# 2 OZONFILT® And Bono Zon® Ozone Plants

## Technical Data

### OZONFILT® Ozone Generation Systems OZMa 1-3 A (Process Gas - Air)

**Ambient parameters**

max. 85 % relative humidity of ambient air, non-condensing, non-corrosive, dust-free, max. ambient temperature: 40 °C

| | | OZMa 1A | OZMa 2A | OZMa 3A |
|---|---|---|---|---|
| **Number of generator modules** | | 1 | 1 | 1 |
| **Ozone capacity, measured in accordance with DIN with air at 20 °C, cooling water at 15 °C** | g/h | 70 | 105 | 140 |
| **Air consumption (only ozone generation)** | $Nm^3/h$ | 3.50 | 5.25 | 7.00 |
| **Ozone concentration in the gas phase referenced to nominal conditions** | $g/Nm^3$ * | 20 | 20 | 20 |
| **Specific energy requirement at nominal capacity** | Wh/g | 16.5 | 16.5 | 16.5 |
| **Power factor at full capacity** | cos ϕ | 0.95 | 0.95 | 0.95 |
| **Ozone connection** | | G 3/8" internal | G 3/8" internal | G 3/8" internal |

* $Nm^3 = m^3$ at standard conditions ($P = 1.013 \times 10^5$ Pa, T = 273 K)

### Electrical connection

| | | OZMa 1A | OZMa 2A | OZMa 3A |
|---|---|---|---|---|
| **Connected load** | V/Hz/A | 230/50;60/10 | 230/50;60/16 | 230/50;60/16 |
| **Enclosure rating** | | IP 43 | IP 43 | IP 43 |

### Overall dimensions (without mixing)

| | | OZMa 1A | OZMa 2A | OZMa 3A |
|---|---|---|---|---|
| **Width** | mm | 1,114 | 1,114 | 1,114 |
| **Height** | mm | 1,961 | 1,961 | 1,961 |
| **Depth** | mm | 400 | 400 | 400 |

### Weight

| | | OZMa 1A | OZMa 2A | OZMa 3A |
|---|---|---|---|---|
| **Weight** | kg | 270 | 280 | 300 |

### Ozone mixing

| | | OZMa 1A | OZMa 2A | OZMa 3A |
|---|---|---|---|---|
| **Raw water temperature max.** | °C | 35 | 35 | 35 |
| **Permissible pressure at ozone outlet** | bar | 0.8–2.0 | 0.8–2.0 | 0.8–2.0 |

### Air supply

| | | OZMa 1A | OZMa 2A | OZMa 3A |
|---|---|---|---|---|
| **Required air quantity** | l/min | 73 | 110 | 147 |

**Air quality** Oil- and dust-free, Non-corrosive, Constant upstream pressure of 4.5 - 10 bar

### Cooling water

| | | OZMa 1A | OZMa 2A | OZMa 3A |
|---|---|---|---|---|
| **Cooling water consumption (15 °C)** | l/h | 90 | 135 | 180 |
| **Cooling water consumption (30 °C)** | l/h | 200 | 300 | 400 |
| **Cooling water inlet pressure** | bar | 2–5 | 2–5 | 2–5 |
| **Cooling water inlet, PE pressure hose** | mm | 8 x 5 | 8 x 5 | 12 x 9 |
| **Cooling water outlet, open discharge** | mm | 8 x 5 | 8 x 5 | 12 x 9 |

**Cooling water quality** No tendency to form lime scale; Removable substances: < 0.1 ml/l ; Iron: < 0.2 mg/l; Manganese: < 0.05 mg/l; no corrosive components; Conductivity: > 100 µS/cm

# 2 OZONFILT® And Bono Zon® Ozone Plants

## OZONFILT® Ozone Generation Systems OZMa 4-6 A (Process Gas - Air)

**Ambient parameters**

max. 85 % relative humidity of ambient air, non-condensing, non-corrosive, dust-free, max. ambient temperature: 40 °C

| | | OZMa 4A | OZMa 5A | OZMa 6A |
|---|---|---|---|---|
| **Number of generator modules** | | 2 | 2 | 3 |
| **Ozone capacity, measured in accordance with DIN with air at 20 °C, cooling water at 15 °C** | g/h | 210 | 280 | 420 |
| **Air consumption (only ozone generation)** | $Nm^3/h$ | 10.50 | 14.00 | 21.00 |
| **Ozone concentration in the gas phase referenced to nominal conditions** | $g/Nm^3$ * | 20 | 20 | 20 |
| **Specific energy requirement at nominal capacity** | Wh/g | 16.5 | 16.5 | 16.5 |
| **Power factor at full capacity** | cos ϕ | 0.95 | 0.95 | 0.95 |
| **Ozone connection** | | G 3/8" internal | G 3/8" internal | G 3/8" internal |

* $Nm^3$= $m^3$at standard conditions (P = $1.013 \times 10^5$Pa, T = 273 K)

## Electrical connection

| | | OZMa 4A | OZMa 5A | OZMa 6A |
|---|---|---|---|---|
| **Connected load** | V/Hz/A | 400/50;60/16 | 400/50;60/16 | 400/50;60/16 |
| **Enclosure rating** | | IP 43 | IP 43 | IP 43 |

## Overall dimensions (without mixing)

| | | OZMa 4A | OZMa 5A | OZMa 6A |
|---|---|---|---|---|
| **Width** | mm | 1,314 | 1,314 | 1,314 |
| **Height** | mm | 1,961 | 1,961 | 1,961 |
| **Depth** | mm | 600 | 600 | 600 |

## Weight

| | | OZMa 4A | OZMa 5A | OZMa 6A |
|---|---|---|---|---|
| **Weight** | kg | – | – | – |

## Ozone mixing

| | | OZMa 4A | OZMa 5A | OZMa 6A |
|---|---|---|---|---|
| **Raw water temperature max.** | °C | 35 | 35 | 35 |
| **Permissible pressure at ozone outlet** | bar | 0.8–2.0 | 0.8–2.0 | 0.8–2.0 |

## Air supply

| | | OZMa 4A | OZMa 5A | OZMa 6A |
|---|---|---|---|---|
| **Required air quantity** | l/min | 220 | 293 | 440 |

**Air quality** Oil- and dust-free, Non-corrosive, Constant upstream pressure of 4.5 - 10 bar

## Cooling water

| | | OZMa 4A | OZMa 5A | OZMa 6A |
|---|---|---|---|---|
| **Cooling water consumption (15 °C)** | l/h | 270 | 360 | 540 |
| **Cooling water consumption (30 °C)** | l/h | 600 | 800 | 1,200 |
| **Cooling water inlet pressure** | bar | 2–5 | 2–5 | 2–5 |
| **Cooling water inlet, PE pressure hose** | mm | 12 x 9 | 12 x 9 | 12 x 9 |
| **Cooling water outlet, open discharge** | mm | 12 x 9 | 12 x 9 | 12 x 9 |

**Cooling water quality** No tendency to form lime scale; Removable substances: < 0.1 ml/l ; Iron: < 0.2 mg/l; Manganese: < 0.05 mg/l; no corrosive components; Conductivity: > 100 µS/cm

# 2 OZONFILT® And Bono Zon® Ozone Plants

## Technical Data

### OZONFILT® Ozone Generation Systems OZMa 1-3 O (Process Gas - Oxygen)

| | | OZMa 1 O | OZMa 2 O | OZMa 3 O |
|---|---|---|---|---|
| **Number of generator modules** | | 1 | 1 | 1 |
| **Nominal ozone capacity at 100 g/Nm³ ** and cooling water at 15 °C** | g/h | 105 | 158 | 210 |
| **Ozone capacity at 150 g/Nm³ *** | g/h | 60 | 90 | 120 |
| **Ozone capacity at 80 g/Nm³** | g/h | 123 | 184 | 245 |
| **Specific energy requirement at nominal capacity** | Wh/g | 9 | 9 | 9 |
| **Power factor at full capacity** | cos ϕ | 0.95 | 0.95 | 0.95 |
| **Ozone connection** | | G 3/8" internal | G 3/8" internal | G 3/8" internal |

### Electrical connection

| | | OZMa 1 O | OZMa 2 O | OZMa 3 O |
|---|---|---|---|---|
| **Connected load** | V/Hz/A | 230/50;60/10 | 230/50;60/16 | 230/50;60/16 |
| **Enclosure rating** | | IP 43 | IP 43 | IP 43 |

### Overall dimensions

| | | OZMa 1 O | OZMa 2 O | OZMa 3 O |
|---|---|---|---|---|
| **Width** | mm | 1,114 | 1,114 | 1,114 |
| **Height** | mm | 1,961 | 1,961 | 1,961 |
| **Depth** | mm | 400 | 400 | 400 |

### Weight

| | | OZMa 1 O | OZMa 2 O | OZMa 3 O |
|---|---|---|---|---|
| **Weight** | kg | 220 | 230 | 250 |

### Ozone mixing

| | | OZMa 1 O | OZMa 2 O | OZMa 3 O |
|---|---|---|---|---|
| **Raw water temperature max.** | °C | 35 | 35 | 35 |
| **Permissible pressure at ozone outlet** | bar | 0.8–2.0 | 0.8–2.0 | 0.8–2.0 |

### Specification of operating gas: oxygen

| | | OZMa 1 O | OZMa 2 O | OZMa 3 O |
|---|---|---|---|---|
| **Gas volume at nominal capacity 100 g/Nm³** | Nl/h | 1,050 | 1,580 | 2,100 |
| **Gas volume at capacity 150 g/Nm³** | Nl/h | 400* | 600* | 800* |
| **Gas volume at capacity 80 g/Nm³** | Nl/h | 1,540 | 2,300 | 3,100 |
| **Concentration min.** | vol% | 90 | 90 | 90 |
| **Dew point max.** | °C | -50 | -50 | -50 |
| **Pressure** | bar | 3 – 6 | 3 – 6 | 3 – 6 |
| **Particles max.** | µm | 5 | 5 | 5 |
| **Hydrocarbons max.** | ppm | 20 | 20 | 20 |
| **Max. temperature** | °C | 30 | 30 | 30 |

### Cooling water

| | | OZMa 1 O | OZMa 2 O | OZMa 3 O |
|---|---|---|---|---|
| **Cooling water consumption (15 °C)** | l/h | 120 | 180 | 240 |
| **Cooling water consumption (30 °C)** | l/h | 200 | 300 | 400 |
| **Cooling water inlet pressure** | bar | 1–5 | 1–5 | 1–5 |
| **Cooling water inlet, PE pressure hose** | mm | 8 x 5 | 8 x 5 | 12 x 9 |
| **Cooling water outlet, open discharge** | mm | 8 x 5 | 8 x 5 | 12 x 9 |

**Cooling water quality** No tendency to form lime scale, no corrosive components; Sedimentable substances: < 0.1 ml/l; Iron: < 0.2mg/l; Manganese: < 0.05 mg/l; Conductivity: > 100 µS/cm; Chloride: < 250 mg/l

* Output 150 g/Nm³as special version must be factory-set

** Nm³= m³at standard conditions (P = 1.013x10⁵Pa, T = 273 K)

# 2 OZONFILT® And Bono Zon® Ozone Plants

## OZONFILT® Ozone Generation Systems OZMa 4-6 O (Process Gas - Oxygen)

| | | OZMa 4 O | OZMa 5 O | OZMa 6 O |
|---|---|---|---|---|
| **Number of generator modules** | | 2 | 2 | 3 |
| **Nominal ozone capacity at 100 g/Nm³ ** and cooling water at 15 °C** | g/h | 320 | 420 | 630 |
| **Ozone capacity at 150 g/Nm³ *** | g/h | 180 | 240 | 360 |
| **Ozone capacity at 80 g/Nm³** | g/h | 370 | 490 | 735 |
| **Specific energy requirement at nominal capacity** | Wh/g | 9 | 9 | 9 |
| **Power factor at full capacity** | cos ϕ | 0.95 | 0.95 | 0.95 |
| **Ozone connection** | | G 3/8" internal | G 3/8" internal | G 3/8" internal |

## Electrical connection

| | | OZMa 4 O | OZMa 5 O | OZMa 6 O |
|---|---|---|---|---|
| **Connected load** | V/Hz/A | 400/50;60/16 | 400/50;60/16 | 400/50;60/16 |
| **Enclosure rating** | | IP 43 | IP 43 | IP 43 |

## Overall dimensions

| | | OZMa 4 O | OZMa 5 O | OZMa 6 O |
|---|---|---|---|---|
| **Width** | mm | 1,314 | 1,314 | 1,314 |
| **Height** | mm | 1,961 | 1,961 | 1,961 |
| **Depth** | mm | 600 | 600 | 600 |

## Weight

| | | OZMa 4 O | OZMa 5 O | OZMa 6 O |
|---|---|---|---|---|
| **Weight** | kg | – | – | – |

## Ozone mixing

| | | OZMa 4 O | OZMa 5 O | OZMa 6 O |
|---|---|---|---|---|
| **Raw water temperature max.** | °C | 35 | 35 | 35 |
| **Permissible pressure at ozone outlet** | bar | 0.8–2.0 | 0.8–2.0 | 0.8–2.0 |

## Specification of operating gas: oxygen

| | | OZMa 4 O | OZMa 5 O | OZMa 6 O |
|---|---|---|---|---|
| **Gas volume at nominal capacity 100 g/Nm³** | Nl/h | 3,200 | 4,200 | 6,300 |
| **Gas volume at capacity 150 g/Nm³** | Nl/h | 1,200* | 1,600* | 2,400* |
| **Gas volume at capacity 80 g/Nm³** | Nl/h | 4,630 | 6,130 | 9,190 |
| **Concentration min.** | vol% | 90 | 90 | 90 |
| **Dew point max.** | °C | -50 | -50 | -50 |
| **Pressure** | bar | 3 – 6 | 3 – 6 | 3 – 6 |
| **Particles max.** | µm | 5 | 5 | 5 |
| **Hydrocarbons max.** | ppm | 20 | 20 | 20 |
| **Max. temperature** | °C | 30 | 30 | 30 |

## Cooling water

| | | OZMa 4 O | OZMa 5 O | OZMa 6 O |
|---|---|---|---|---|
| **Cooling water consumption (15 °C)** | l/h | 200 | 280 | 420 |
| **Cooling water consumption (30 °C)** | l/h | 330 | 470 | 700 |
| **Cooling water inlet pressure** | bar | 1–5 | 1–5 | 1–5 |
| **Cooling water inlet, PE pressure hose** | mm | 12 x 9 | 12 x 9 | 12 x 9 |
| **Cooling water outlet, open discharge** | mm | 12 x 9 | 12 x 9 | 12 x 9 |

**Cooling water quality** No tendency to form lime scale, no corrosive components; Sedimentable substances: < 0.1 ml/l; Iron: < 0.2mg/l; Manganese: < 0.05 mg/l; Conductivity: > 100 µS/cm; Chloride: < 250 mg/l

* Output 150 g/Nm³as special version must be factory-set

** Nm³= m³at standard conditions (P = 1.013x10⁵Pa, T = 273 K)