x 30	GMICA1925-240
43010	GMICA1925-080	GMICA1925-150	19 x 25	
43011	GMICA2220-080	GMICA2220-150	22 x 20	
43012	GMICA2525-080	GMICA2525-150	25 x 25	
43013	GMICA3020-080	GMICA3020-150	30 x 20	
43014	GMICA3030-080	GMICA3030-150	30 x 30	



SCISSORS

5 SCISSORS




Item	P/N	Description	
5001	GMIAC017	Standard Scissors For papers or others Length: 24cm	
5002	GMIAC018	High Quality Scissors with micro teeth For <u>Kevlar</u> , <u>Carbon</u> and dry fabric.	
5003	GMIAC119	Electrical scissors For <u>Glass fibre</u> , <u>Carbon</u> or <u>Kevlar</u> (Max 175g/m ²) Delivered in a box with accessories <u>Note:</u> Not for pre-pregs	

6 TOOLINGS FOR SEALANTS AND PR TREATMENT

6.1 VIBRATING CHISEL AND SPECIAL BLADES FOR SEALANT REMOVAL

For this activity, GMI has developed:



- Tools designed specifically to remove sealants, PRC, Silicones, glues, RTV, seals, gaskets and all general mastic (see below)
- Instrument to accelerate the hardening of the PR with temperature control

Item	P/N	Description	
6101	GMIVG01-01	Pneumatic Vibratic Chisel (medium power) Delivered in its box	
6102	GMIVG02-02	Pneumatic Vibrating Chisel (High Power) For thicker coat of sealants Delivered in its box	
6103	GMIBS010	Chisel Blade Sharpening Wheel in a portable case	

Consumable for sharpening machine

6104	GMIVGBG10	Package of 10 Dustless Vacuum Bags for sharpening case
6105	GMIVGR11	Package of 10 Aggregate Disks for sharpening case

Kits of Blades

6106	GMIVGH06-T3	Hand Kit for Mastic Removal Blades - Box of 6 blades for soft T3 aluminium - With a plastic Handle for easy manipulation	
6107	GMIVGH06-H3	Hand Kit for Mastic Removal Blades - Box of 6 blades for hard metal - With a plastic Handle for easy manipulation	

TOOLINGS

TOOLINGS FOR SEALANTS AND PR TREATMENT

Item	P/N	Description
6108	GMIVGH06	<p>Hand Kit for Mastic Removal Blades</p> <ul style="list-style-type: none"> - a box of 3 blades for Hard metal and 3 for soft aluminium - With a plastic handle for easy manipulation



Other useful items for mastic removal

6109 GMIAP03 **Angle Polisher For T3 Aluminium**



61010 GMIAP03-F03 **Compound impregnated discs for angle polisher**

Specific for T3 aluminium
Come in bags of 3 discs



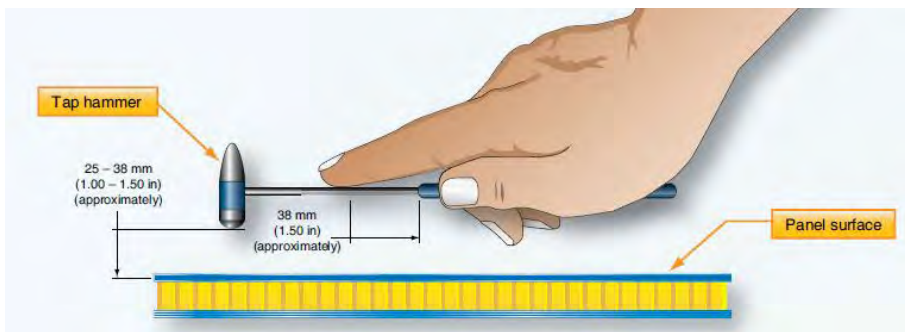
61011 GMIVGS15 **Anti Static Hose (Roll of 15m)**






Recommended when working inside the aircraft. To provide compressed air to the vibrating chisel
Assembled with conductive connectors





(6) INSTRUMENTS FOR NON DESTRUCTIVE TESTS -NDT

1 TAP-TAP



Item	P/N	Description	
1001	GMIUC226	Tap-Tap aluminium for sandwich and thin skin	
1002	GMIUC227	Tap-Tap steel for laminate panels with thick skins	
1003	GMIUC228	Other model in aluminium (Airbus AITM 6-5003 Type A)	
1004	GMIUC229	Tap-Tap aluminium for sandwich and thin skins, 30,5mm designed according to Airbus AITM 6-5003 Type B	
1005	GMIUC230	Tap-Tap aluminium B-Type From Boeing SRM	

2 ELISA ULTRASONIC CONSOLE KIT FOR COMPOSITE REPAIR

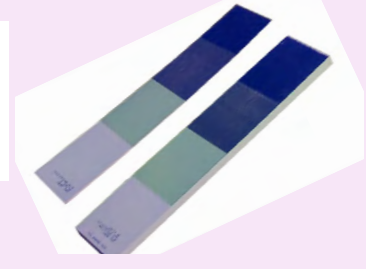
Item	P/N	Description	
2001	GMIUCS87B02- VFT	<p>ELISA Ultrasonic Kit (NDT)</p> <p>Ultrasonic instrument set developed for composite repair context.</p> <p>With easy operation to be used by technicians in charge of composite repair</p> <p><u>Delivered with</u></p> <ul style="list-style-type: none"> - An A-Scan simple interface small box - 2 probes for carbon test - A set of accessories - A nice transportable case - A manual for use and composite damage assessment procedure 	 

NDT

SPECIMENS FOR THICKNESS CALIBRATION

3 SPECIMENS FOR THICKNESS CALIBRATION

Item	P/N	Description
3001	GMIUCTS2010	<p>Set of carbon thickness specimens; fabric and tape of various thicknesses</p> <p>This kit composed of the Two Sub-Kits below:</p> <p>a) Specimens of Carbon Tape: 11 specimens of thickness: 4, 6, 8, 12, 16, 24, 32, 48, 64, 72, 96 plies</p> <p>b) Specimens of Carbon Fabric: 7 specimens of thickness in terms of plies: 2, 3, 4, 6, 8, 12, 16 plies</p> <p>Each sample with 4 presentations: carbon + bronze mesh, + primer + paint</p>
3002	GMIUCT72-5	<p>Set of 5 specimens for laminated Tape</p> <p>Thickness: 96, 64, 32, 16 & 8 plies</p> <p>Application to ATR72 wing panel inspection</p>
3003	GMIUCF72-7	<p>Set of 7 specimens for laminated Fabric</p> <p>Thickness: 2, 3, 4, 6, 8, 12, 16 plies</p>



4 THERMOGRAPHY KITS FOR AIRBUS ELEVATORS

Item	P/N	Description
------	-----	-------------

Heating Blankets to perform Thermography NDT for the detection of water ingress in Airbus Elevators (A300, A320, A330, A340)

Each Kit is delivered in a case for easy storage and safe transportation and is conform to the specifications and methodology as developed in agreement with Airbus NDT.

4001 **GMIDS00HK010-2** **Kit of 6 blankets for A300 composed of:**

4002 **GMIDS00S101-2** Blanket n°1 for A300 Elevator Kit

4003 **GMIDS00S102-2** Blanket n°2 for A300 Elevator Kit

4004 **GMIDS00S103-2** Blanket n°3 for A300 Elevator Kit

4005 **GMIDS00S104-2** Blanket n°4 for A300 Elevator Kit

4006 **GMIDS00S105-2** Blanket n°5 for A300 Elevator Kit

4007 **GMIDS00S106-2** Blanket n°6 for A300 Elevator Kit

4008 **GMIDS32HK010-2** **Kit of 3 blankets for A320 composed of:**

4009 **GMIDS32S101-2** Blanket n°1 for A320 Elevator Kit

40010 **GMIDS32S102-2** Blanket n°2 for A320 Elevator Kit

40011 **GMIDS32S103-2** Blanket n°3 for A320 Elevator Kit

40012 **GMIDS34HK010-2** **Kit of 6 blankets for A330/340 composed of:**

40013 **GMIDS34S101-2** Blanket n°1 for A330/340 Elevator Kit

40014 **GMIDS34S102-2** Blanket n°2 for A330/340 Elevator Kit

40015 **GMIDS34S103-2** Blanket n°3 for A330/340 Elevator Kit

40016 **GMIDS34S104-2** Blanket n°4 for A330/340 Elevator Kit

40017 **GMIDS34S105-2** Blanket n°5 for A330/340 Elevator Kit

40018 **GMIDS34S106-2** Blanket n°6 for A330/340 Elevator Kit

40019 **GMIDS34CK010-2** **NDT Controller for Elevator Kit**
 For control of the above blankets
 Delivered with all its accessories in a case for easy storage and safe transportation

Each kit conform to the specifications and methodology as developed in agreement with Airbus NDT.

40020 **GMIDS34TK010-2** **Transformer for NDT Kit for 120 Volts Users**

The transformers allows to turn 120V power into 230V.

Delivered with all its accessories in a case for easy storage and safe transportation



NDT

THERMOGRAPHY KITS FOR AIRBUS ELEVATORS

Item	P/N	Description
40021	GMIDS34IC020	Infra Red Camera High performances for water ingress detection in elevators. Picture not contractual - model subject to change Consult us.



(7) SPECIFIC REPAIR APPLICATION TOOLS

We present here a range of solutions developed for specific maintenance issues or particular repair processes.

1 TEST OF DE-ICER BOOTS FOR REGIONAL COMMUTERS

1.1 PNEUMATIC DE-ICER BOOT TESTER - SACHA

Item	P/N	Description
1101	GMISA9501	<p>SACHA (Application to ATR Aircraft)</p> <p>This console handles all the pneumatic operation sequences specified for this operation. It as been conceived as a self consistent console which integrates high quality pressure control instruments with a design that allows easy operations with the accuracy it was not possible to achieve previously with traditional assembly of pipes, hoses and manometers.</p> <p>Because of its small size and compact design, the console allows operations in the workshop and is fully transportable to be ready for an outside work.</p> <ul style="list-style-type: none"> - Simultaneous test of 2 circuits - Digital pressure sensing - Highly accurate control <p>Units to chose at the order from: 1) PSI & Fahrenheit 2) Bar & Celsius</p>
1102	GMISAP060	<p>Pressure digital gauge</p> <p>This manometer connects in either connector of the two output pressure connector of the instrument Sacha</p>
1103	GMISAP120	<p>De-icer inflating Hose</p> <p>Pressure Hose 3 meters; Comes with connector compatible on one side to the Sacha, and free on the other side; you will have to connect a connector adapted to the standard of the de-icer.</p>



Applications

OLGA - FOR PRESSURISATION OF A REPAIR PATCH

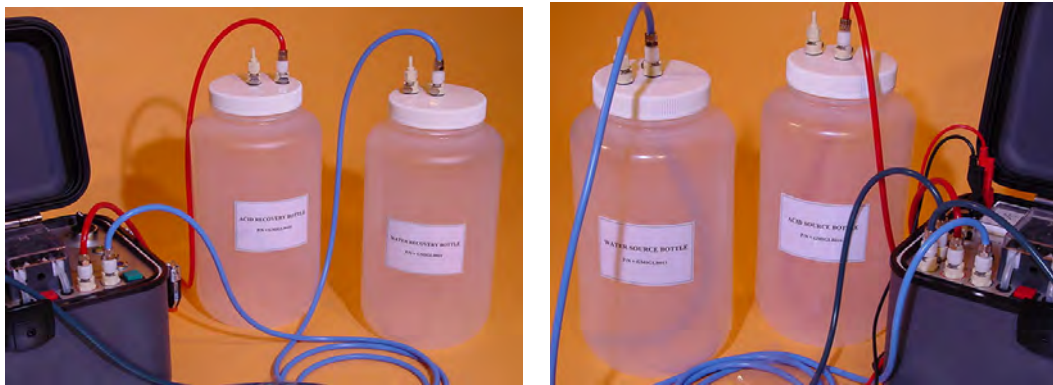
2 OLGA - FOR PRESSURISATION OF A REPAIR PATCH

Item	P/N	Description
2001	GMIOL010	<p>OLGA is an innovative Portable System for pressurisation of an advanced composite repair patch.</p> <p><u>Composed of:</u></p> <ul style="list-style-type: none">- The pressurisation tool with its flexible pads for adaptation to contoured parts,- The pressure and vacuum generator with safety function controller- Can deliver up to 1,5 bar on a surface of 30 cm diameter.



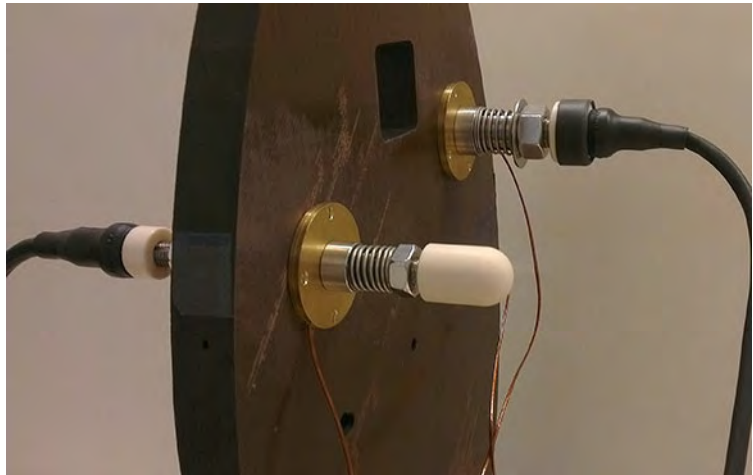
3 GILDA - METAL BONDING - SURFACE TREATMENT

Item	P/N	Description
3001	GMIGL010	<p>GILDA Console to perform an anodizing operation through a phosphoric acid solution in preparation of a metal to metal bonding</p> <p>With a programmable current source, pumps to fill the treatment poach and to draw out the fluids.</p> <p>Delivered complete with all its accessories to conduct the process</p> <p>120 or 230 Volts</p>



Source Bottles of Acid and Water..... Récupération Bottles

4 REPAIR OF DRILLED HOLES



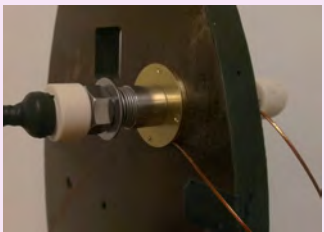
During drilling operations on composite laminate parts, damages can occur either at the entrance of the drill, at the exit or internally. The Heating Bolt Solution has been developed to provide heat for curing the resin applied to repair these damages; compaction can be also mechanically generated. Inserted in the hole, the tool provides heat to raise the temperature at the periphery of the hole and in a localized area on the two in /out skins at a programmed temperature up to 120°C. To control the process, specific electric and electronic interfaces with advanced programmable software have been developed.

All tools include possibility of temperature control by 3 thermocouples type J or K by our **ANITA bonders**.

For assembly line, where it is frequent to face to repair several damages in the same period, we have designed a controller for up to **6 devices** (see “TEMPERATURE CONTROL FOR PINS AND WASHERS OR BOLTS” on page 87)

4.1 HEATING BOLTS

Item	P/N	HOLE DIAMETER (MM)
4101	GMICB102-T*-V*	10,2
4102	GMICB111-T*-V*	11,1
4103	GMICB127-T*-V*	12,7
4104	GMICB159-T*-V*	15,9
4105	GMICB191-T*-V*	19,1



*V= 1 for 120 Volts; V= 2 for 230 Volts
 *T is the type of thermocouples = J or K

4.2 HEATING WASHERS

Item	P/N	External Diameter	Internal Diameter
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For the same type of work, heating washers are also of interest.

Typical: 50 mm external diameter; central hole diam. 5,0mm; with 3 thermocouples type J or K to be defined

P/N	External Diam.	Internal Diam.
4201 GMIHW50032-T*	50 mm	3,2 mm
4202 GMIHW50048-T*	50 mm	4,8 mm
4203 GMIHW50050-T*	50 mm	5,0 mm
4204 GMIHW50056-T*	50 mm	5,6 mm
4205 GMIHW50060-T*	50 mm	6,0 mm
4206 GMIHW50064-T*	50 mm	6,35 mm
4207 GMIHW50070-T*	50 mm	7,0 mm
4208 GMIHW50080-T*	50 mm	8,0 mm



* T = J or K according to the type of thermocouples

Other dimensions upon request

Note: these parts are designed under **24 Volts** See below for control.

4.3 TEMPERATURE CONTROL FOR PINS AND WASHERS OR BOLTS

Item	P/N	Description
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To control a **bolt**, a **washer** or a **heating plate** (24 Volts) with an **Anita EZ** bonding Console an **interface** is needed.

4301 **GMICTE1-EZ** Interface 1 Zone for an Anita Console
1 WASHER only can be connected

4302 **GMICTE2-EZ** Interface 2 Zones for an Anita Console
2 WASHERS can be connected



For Bolts, no interface is needed; connect it to the Anita directly

4.4 ANIBOLT - INTEGRATED CONTROLLER FOR 6 BOLTS, WASHERS

Item	P/N	Description
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4401 **GMIAB6Z01**

ANIIBOLT

Characteristics:

- Control up to **6 bolts** independently
- 3 thermocouples per zone (18 in total)
- Dimensions: mm 406 x 254 x 190
- Weight 6 Kg
- Total Power 6000 Watts
- **Anitalk PC software for cycle programming**
- USB port for reporting
- Delivered complete with its accessory case

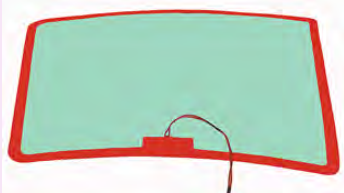



5 PR HARDENING OR SOFTENING

5.1 APPLICATION TO THE HALF WING OF THE ATR72

Item	P/N	Dimensions
5101	GMIKD010-V*	<p>Disbonding Kit for ATR72</p> <p>Complete kit containing:</p> <ul style="list-style-type: none"> - Specific blanket and its neoprene protection - Power driver and temperature limiter <p>* V = 1 version 120V and V= 2 version 230V</p>    <p>Sold by ATR under P/N: 98S57205007000 (230 Volts) and 98S57205007002 (120 Volts)</p>

5.1.1 DISBONDING HEATER OF WIND SCREEN

Item	P/N	Dimensions
5111		<p>Disbonding Kit for Wind Screens</p> <p>Complete kit containing:</p> <ul style="list-style-type: none"> - Specific heating blanket having the profile of the screen contour - Pre-set controller adapted <p><i>Consult us for the engineering of the solution</i></p>  

6 REPAIR OF INFLATING SYSTEMS - SAMANTHA

Item	P/N	Description
6001	GMIST0704-V	<p>SAMANTHA (Safety Slide repair)</p> <p>V= 2 for 230 Volts V= 1 for 120 Volts</p> <p>Device developed to handle the bonding process of repair patches on flexible structures of inflating systems (safety slides).</p> <p>The console offers following features:</p> <ul style="list-style-type: none"> - Cycle programming, - Temperature control, - Power control - PC interface. <p>The console can control up to 4 patches simultaneously</p>



Heating systems appropriately designed for this application are available according to dimensions; consult the specific brochure.



Applications

(8) EQUIPMENT FOR MRO WORKSHOP For CLEAN AND SANDING ROOMS

This chapter lists the main equipment specific to construct and equip an MRO Workshop for Aircraft Composite Structure Repair. When considering the installation or the extension of a repair workshop, it is useful to consider the following classification

- a) Sanding and Clean Room (Vacuum, dust, ...) environment control,
- b) Basic and specific equipment for repair,
- c) Specialised or Heavy repair production equipment.

We propose a range of equipment to create a composite workshop or clean room: vacuum provision, storage of pre-pregs, storage of consumables, solutions specifically used in composite repair workshops of all airlines and MROs.

Consult us for engineering services and full supply

1 ENGINEERING OF VACUUM FOR CLEAN ROOM

We can design and install appropriate vacuum system to distribute the vacuum and connections inside a clean room

Vacuum Tank and Pump & Controller



Here installed on top of entrance hall : a vacuum tank and a pump

Clean Room - Vacuum Internal Connections



Connexions to distribute the vacuum to connect to several bags

2 MOBILE VACUUM CENTERS FOR WORKSHOP

Item	P/N	Description
2001		<p>Vacuum Pump with oil and tank Mounted on rolls. Ready for simultaneous connection of 5 vacuum bags</p> <p>Tank capacity: 100 Liters Pump Flow: 25 M3/H; Version: 230 Volts monophase or 380 Volts three phases</p> <p>This system as already been described in the Chapter Vacuum (cf. “MOBILE VACUUM CENTERS FOR WORKSHOP” on page 62) ; thank you to refer for P/N</p>



WORKSHOP

3 MOBILE AIR COMPRESSOR

Item	P/N	Description
3001	GMIWCM010	<p>Mobile compressor Volts: 230 Volts monophase Useful to drive one machine as sander or router of the mobile workshop at a time.</p> <p>Delivered with its connector and hose of 10 meters to connect to the machine.</p> <p>Other compressors on request</p>



4 DUST SANDING PROTECTION EQUIPMENT

4.1 DOWN DRAFT TABLES

We offer two models according to working table length



Item	P/N	Description
<p>Model 1: Length 1500 mm Model 2: Length 2000 mm General features:</p> <ul style="list-style-type: none"> - Working table width 1000 mm - Working table height: 900 mm - Working table made in steel grid of node 30 x 30 mm (protection in option) - Fan: Flow: 5000 m3/h; Motor: 3 Kw; Volts: 230 & 380 Volts - Filters: 1st level in efficiency F7; 2nd level: Efficiency H14 - Collect bin: 1; dim: 1380 or 1880 x 140 x 70 mm - Filter check: detection of filter fill up before change; lights to indicate which of the two is to be changed. - - Rejection of air: adaptation hole: 45 cm diam. - Electrical control cabinet for power on/off. 		

4101	GMIWDT015-2	Model 1 - Working Table dimensions: 1500 x 1000 mm
4102	GMIWDT020-2	Model 2 - Working Table dimensions: 2000 x 1000 mm

OPTIONS

4103	GMIWDT015-3J	Panels for 3 sides (for model 1)
4104	GMIWDT020-3J	Panels for 3 sides (for model 2)
4105	GMIWDT015-L	Lights for Model 1
4106	GMIWDT020-L	Lights for Model 2
4107	GMIWDTF-F7	Filter spare - front type F7
4108	GMIWDTF-H14	Filter spare - rear one




WORKSHOP

DUST SANDING PROTECTION EQUIPMENT

4.2 MOBILE UNIT FOR FUME AND DUST ASPIRATION

Item	P/N	Description
4201	GMIWDM015-2	<p>Mobile Unit for Fume and Dust Aspiration</p> <p>This cleaner unit is designed to protect the operator from fumes and dust ensuring an easy movement for the operator into the work space, without having to install fixed extraction plants.</p> <p>The mechanical filters are easy to be replaced.</p> <p>Conform to EN1822[H12] 99%</p> <p>230 Volts Monophase</p>
4202	GMIWDM015-F12	Set of spare filters



5 VAPOR ASPIRATION HOOD

We offer selected models optimized in terms of safety, simple installation and operation.

- 1) A Model with an **extractor motor** to be connected to external conduct
- 2) **Model ductless**, where the vapours are extracted and purified when they go through the activated carbon filter. Model compliant to the standard NF X 15-211.
External Dimensions: W X H X D: 900 x 750 x 750 mm

Item	P/N	Description
------	-----	-------------

1- VAPOR ASPIRATION HOOD with EXTRACTOR MOTOR

- 15/10th steel construction. Polycarbonate glazed walls
- White epoxy painting RAL 9010 with high resistance against chemicals.

5001	GMIWAH011-2	<p>External Dimensions: W x H x D mm: 945 x 900 x 750</p> <p>Internal Dimensions: W x H x D mm: 935 x 845 x 700</p> <p>Nominal Voltage V 220-240</p> <p>Weight Kg (without extraction motor - see below): 67</p> <p>Delivered complete with its extraction motor and connection kit</p>
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5002:	GMIWAHT010	<p>Support table for both models</p> <p>Dimensions mm: 1200 x 750 x 750</p>
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Item	P/N	Description
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2 VAPOR ASPIRATION HOOD DUCTLESS WITH FILTER

Our ductless fume hood allows manipulating chemicals safely because the vapours are extracted and purified when they go through the activated carbon filter. It is appropriate for confined spaces

5003	GMIWAH020-2	<p>External Dimensions: W x H x D mm: 900 x 950 x 750</p> <p>Nominal Voltage V 220-240</p> <p>Delivered complete with its Filter Set (2 filters)</p>
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FILTER Activated carbon filter for the absorption of molecules from organic vapours

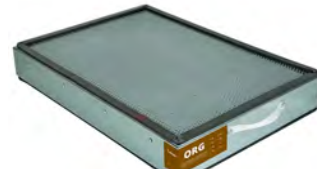


WORKSHOP

VAPOR ASPIRATION HOOD

5004 **GMIWAHF020**

Activated Carbon Filter A set of 2 filters



5005 Consult us for other models




6 FREEZERS

6.1 CHEST FREEZER FOR PRE-PREGS

Item	P/N	Description
6101	GMIWPF010	 <ul style="list-style-type: none"> • Temperature: -18 to -25°C • External depth 713 mm; External height 903 mm; External width 2055 mm Internal depth 510 mm; Internal height 682 mm; Internal width 1935 mm; Gross weight 118.5 Kg • 230Volts • To be delivered optionally with a graphic recorder - see below • Consult us for updated specifications.

6.2 GRAPHIC RECORDER

Item	P/N	Description
6201	GMIWFR020	<p>GRAPHIC RECORDER Delivered with its probe for Freezer or Cold Room 8 inch Chart rotation speed: 1 week</p> 
6202	GMIWFR020-1	Spares pages of recording; on 7 days
6203	GMIWFR020-2	Pens - Set of spares of 6 pens

WORKSHOP

FREEZERS

6.3 ATEX FRIDGE


Item	P/N	Description
6301	GMIWPFX010-554	ATEX FRIDGE 554 litres Spark-free certified to ATEX II 3/-G IIB+H2with ATEX certification CE. To store inflammable products and resins <ul style="list-style-type: none">• External Dim mm: 750 x 730 x 1640• Internal Dim mm 560 x 600 x 1452• 230V• Temperature 2 to 8 °C

Picture not contractual



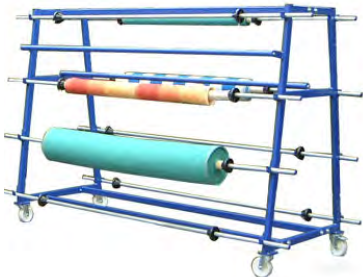


6.4 WALK IN FREEZER - COLD ROOM FOR PREPREG STORAGE

Item	P/N	Description
6401	GMIWCC010-12	COLD ROOM 12 M3 <ul style="list-style-type: none">• negative temperature (-18°C, -23 °C)• with one hinged door• Internal dimensions W X D X H cm: 240 x 240 x 241• Wall Panel Thickness 150mm• 380 Volts Three Phases• Complete control and register
6402	GMIWCC010-25	COLD ROOM 25 M3 <ul style="list-style-type: none">• negative temperature (-18°C, -23 °C)• with one hinged door• Internal dimensions W X D X H cm: 400 x 240 x 240,• Wall Panel Thickness 150mm• 380 Volts Three Phases• Complete control and register



Other models available. Consult us for detailed specifications.

7 ROLL STOCKER


Item	P/N	Description	
7001	GMIWSR102-180	PYRAMIDAL ROLL STOCKER FOR 10 ROLLS Support for <u>10 rolls</u> mounted on both sides. Width of rolls 180 mm Mounted on wheels	
7002	GMIWSR071-180	PYRAMIDAL ROLL STOCKER FOR 7 ROLLS Support for <u>7 rolls</u> mounted on One side. Width of rolls 180 mm Mounted on wheels	
7003	GMIWSRR08-180	ROTATIVE ROLL STOCKER FOR 8 ROLLS Support for <u>8 rolls</u> Width of rolls 155 cm Mounted on wheels	

STORAGE

8 STORAGE


8.1 FOR STANDARD PRODUCTS

Item	P/N	Description
		CLASSICAL CABINET 2 swing doors Max load per shelf: 100 Kg
8101	GMIWSTS120	Model Width 120 cm
8102	GMIWSTS100	Model Width 100 cm




8.2 FOR DANGEROUS PRODUCTS

Item	P/N	Description
8201	GMIWSTH090	SAFETY STORAGE CABINET Dimensions ext: W 1196 mm; H 1968 mm; D 616 mm Fire resistance 90 minutes, type tested in accordance with Norma



8.3 VENTILATED CABINET

Item	P/N	Description
8301	GMIWSTV120	VENTILATED CABINET according to AFNOR NFX 15-211 Width 120 cm - 125 litres 3 shelves Max Load per shelf: 60 kg




9 GENERAL USEFUL SUPPLIES



9.1 GENERAL USE WORKING TABLE

Item	P/N	Description	
9101	GMIWWTXY	General use table width 600 or 800 Length 1200 or 1500 mm	

9.2 CUTTING LAMINATE - TABLE TOP

Item	P/N	Description	
9201	GMIWDO-6-100-200	CUTTING LAMINATE (Appears green on table in picture) Colour subject to change Thickness 6 mm Dimensions: 100 x 200 cm Dimensions may change - consult us	


9.3 MIXING POTS

Item	P/N	Description	
9301	GMIAC160-400	MIXING POT For non wax product Graduated Diameter 80 mm Volume: 400 ml	
9302	GMIAC061	spatula appropriate for RTV application	


WORKSHOP

GENERAL USEFUL SUPPLIES


9.4 SAFETY HUMIDIFIER CAN

Item	P/N	Description	
9401	GMIWSH01	Safe humidification of cloths and sponges Easy-to-use pumping system with spring-loaded strainer 1 litre	

9.5 WEIGHING SYSTEMS

Item	P/N	Description	
9501	GMIWEB010-600	High precision weight device to weigh resins and mixing.To be put on a table. Weighting range Max: 600 g Precision 0,1g	
9502	GMIWEB010-2000	High precision weight device to weigh resins and mixing.To be put on a table. Weighting range Max: 2000 g Precision 0,1g	

9.6 COMPRESSED AIR HOSE REEL

Item	P/N	Description	
9601	GMIWCHR020	Compressed air hose 20 m long 15 Bar Max Ext diam 13 mm Internal Diam 7 mm	

10 VACUUM HEATING TABLE

Item	P/N	Description
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10001 GMIWVHT050150-2 **Vacuum Heating Table**

- With vacuum membrane in Mosite for temperature up to 220 °C
- Heated platen with two independent electrical zones; maximum temperature 210 °C
- Useful Dimensions: 50 x 150 cm
- Table ext 175 x 75 cm
- With a vacuum pump and its control system



11 CURING OVENS

**Ovens Fully equipped for Repair
Our Family ANICURE©**

Standard model of internal dimensions:
2,5 x 2,5 x 4 m;

Fully equipped for part temperature sensing;
Vacuum system
Cooling

With **GMI ANIFIB Computer control**
Consult our brochure



12 AUTOCLAVE ENGINEERING AND ADVANCED CONTROL

According to dimensions and specifications
Fully controlled by our Computer **ANIFIB**



13 DATA SCANNER FOR AUTOCLAVE/OVEN

Autoclave or Ovens may have already their Process Controller installed , however customers may wish to record , display all vacuum , temperature data that are not made available.
For this configuration, GMI manufactures and supply **ANISCAN** , a dedicated scanner .
Vacuum , Temperature are sensed, display in real time and recorded ; reporting is accessible in real time or off line.

Our Scanner can be installed on the wall of an oven for example ; cables and hoses are then connected easily ; **A standard configuration is with 24 Thermocouples and 4 Vacuum lines under P/N GMISCUR024004-J*** ;
* or K for thermocouple type



14 HOT AIR SOLUTION ENGINEERING

Below we present some applications developed for GMI customers.

14.1 OVENS WITH FLEXIBLE WALL COVERS

We can also offer solutions to construct **Ovens** adapted to heat a Production Mechanical Tool where its necessary to heat to accelerate the curing of resins at a relatively low temperature, drying.

Our system is constituted of flexible wrapping structures and hot air generators. The flexibility of the installation make it specially adapted to heat heavy large metallic structures in order to activate the hardening process of resins

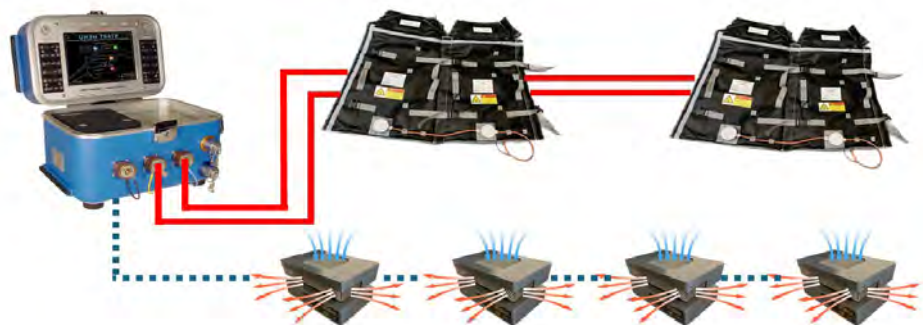
The whole system is controllable in temperature by our Anita Consoles.



Item	P/N	Description
14101	GMIPOC012*	Heating wrapping cover adapted in dimensions to the installation to be heated * according to client specs
		Here an assembly of 2 heating wraps 230 Volts Monophase
14102	GMIPOB012	Heat Blower to install inside the portable oven Several blowers can be installed and controlled by an Anita Console; an electrical connexion set is used to connect to the Anita Controller 230 Volts monophase



The whole system is connected through a specific cabling set to an Anita Bonding Console. The temperature process is fully handle together with specific alarms



TOOLS FOR CURING IN AUTOCLAVE

15 TOOLS FOR CURING IN AUTOCLAVE

15.1 VACUUM HOSES

Item	P/N	Description
Vacuum hose high temperature Threaded 1/4" NPT		
15101	GMIAUVH010-010	Length 1,0 m
15102	GMIAUVH010-015	Length 1,5 m
15103	GMIAUVH010-020	Length 2,0 m
15104	GMIAUVH010-025	Length 2,5 m
15105	GMIAUVH010-030	Length 3,0 m
15106	GMIAUVH010-040	Length 4,0 m
15107	GMIAUVH010-050	Length 5,0 m
15108	GMIAUVH010-060	Length 6,0 m
15109	GMIAUVH010-070	Length 7,0 m
151010	GMIAUVH010-080	Length 8,0 m
151011	GMIAUVH010-090	Length 9,0 m
151012	GMIAUVH010-100	Length 10,0 m
151013	GMIAUVH010-110	Length 11,0 m
151014	GMIAUVH010-120	Length 12,0 m





15.2 VACUUM VALVES

Item	P/N	Description
Valves High Quality for autoclaves - Stainless Steel - Viton seal		
15201	GMIAUVB010	Vacuum Valve <ul style="list-style-type: none"> • Base size: 2 inches • Connection size: 1/4 inch
15202	GMIAUVP010	Vacuum Plug <ul style="list-style-type: none"> • QRC plug with female thread • Thread size: 1/4 inch
15203	GMIAUVS010	Vacuum Socket <ul style="list-style-type: none"> • QRC Socket Connector with female thread • Thread size: 1/4 inch

16 HIGH TEMPERATURE PLUGS TO REPAIR IN AUTOCLAVE/OVEN



16.1 3 PHASE VOLTAGE CONNECTORS

P/N	Description	
GMIUCHT013-30	Wall mounting socket ; 380 - 440 VAC; 30 Amp ; Metal ; female 5 poles (3 phases + Neutral + Ground) Temp max 240 °C	
GMIUCHT113-30	Mobile plug; 380 - 440 VAC; 30 Amp ; Metal ; female 5 poles (3 phases + Neutral + Ground) Temp max 240 °C	

We can propose **Cables** with mobile plug above to connect to Anita Blankets three phases or monophase. Monophase blankets to be connected to the 3 phase plugs using connections between phase and neutral

Consult us

16.2 MONOPHASE VOLTAGE CONNECTORS

P/N	Description	
GMIUCHT012-30	Wall mounting socket ; 220 -250 VAC; 30 Amp ; Metal ; female 3 poles (Phase + Ground) Temp max 240 °C	
GMIUCHT112-30	Mobile plug; 220 -250 VAC; 30 Amp ; Metal ; female 3 poles (Phase + Ground) Temp max 240 °C	



GMIUCHT060-20-5 **Cable** with mobile plug monophase 220-250 VAC (above) with a 220 -250 Volts - 20 Amp Connector compatible with GMI Heating Blankets - 5 meters long






CALIBRATION SETS FOR OUR INSTRUMENTS

17 CALIBRATION SETS FOR OUR INSTRUMENTS

17.1 CALIBRATOR OF TEMPERATURE FOR ANITA CONSOLES

Item	P/N	Description	
17101	GMINGT250	Portable temperature calibrator for temperature circuits of Anita by simulation of thermocouples J or K. This instrument is also a thermometer for thermocouples J or K.	
17102	GMINGTC06J	Accessory to calibrate simultaneously 6 channels of thermocouple type J	
17103	GMINGTC06K	Accessory to calibrate simultaneously 6 channels of thermocouple type K	

17.2 CALIBRATOR SET FOR VACUUM CALIBRATION

Item	P/N	Description	
17201	GMIOTV251-01	Hand vacuum pump to achieve a vacuum level in the sensor circuit of the Anita console; to be associated with the vacuum measuring instrument below.	
17202	GMIOTV251-02	Reference vacuum manometer high precision to compare to the value of the Anita. Comes fully equipped for connection to pump above.	
17203	GMIOTV251	Kit containing the two elements above: hand pump and vacuum reference	

Item	P/N	Description
17204	GMIOTV252	Complete kit as above: - with manual pump and a digital precision manometer



17.3 CHECKING UNIT FOR HEATING BLANKETS

Item	P/N	Description
17301	GMITHB010	A precise instrument to register with fidelity the ohmic value of the blanket resistance with appropriate cables to connect to Anita Blankets Note: Picture not contractual
17302	GMITHBE020-1	Cable for connecting / testing a Blanket 230V - 20A with a European Plug
17303	GMITHBE030-1	Cable for connecting / testing a Blanket 230V - 30A with a US Plug

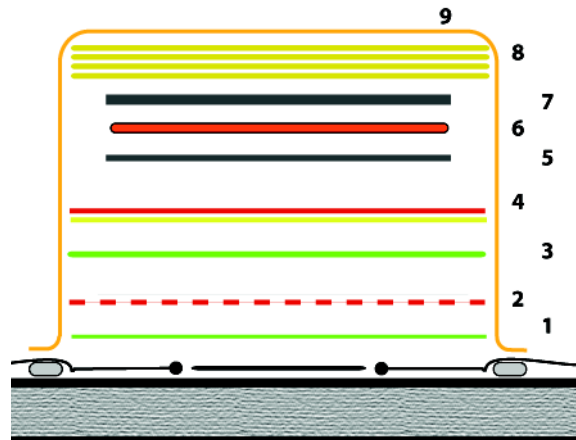


(9) REPAIR MATERIALS

1 REPAIR PRODUCTS

1.1 VACUUM BAG MATERIALS

According to identification numbers in the following sketch of a typical vacuum bag montage:



Item	P/N	Description
1101	GMIPEV1010	# 1 -RELEASE FABRIC
1102	GMIPEV1019	#2 - PERFORATED NYLON
1103	GMIPEV1022	#3 - BLEEDER FABRIC
1104	GMIPEV1011	#4 - NON PERFORATED NYLON
1105	GMIPEV1014	# 5 - FLEXIBLE CAUL PLATE
1106	GMIPEV1024	# 7 - INSULATOR SHEET FLEXIBLE
1107	GMIPEV1013	# 8 - AIRWEAVE - BREATHER
1108	GMIPEV1018	# 9 - VACUUM BAG NYLON
1109	GMIPEV1015	VACUUM BAG TAPE (GS213)
11010	GMIPEV1016	HIGH TEMPERATURE TAPE



Specific products can be delivered under specific request like adhesives, Pre-Preg, honeycomb

1.2 BAGGING KIT FOR ON SITE MISSION

Item	P/N
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For customers who have ready at hand a complete bagging kit for Mission «On the Go», GMI offers a prepared kit with a selection of the necessary products, in a sealed pack

The kit includes: bleeding fabric, nylons perforated and non perforated, bleeding glass fibre fabric, vacuum bag, breather, mastic sealant

1201	GMIBGK010
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(10) TRAINING SERVICES

We propose various level of training. Consult our extensive catalogue.

Our courses aim at transferring to the users a practical knowledge of the theory and of the principles of advanced composite repair and hands on practice of the specific equipment. A program is established in each case.

We offer courses that may be classified into 3 groups:

1 Transfer of Technology in the field of Repair Processes

These courses cover all the fundamental basic and advances themes of aircraft composite part repairs. Moreover some programs are proposed here that deal with basic physics of processes like “drying”, heat transfer,...

2 Commissioning Training

Mastering the operating procedures of our maintenance equipment.

These courses have for objective to review the operating procedures of our equipment and the instructions for calibration and servicing. Voluntarily, these courses are concentrated in one or two days maximum

3 Specific part repair or On Job Training

These courses are conducted to demonstrate the actual procedures for repairing specific parts. The operators are guided to follow exactly the SRM, CMM procedures and to perform the repair operations.



LEVEL I – BASIC BONDED COMPOSITE REPAIR (5 DAYS)

1 LEVEL I – BASIC BONDED COMPOSITE REPAIR (5 DAYS)

Scope: This curriculum is intended to meet the formal training requirement for individuals who intend to become certified as aircraft composite repair technicians. Persons who successfully complete this aircraft structural repair training program are considered to be able to perform **basic** composite bonded repairs to aircraft structures in compliance with the manufacturers’ repair documentation or other acceptable or approved repair data.

Applicable documents: GMI Aero proposed Training Courses align with the latest SAE Commercial Aircraft Composite Repair Committee (**CACRC**) and regulatory authorities documents, as follows:

- **AIR-4938C** Composite and Bonded Structure Technician/Specialist Training Document
- **AIR-4844D** Composites and Metal Bonding Glossary
- **AIR-5719B** Teaching Points for an Awareness Class on “Critical Issues in Composite Maintenance and Repair”
- **FAA AC 65-33A** Development of Training/Qualification Programs for Composite Maintenance Technicians

Trainee’s prerequisites:

- Experience as aircraft maintenance technician or engineer
- Good knowledge of the English language (minimum B2)
- Basic mathematics, physics and chemistry considerations (minimum High School level or equivalent)

Course Outline: This training course is divided into four (4) main training units, namely:

- Basic Theoretical Considerations
- Bonded Composite Repair Equipment and Toolings for Curing and Machining
- Implementation of actual Bonded Composite Repairs
- Theoretical & Practical Examinations

Day 1 - Theory	Day 2 Curing/ Machining	Day 3 - Repair Application	Day 4 - Repair Application	Day 5 - Examinations
Introduction to aircraft composite structures Matrix System Safety & Environment Adhesive Aircraft Design Considerations Heat Transfer Bonding Repair consideration Damage Assessment	Hands On Exercises Introduction to Basic Composite Repair Equipment	Repair of monolithic part using wet lay-up	Repair of sandwich part using pre-preg	Practical Assessment Written Examination

2 LEVEL II – ADVANCED BONDED COMPOSITE REPAIR (10 DAYS)

Scope: This curriculum is intended to meet the formal training requirement for individuals who intend to become certified as aircraft composite repair technicians. Persons who successfully complete this aircraft structural repair training program are considered to be able to perform **advanced** composite bonded repairs to aircraft structures in compliance with the manufacturers’ repair documentation or other acceptable or approved repair data.

Applicable documents: GMI Aero proposed Training Courses align with the latest SAE Commercial Aircraft Composite Repair Committee (**CACRC**) and regulatory authorities documents, as follows:

- **AIR-4938C** Composite and Bonded Structure Technician/Specialist Training Document
- **AIR-4844D** Composites and Metal Bonding Glossary
- **AIR-5719B** Teaching Points for an Awareness Class on “Critical Issues in Composite Maintenance and Repair”
- **FAA AC 65-33A** Development of Training/Qualification Programs for Composite Maintenance Technicians

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- Experience as aircraft maintenance technician or engineer
- Good knowledge of the English language (minimum B2)
- Basic mathematics, physics and chemistry considerations (minimum High School level or equivalent)

Course Outline: This training course is divided into four (4) main training units, namely:

- Basic Theoretical Considerations
- Bonded Composite Repair Equipment and Toolings for Curing and Machining
- Implementation of actual Bonded Composite Repairs
- Theoretical & Practical Examinations

Day 1 - Theory	Day 2 Theory	Day 3 - Theory	Day 4 - Repair Application	Day 5 - Repair Application
Introduction to aircraft composite structures Matrix System	Safety & Environment Adhesive Aircraft Design Considerations Heat Transfer	Bonding Repair consideration Damage Assessment	Hands On Exercises Introduction to Basic Composite Repair Equipment	Hands On Exercises Introduction to Basic Composite Repair Equipment
Day 6 - Repairs Implementation	Day 7- Repairs Implementation	Day 8- Repairs Implementation	Day 9 - Assessment & Exam	Day 10- Assessment & Exam
Repair of sandwich part using wet lay up	Repair of sandwich part using pre-preg	Repair of sandwich parts core with ply drop off	Practical Assessment (damage assessment, vacuum bagging...)	Practical Assessment (Inspection, NDT, Ultrasonic) Written Examination

TRAINING

LEVEL II – ADVANCED BONDED COMPOSITE REPAIR INTENSIVE (5 DAYS)

3 LEVEL II – ADVANCED BONDED COMPOSITE REPAIR INTENSIVE (5 DAYS)

Scope: This curriculum is intended to meet the formal training requirement for individuals who intend to become certified as aircraft composite repair technicians. Persons who successfully complete this aircraft structural repair intensive training program are considered to be able to perform advanced composite bonded repairs to aircraft structures in compliance with the manufacturers' repair documentation or other acceptable or approved repair data.

Applicable documents: GMI Aero proposed Training Courses align with the latest SAE Commercial Aircraft Composite Repair Committee (**CACRC**) and regulatory authorities documents, as follows:

- **AIR-4938C** Composite and Bonded Structure Technician/Specialist Training Document
- **AIR-4844D** Composites and Metal Bonding Glossary
- **AIR-5719B** Teaching Points for an Awareness Class on “Critical Issues in Composite Maintenance and Repair”
- **FAA AC 65-33A** Development of Training/Qualification Programs for Composite Maintenance Technicians

Trainee’s prerequisites:

- Basic experience as technician or engineer in bonded composite repairs (Level I)
- Already performed repairs with wet layup and started pre-preg repairs
- -
- Good knowledge of the English language (minimum B2)
- Basic mathematics, physics and chemistry considerations (minimum High School - level or equivalent)

Course Outline: This training course is divided into four (4) main training units, namely:

- Basic Theoretical Considerations
- Bonded Composite Repair Equipment and Toolings for Curing and Machining
- Implementation of actual Bonded Composite Repairs
- Theoretical & Practical Examinations

Course Content: See Table below. Contents will include only “Advanced” subjects in each topic.

Day 1 - Theory	Day 2 -Curing/ Machining	Day 3 - Repair Application	Day 4 - Repair Application	Day 5 - Examinations
Introduction to aircraft composite structures Matrix System Safety & Environment Adhesive Aircraft Design Considerations Heat Transfer Bonding Repair consideration Damage Assessment	Hands On Exercises Introduction to Basic Composite Repair Equipment	Repair of complex monolithic part using wet lay up	Repair of complex sandwich part using pre-preg	Practical Assessment Written Examination

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