Medclair

Recycling Decomposition Unit - DU2100-M21

User Manual

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1. Introduction

1.1. Scope

This document serves as the ***User Manual*** for the Recycling (N_2O) Decomposition Unit (RDU) DU2100-M21.

For a technical overview of the RDU, refer to the ***Technical Brief*** document.

1.2. Overview

The Recycling Decomposition Unit (RDU) is designed to decompose nitrous oxide (N_2O) together with a Recycling Decomposition Wagon (RDW). This is accomplished by mounting (N_2O) tubes onto the RDW which then pipes the gas into the RDU which decomposes the gas.

1.3. Safety Information

- The User Manual shall always be available for users.
- The RDU may only be used by trained personnel.
- Only supply N_2O to the unit
- During use, the air supply into the RDU must not be blocked. If this occurs, the RDU will trigger a malfunction alarm.
- Don’t leave the machine unattended in case of an alarm.
- It is recommended to use the machine in a well ventilated room.
- It is recommended to use a N_2O measurement device during use.
- Place the machine away from walkways to avoid tripping hazard
- Place the machine a safe distance away from other equipment

	***DANGER! – LETHAL VOLTAGE*** Lethal voltage hazard under the protective cover. Only authorized personnel may remove the cover.
	The RDU shall be sorted as electronic waste. Included battery, placed on the circuit board, shall be sorted separately.
	Read the complete user manual before use!
	The RDU should not be exposed to direct water contact or to any aggressive chemicals. See cleaning guide for instructions.
	The RDU should only be used in an environment with active ventilation, approved according to local regulations.

2. Product Overview

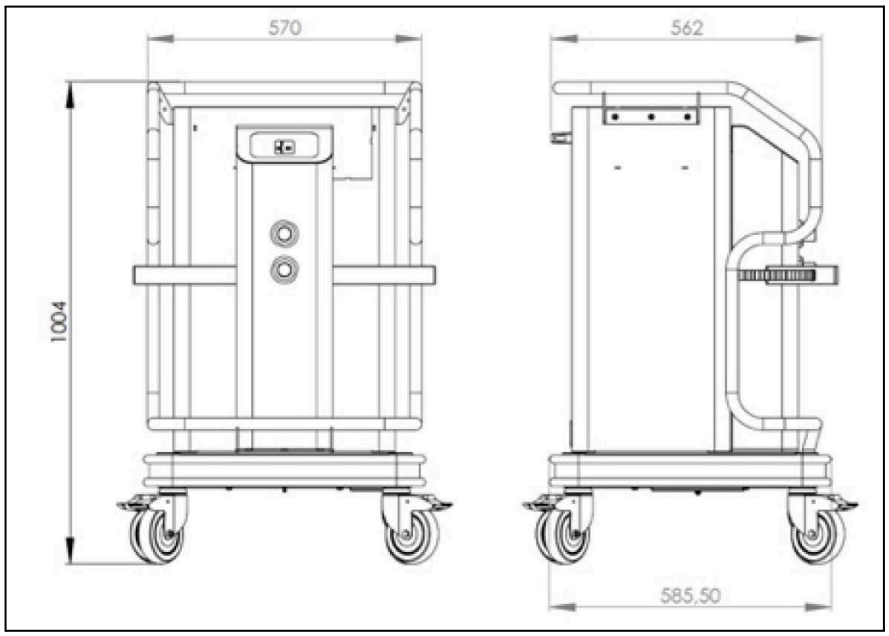
2.1. RDU Front View

Two connection ports for air are located on the front. Typically, the blue port (Gas Inlet #1), is fitted with a filter, while the white port (Gas Inlet #2) is normally not in use and must be fitted with a plug. The dimensions of the inlet connections are 22 mm (female) and 30 mm (male).

The RDU features an operator panel with buttons for starting (ON) and stopping (OFF) the unit, along with indicators for operational status and potential faults. For detailed instructions on operation and indicator meanings, refer to the dedicated chapter in this manual.

2.2. RDU Back View

2.3. Dimension Sketch



Measurements specified in mm.

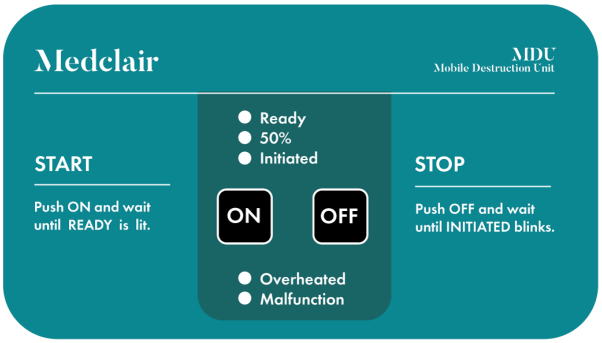
3. Operating the RDU

3.1. Preparation

- Place the unit in the desired position.
- For safety reasons, lock the wheels.
- Connect the blue tube from the RDW to the small inlet labeled “ONLY N2O” on the RDU
- Connect the unit to the wall socket (230 VAC).
- The 'initiated' light on the operator panel will flash, indicating that the unit is connected to power.

3.2. Starting the RDU

- Press the ‘*ON*’ button firmly. The ‘*initiated*’ light will turn steady.
- The RDU now enters its heating phase, taking ~55 min until operational.
- When the ‘*50%*’ indicator lights up, the heating phase is about halfway done.
- When the '*Ready*' indicator lights up, **the unit is ready for operation**.



NOTE: *If the unit has been in operation recently, it may retain internal heat. This residual heat can trigger the ‘50%’ or ‘Ready’ indicators to activate upon start-up, especially after a brief relocation.*

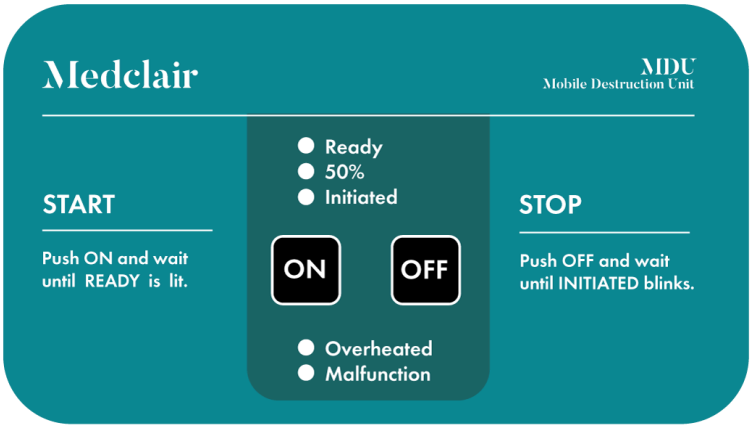
NOTE: *Never start the unit with the protection caps still on the inlets. Doing so will block air flow and consequently trigger a malfunction alarm and shut-down of the device.*

3.3. Shut-down

NOTE: *Following N_2O treatment, the unit should be left running for an additional 5 minutes in order to allow for the complete removal of residual N_2O.*

- Press the '*OFF*' button firmly.
- The unit will now start the cooling phase, indicated by the *'Ready'* indicator flashing for one minute.
- '*Initiated*' will then flash to indicate that the power cord can be disconnected.

4. Summary of Possible Indications



4.1. Status Indicators: Normal Operation

Indication		Description
	No indication	The unit is **not** connected to power.
	*"Initiated"* flashes	The unit is connected to power.
	"*Initiated*" is lit	The *"ON"* button has been pressed and the unit is in its heating phase.

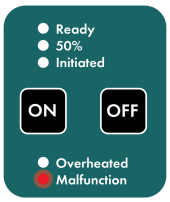
Indication		Description
	”*50%*” is lit	The unit has reached 50% of the operating temperature, meaning the heating phase is halfway done.
	”*Ready*” is lit	The unit has reached the operating temperature and is now ready for use.
	”*Ready*” flashes	*”OFF”* button has been pressed and the cooling down phase is ongoing.
	”*Initiated*” flashes	The power connection can be disconnected without disturbing the cooling down phase.

4.2. Status Indicators: Faults and Errors

The RDU features a built-in control system that continuously monitors **temperatures and gas flow**. If an issue occurs, the unit will automatically shut down.

- **Indication:** The operator panel will display either **"Overheated"** or **"Malfunction"** to signal the problem.

NOTE: *Indication "Malfunction" can be lit if caps are mounted on both the inlets due to blockage of air flow.*

Indication	Description & Recourse
	If "**Overheated**" is illuminated, it means the catalytic process has exceeded its maximum allowed temperature. This can occur under high load conditions, such as when the unit processes N_2O concentrations above 70%. • For safety reasons, the RDU will shut down the process completely until the temperature falls below the limit. • Once the temperature stabilizes, the unit will automatically restart. **If the fault indication hasn't disappeared after 30 minutes, contact your reseller for support.**
	If **"Malfunction"** flashes, it indicates that the unit is **releasing more N_2O than the allowed limit**, suggesting a potential drop in the decomposition rate. If "Malfunction" is lit perform the following steps: Step 1: Restart the unit by disconnecting the power cord. - Wait 15 minutes Step 2: Connect the power cord The indication should now show that power is connected by a blinking "Initiated" indication. Step 3: Press "ON" The heating phase will now start. **If the fault indication remains, contact your reseller.**

5. Service & Maintenance

5.1. Service

Regular servicing ensures that the RDU operates reliably and efficiently. During a service check, the unit undergoes a **comprehensive inspection**, including an evaluation of its overall functionality, performance, and key components.

This includes checking startup time, reviewing efficiency, and ensuring that gas decomposition remains within expected parameters. The unit's particle filter is inspected and replaced if needed, and the alarm history is reviewed to identify any recurring issues. Additionally, any problems reported by users are assessed and addressed as part of the service process.

For service inquiries or to schedule maintenance, **contact your reseller**.

5.2. Connection to Remote Server

The RDU is always connected to the internet to enable remote support and analysis of potential issues with the unit. This connection can only be accessed by authorized service personnel.

5.3. Cleaning

Avoid dousing the machine in water as it can damage the electrical components, instead wipe off with a wet towel or similar.

6. Environmental Considerations and Proper Use

6.1. Terms of Use

The RDU must be used in accordance with its intended purpose and operating instructions. Do not modify, tamper with, or attempt to access internal components of the unit.

The RDU must not be exposed to aggressive chemicals, high-pressure cleaning, or environments that could damage its materials or electronics.

Use only in well-ventilated areas. Operation in sealed or unventilated spaces is not permitted.

6.2. Worn-out Equipment

When the equipment reaches end of life, it will be returned to Medclair for dismantling and recycling.

- The **lithium battery** in the DU2100-M21 must be disposed of through proper battery recycling channels.
- **Electronic components** are dismantled and handled as electronic waste.
- The **catalytic mass** is returned to the supplier for recovery of metal components.
- **Mechanical parts** are separated into plastic and metal and sent for material recycling.

Medclair, founded in 2013, is a Swedish Research and Development company with leading-edge expertise in process gas purification, gas measurement, ventilation and control. We solve healthcare and environmental challenges through innovation.