Deep Freezers and Plasma Storage Freezers

-35°C
-41°C

Technology for life

Dometic
MEDICAL SYSTEMS

The model range FR complies with the Dometic GOLD Safety Standard

MODEL	FR 250 G	FR 410 G	FR 490 G	FR 750 G
DIN 58375 ('Plasma Storage Facilities')	●	●	●	●
GMP Clean Room Class A / ISO 5 (ISO EN 14644-1)	●	●	●	●
Dometic Electronic	●	●	●	●
Safety door lock	●	●	●	●
Digital temperature indicator (display : 0.1 digits)	●	●	●	●
Controlled fan cooling system for constant temperature and even temperature distribution across the entire refrigerating chamber. Automatic fan switch-off when front door opens	●	●	●	●
Self-contained alarm system with integrated battery takes over the alarm function and temperature value measurements in case of power failure for at least 48 hours	●	●	●	●
Acoustic/visual alarm signal in case of temperature alarm and power failure	●	●	●	●
All relevant data of temperature alarm and power failure alarm are stored in the alarm history. Such as date and time of start and end, min. max and average temperature	●	●	●	●
Alarm function test : simulation of a temperature rise or drop in order to test the alarm system functionality	●	●	●	●
Control via self-diagnostic system	●	●	●	●
Defrosting (automatic)	●	●	●	●
Door opening alarm	●	●	●	●
Remote transmission alarm signal (via potential-free contact) in case of temperature alarm (change-over contact)	●	●	●	●
Remote transmission alarm signal (via potential-free contact) in case of power failure (change-over contact)	●	●	●	●
Automatic closing of the front door below a door opening angle of 90°	●	●	●	●
Interior made from stainless steel	●	●	●	●
Climate class (ambient temperature range) N (+16°C to +32°C)	●	●	●	●
Smooth castors with stabilizers for optimum flexibility of movement	●	●	●	●
RS 485 interface for the display of all operating and control functions (hardware and software settings) via DMN monitoring software on a peripheral device (computer)	●	●	●	●
DMN software package	●	●	●	●
DCU - Dometic Communication Unit	○	○	○	○

● standard / ○ optional

Discover the world of Dometic Medical Systems

GOLD
SAFETY STANDARD

FR 250 G

Gross volume :   246 L
Net volume :   167 L
Storage capacity :   app. 120 plasma bags at 450 ml each
                     app. 160 plasma bags at 350 ml each

FR 410 G

Gross volume :   408 L
Net volume :   319 L
Storage capacity :   app. 240 plasma bags at 450 ml each
                     app. 320 plasma bags at 350 ml each

FR 490 G

Gross volume :   489 L
Net volume :   395 L
Storage capacity :   app. 300 plasma bags at 450 ml each
                     app. 400 plasma bags at 350 ml each

FR 750 G*

Gross volume :   738 L
Net volume :   620 L
Storage capacity :   app. 450 plasma bags at 450 ml each
                     app. 525 plasma bags at 350 ml each

* The picture of the FR 750 G shows the interior equipment of version 1 (see Technical Data).

Subject to change without prior notice. Some of the accessories shown in the pictures are optional.

Technical Data

Gross volume	246 l
Net volume	167 l
Storage capacity : plasma bags / approx.	120 at 450 ml each
	160 at 200-350 ml each
External dimensions (H x W x D)	1305 x 850 x 785 mm
Inner dimensions (H x W x D)	655 x 680 x 552 mm
Net weight (with standard equipment)	149 kg
Set temperature (preset)	-41°C
Set temperature (setting range) can be adjusted in steps of 0.5 °C	-20°C to -41°C
Temperature cold alarm limit (preset)	-45°C
Temperature warm alarm limit (preset)	-32°C
Control sensor	PT1000 2-WIRE 1/3DIN CL.B
Precision (from -80°C to +180 °C)	± 0,2°C
Display sensor	PT1000 2-WIRE 1/3DIN CL.B
Precision (from -80°C to +180 °C) in reference body with reference fluid 100 ml DOW corning 200-5CST (Silicon Oil)	± 0,2°C
Voltage	220-240 V - 50Hz (16A)
Power	500 W
Energy consumption	6.10 kWh /24h
Heat emission	430 Kcal/h
Compressor running time	43%
Noise level (at 1m height & 1m distance)	64 dB(A)
Accu data / function time of the control panel when power failure	12V -7 AH / 48 hours
Climate class (ambient temperature range)	N (+16°C to +32°C)
Relative humidity at ambient temperature	≤ 70% at 32°C
Defrosting technique	automatic (hot gas)
Refrigerant type	Isceon 89
Door insulation (polyurethane)	100 mm
Casing insulation (polyurethane)	85 - 95 mm
Hold over time	210 min (from -40°C to -18°C)
Safety class	I
EMC directive	2004 / 108 / EEC
Low voltage directive	2006 / 95 / EEC
GMP - clean room classification	A / ISO 5
Material inner body	Stainless steel (V2A - 1.4301)
Material outer casing & door	Galvanized sheet steel (STO2Z-AZ150)
Material (Drawers)	Stainless steel (V2A - 1.4301)
Material (Wire Shelves)	Wire DIN172-2, PA11 coated
Material (N-Rack)	Polycarbonat, transparent
Color outer casing	White (similar to RAL9010)
Color contrasts	Blue (similar to RAL5002)
ATEX category III, zone 2, interior	conform

Interior Equipment & Options (Concerning further information on accessories please see our leaflet "Racking & Storage Systems")

Separate interior doors in order to minimize the loss of refrigeration		2 ●
Standard interior equipment	ST-Drawers	1 ●
	Wire shelves	1 ●
	ST-Shelf UF	-
Wire Shelves, recommended / max.		2 / 4 ○
ST-Drawers without Front Cover, recommended / max		2 / 4 ○
N-Racks		max. 5 per ST-Drawer ○
N-Racks with Front Cover		max. 5 per Wire Shelf ○
RS485 interface		●
DCU - Dometic Communication Unit		○
DMN Software package		●
Ambient temperature sensor		○
Potential-free contact in case of power failure		●
Integrated inlet for external sensor (installed by customer)		●
Additional reference bottle with reference fluid and fitting		○
Smooth castors with stabilizers		●
External water cooling		○
Integrated temperature recorder in the form of a circular chart recorder / recording range : -50°C to 0°C		for 24h or 7 days ○
Door hinge right		●
Door hinge left		○
Wooden packaging for ocean transport / export		○

● standard / ○ optional / - not available - All values were measured at +25°C ambient temperature and without load (with inertial mass). All products can be supplied with 110-120V / 60 Hz and 220-240V / 60 Hz

FR 410 G	FR 490 G	FR 750 G	
408 l	489 l	738 l	
319 l	395 l	620 l	
240 at 450 ml each	300 at 450 ml each	450 at 450 ml each	
320 at 200-350 ml each	400 at 200-350 ml each	525 at 200-350 ml each	
1735 x 850 x 785 mm	1950 x 850 x 785 mm	1990 x 910 x 985 mm	
1085 x 680 x 552 mm	1300 x 680 x 552 mm	1352 x 730 x 760 mm	
177 kg	185 kg	202 kg	
-41°C	-41°C	-41°C	
-20°C to -41°C	-20°C to -41°C	-20°C to -41°C	
-45°C	-45°C	-45°C	
-32°C	-32°C	-32°C	
PT1000 2-WIRE 1/3DIN CL.B	PT1000 2-WIRE 1/3DIN CL.B	PT1000 2-WIRE 1/3DIN CL.B	
± 0,2°C	± 0,2°C	± 0,2°C	
PT1000 2-WIRE 1/3DIN CL.B	PT1000 2-WIRE 1/3DIN CL.B	PT1000 2-WIRE 1/3DIN CL.B	
± 0,2°C	± 0,2°C	± 0,2°C	
220-240 V - 50Hz (16A)	220-240 V - 50Hz (16A)	220-240 V - 50Hz (16A)	
500 W	500 W	600 W	
7.40 kWh /24h	7.80 kWh /24h	7.10 kWh /24h	
430 Kcal/h	430 Kcal/h	515 Kcal/h	
55%	57%	50%	
64 dB(A)	64 dB(A)	< 62 dB(A)	
12V -7 AH / 48 hours	12V -7 AH / 48 hours	12V -7 AH / 48 hours	
N (+16°C to +32°C)	N (+16°C to +32°C)	N (+16°C to +32°C)	
≤ 70% at 32°C	≤ 70% at 32°C	≤ 70% at 32°C	
automatic (hot gas)	automatic (hot gas)	automatic (hot gas)	
Isceon 89	Isceon 89	R507	
100 mm	100 mm	85 mm	
85 - 95 mm	85 - 95 mm	90 mm	
210 min (from -40°C to -18°C)	210 min (from -40°C to -18°C)	210 min (from -40°C to -18°C)	
l	l	l	
2004 / 108 / EEC	2004 / 108 / EEC	2004 / 108 / EEC	
2006 / 95 / EEC	2006 / 95 / EEC	2006 / 95 / EEC	
A / ISO 5	A / ISO 5	A / ISO 5	
Stainless steel (V2A - 1.4301)	Stainless steel (V2A - 1.4301)	Stainless steel (V2A - 1.4301)	
Galvanized sheet steel (STO2Z-AZ150)	Galvanized sheet steel (STO2Z-AZ150)	Galvanized sheet steel (STO2Z-AZ150)	
Stainless steel (V2A - 1.4301)	Stainless steel (V2A - 1.4301)	Stainless steel (V2A - 1.4301)	
Wire DIN172-2, PA11 coated	Wire DIN172-2, PA11 coated	Wire DIN172-2, PA11 coated	
Polycarbonat, transparent	Polycarbonat, transparent	Polycarbonat, transparent	
White (similar to RAL9010)	White (similar to RAL9010)	White (similar to RAL9010)	
Blue (similar to RAL5002)	Blue (similar to RAL5002)	Blue (similar to RAL5002)	
conform	conform	conform	

		Version 1	Version 2
4 ●	5 ●	5 ●	5 ●
2 ●	3 ●	3 ●	-
2 ●	2 ●	2 ●	-
-	-	-	4 ●
4 / 8 ○	5 / 10 ○		5 / 10 ○
4 / 8 ○	5 / 10 ○		5 / 10 ○
max. 5 per ST-Drawer ○	max. 5 per ST-Drawer ○		max. 5 per ST-Drawer ○
max. 5 per Wire Shelf ○	max. 5 per Wire Shelf ○		max. 5 per Wire Shelf ○
●	●		●
○	○		○
●	●		●
○	○		○
●	●		●
●	●		●
○	○		○
●	●		●
○	○		○
for 24h or 7 days ○	for 24h or 7 days ○		for 24h or 7 days ○
●	●		●
○	○		○
○	○		○

MF 110 S

Gross volume : 108 L
Net volume : 104 L
Storage capacity : app. 90 plasma bags at 450 ml each
app. 136 plasma bags at 350 ml each

The illustrations show the models of the MF range with standard interior equipment.

Control of the storage temperature and documentation of the temperature changes can – depending on the application – be carried out via an optional temperature recorder (in form of a circular chart recorder) or via the optional DCU, this through the Monitoring & Visualization Software DMN.

MF 250 S

Gross volume : 247 L
Net volume : 228 L
Storage capacity : app. 220 plasma bags at 450 ml each
app. 290 plasma bags at 350 ml each

Technical Data

	MF 110 S	MF 250 S
Gross volume	108 l	247 l
Net volume	104 l	228 l
Storage capacity : plasma bags / approx.	90 at 450 ml each	220 at 450 ml each
	136 at 350 ml each	290 at 350 ml each
External dimensions (H x W x D)	905 x 595 x 600 mm	1830 x 595 x 605 mm
External dimensions (with mounted temperature recorder)	1080 x 595 x 600 mm	1990 x 595 x 605 mm
Inner dimensions (H x W x D)	618 x 480 x 417 mm	1440 x 445 x 413 mm
Net weight (with standard equipment)	45 kg	97 kg
Set temperature (preset)	-35°C	-35°C
Set temperature (setting range) can be adjusted in steps of 0.5 °C	-20°C to -35°C	-20°C to -35°C
Temperature cold alarm limit (preset)	-40°C	-40°C
Temperature warm alarm limit (preset)	-30°C	-30°C
Control sensor	PT1000 2-WIRE 1/3DIN CL.B	PT1000 2-WIRE 1/3DIN CL.B
Precision (from -80°C to +180 °C)	± 0,2°C	± 0,2°C
Display sensor, optional	PT1000 2-WIRE 1/3DIN CL.B	PT1000 2-WIRE 1/3DIN CL.B
Precision (from -80°C to +180 °C)	± 0,2°C	± 0,2°C
Voltage	220-240 V - 50Hz (10A)	220-240 V - 50Hz (10A)
Power	200 W	215 W
Energy consumption	2.40 kWh /24h	2.50 kWh /24h
Heat emission	170 Kcal/h	185 Kcal/h
Compressor running time	46%	48%
Noise level (at 1m height & 1m distance)	44 dB(A)	44 dB(A)
Accu data / function time of the control panel when power failure	6V - 4,2Ah / 48 hours	6V - 4,2Ah / 48 hours
Climate class (ambiant temperature range)	N (+16°C to +32°C)	N (+16°C to +32°C)
Relative humidity range at ambient temperature	≤ 70% at 32°C	≤ 70% at 32°C
Defrosting technique	manual	manual
Refrigerant type	R404a	R404a
Door insulation (polyurethane)	55 mm	70 mm
Casing insulation (polyurethane)	70 - 90 mm	75 - 80 mm
Hold over time	60 min (from -35°C to -18°C)	66 min (from -35°C to -18°C)
Safety class	I	I
EMC directive	2004 / 108 / EEC	2004 / 108 / EEC
Low voltage directive	2006 / 95 / EEC	2006 / 95 / EEC
GMP - clean room classification	B / ISO 6	B / ISO 6
Material inner body	Polystyrene (PS)	Styrene (SAN)
Material outer casing and door	Galvanized sheet steel (ST02Z-AZ-150)	Galvanized sheet steel (ST02Z-AZ-150)
Material drawers	Polystyrene (PS)	Styrene (SAN)
Color outer casing	White (similar to RAL9010)	White (similar to RAL9010)
Color contrasts	Blue (similar to RAL5002)	Blue (similar to RAL5002)
ATEX category III, zone 2, interior	conform	conform

Interior Equipment & Options (Concerning further information on accessories please see our leaflet "Racking & Storage Systems")

	MF 110 S	MF 250 S
Standard interior equipment	4 Drawers ●	7 Drawers ●
RS 485 interface	●	●
DCU - Dometic Communication Unit	○	○
DMN Software package	●	●
Ambient temperature sensor	○	○
Potential-free contact in case of power failure	●	●
Integrated inlet for external sensor (installed by customer)	●	●
Temperature recorder in the form of a circular chart recorder recording range : -50°C to 0°C	Mounted for 24h or 7 days ○	Mounted for 24h or 7 days ○
Door hinge right	●	●
Door hinge left	○	○
Wooden packaging for ocean transport / export	○	○

● standard / ○ optional / - not available - All values were measured at +25°C ambient temperature and without load (with inertial mass). All products can be supplied with 110-120V / 60 Hz and 220-240V / 60 Hz

Subject to change without prior notice. Some of the accessories shown in the pictures are optional.

The model range MF complies with the Dometic SILVER
Safety | Standard

MODEL	MF 110 S	MF 250 S
According DIN 58375	●	●
GMP Clean Room Class B / ISO 6 (ISO EN 14644-1)	●	●
Dometic Electronic	●	●
Key-operated power switch (power ON/OFF)	●	●
Safety door lock	●	●
Digital temperature indicator (display : 0.1 digits)	●	●
Self-contained alarm system with integrated battery takes over the alarm function and temperature value measurements in case of power failure for at least 48 hours	●	●
Acoustic/visual alarm signal in case of temperature alarm and power failure	●	●
The alarm history on the operation and control panel stores all the relevant values during a temperature alarm, such as : min., max. and average temperature and also the duration of the alarm	●	●
Alarm function test : simulation of a temperature rise or drop in order to test the alarm system	●	●
Control via self-diagnostic system	●	●
Defrosting (manual)	●	●
Door opening alarm	●	●
Climate class (ambient temperature range) N (+16°C to +32°C)	●	●
Remote transmission alarm signal (via potential-free contact) in case of temperature alarm (change-over contact)	●	●
Remote transmission alarm signal (via potential-free contact) in case of power failure (change-over contact)	●	●
RS 485 interface for the display of all operating and control functions (hardware and software settings) via DMN monitoring software on a peripheral device (computer)	●	●
DMN Software package	●	●
DCU - Dometic Communication Unit	○	○

● standard / ○ optional

Equipment / Options

Temperature recorder (in form of a circular chart recorder) optional, within the mounted casing for MF model range (optional, integrated for FR model range)

Remote temperature and power failure alarm

N-Racks with/without Front Cover can be subdivided into compartments (optional, for FR model range)

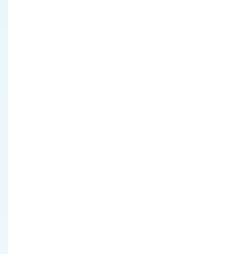**ST Cover - Wire Shelf** (optional, for FR model range)

Dometic Electronic

The new and innovative Dometic Electronic (operation and control panel) assures thanks to its **password protected settings menu** optimum protection for your stored preparations.

The menu structure of the **modern and user-friendly graphic display** offers a simple and intuitive utilization.

Settings menu

Extra menu

HISTORY
BUZZER
DISPLAY
VOLTAGE IND.
AMBIENT PROBE
ADD. PROBE
RESOLUTION
TEMP. UNIT
LANGUAGE
DIAGNOSTICS
PARAMETERS

Beside this the new Dometic Electronic offers :

- Wide range of adjustment and diagnostic facilities as well as additional protection / warning operations (via external alarm operations, histories and individual display signals).
- An optional PT 100 sensor inlet to show the sensor's temperature data on the display as well as forwarding and further processing via a 4 ... 20 miliA outlet.

- An optional 20 miliA outlet to transmit temperature data of a sensor connected to the electronic.
- Connection facilities for additional (optional) temperature sensors.
- DMN (Dometic Monitoring Network) and the (optional) DCU (Dometic Communication Unit) allows to illustrate texts on the product's display.

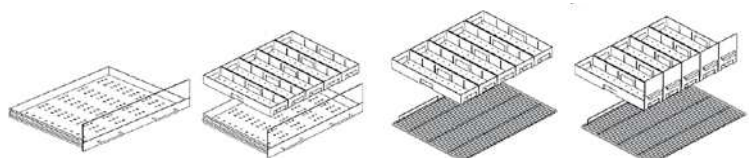**ST-Drawers** with/without Front Cover, on telescopic runners with safety stop (optional, for FR model range)

H₂O **OUT**

H₂O **IN**

Filter / filtre
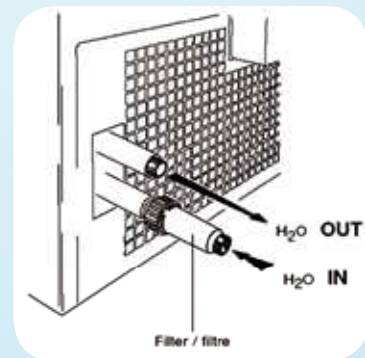
Water cooling, external (ex factory) (optional, for FR model range)

Wire Shelf

Loading options

All FR and MF models are in compliance with the ATEX directive.

The ATEX Directive

An EXplosive ATmosphere (ATEX) is a mixture of air and an inflammable substance (in the form of gas, vapour or dust), in which - after igniting – the combustion fans out in the entire non-burned mixture.

To generate an explosive atmosphere, an oxidant and a combustible substance are necessary. And this mixture becomes explosive when a fire initiator is added.

To avoid an explosion it is possible to :
   Eliminate the explosive atmosphere
   Eliminate the source of combustion
   Avoid the fan-out of the inflammation

Since 1st July 2003, the directive 1999/92/CE has applied, which declares that for all workplaces and existing equipment there must be an evaluation of explosion risks. Thus to improve the security and health of users, must be set out the risks of explosive atmospheres. Beside this, new appliances must be selected based on their protection against explosions.

Dometic's products that feature the logo, are certified as products that support in their interior applications of « zone 2 ».

Materials and Instructions to be respected :

   Interior : to avoid any electrical static load
   Plain door (without window)
   Interior lighting to be avoided
   Samples to be stored must be locked
   Risk analysis to be arranged by the user (assuring training of staff)
   To evaluate the risks of explosion / to organise appropriate site inspections

Directives to be applied :

EN 1127-1:1997	Explosive atmospheres – prevention of explosions and protection against explosions
EN 13463-1:2001	Non-electrical material to be used in explosive atmospheres
EN 60079-15:2005	Explosive atmospheres

DMN – Dometic Monitoring Network

Universal software for collection, long-term recording and visualization of temperature data.

- Complete activity list (password protected).
- Integrated event and activity history of all appliance components.
- Graphical visualisation of all temperature curves.
- Connection to existing or third-party appliances via network technology (LAN, WLAN, WAN).
- Simultaneous data monitoring and recording.
- Possibility for specific and individually configurable alarm forwardings, e. g. via email, SMS (with optional GSM module) or via DECT.
- Simple and intuitive utilization.
- Essential price advantage compared to a traditional circular chart recorder and its spare parts.

- Economy of time as regular changes of recorder paper, ink and battery is not necessary.

Your essential advantages :
- ▶ One central database for all connected appliances.
- ▶ Remote inquiry of all data possible, even from different sites simultaneously.

DCU – Dometic Communication Unit

Hardware module that notes all operating conditions and passes them through to a central data base – via local network, on which devices are connected.

- Interface connection of Dometic appliances to existent network.
- The DCU offers direct connection to the Ethernet, even wireless, to the serial BUS RS 485, as well as to the central building control system (4 ... 20 miliA).
- Possibility of connection of actors (4 ... 20 milliA out).
- Digital IN/OUT (customer-specific use of these connections is programmable).
- The integrated USB port allows to write stored data to an external memory stick.
- Recording and storage of relevant data of the appliance.
- The DCU replaces the paper temperature recorder.
- The DCU also works with Dometic electronics which were applied until October 08 (upgrade possible).

- All data are recorded and saved in the data base of the DMN and are available for analysing purposes at any time.
- Possibility of connection of several additional self-sufficient temperature sensors (up to 4 PT1000 & 2 PT100).

Your essential advantages :
- ▶ One integrative system for collecting all temperature relevant appliances and ambients.
- ▶ Many different connection facilities allow flexible upgrades for individual projects.

CON1 : DC inlet
CON2 : Electronic
CON3 : -----
CON4-6 : Add. sensors
USB Remote
CON7 : 4-20mA / RS 232
CON8 : RS 485

WLAN (option)
Ethernet LAN
USB

DMN & DCU in combination offer a highly flexible system that is adaptable to specific customer requirements.

+ **=**

Complete & legally safe documentation of temperature data

Comprehensive applications and diagnostic possibilities

THE WORLD OF DOMETIC MEDICAL SYSTEMS

DOMETIC FACTORY
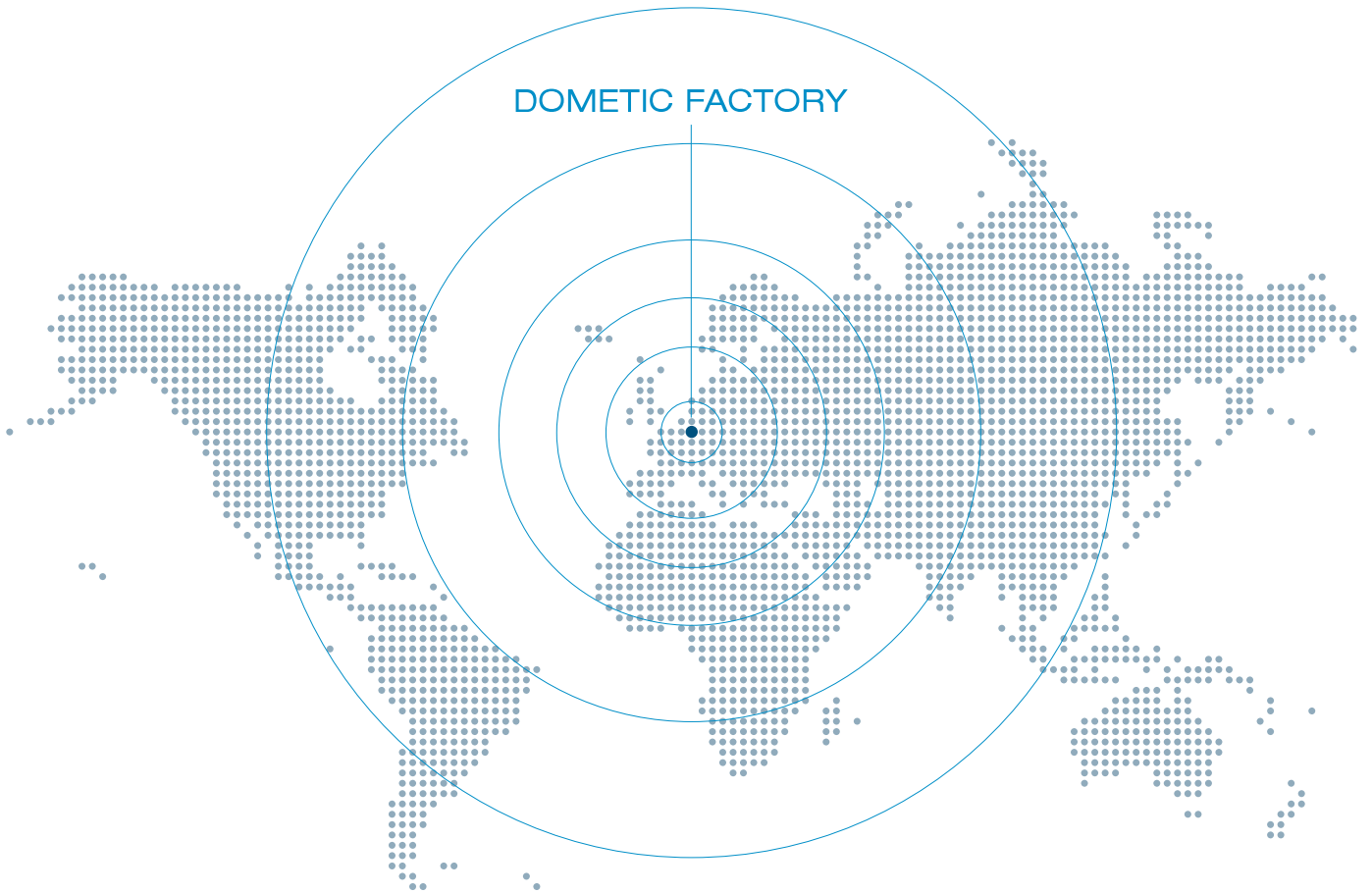
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Technology for life

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