Meteosat Third Generation

A highly innovative geostationary satellite system for Europe and Africa

EUMETSAT’s next generation meteorological satellites are about to revolutionise weather forecasting in Europe and beyond.

The Meteosat Third Generation system is the most complex and innovative geostationary meteorological system ever built, with two different types of satellites delivering at least 50 times more data than Meteosat Second Generation.

The ground segment, used to control the spacecraft, acquire, process and archive the data and deliver data and products to users worldwide, faces a double challenge: more data being delivered more frequently. Therefore EUMETSAT will use the high-bandwidth Ka-band data frequency for the first time.

MTG is EUMETSAT’s most advanced system yet.

### Meteosat Second Generation (MSG) vs Meteosat Third Generation (MTG)

**MSG**

- Fully operated from the control centre in EUMETSAT headquarters in Darmstadt, Germany
- Geostationary orbit, 36,000km above the Earth
- Two-satellite constellation, both satellites are imagers
- Gyroscopic stabilisation with a rotating satellite, which views the Earth only 5% of the time
- Images of Europe are delivered every 5 minutes
- Images of Europe and Africa are delivered every 15 minutes
- Spatial resolution of 1 to 3km, depending on the instrument
- Full constellation distributes 2Mbps of data every day via EUMETCast Europe
- No Lightning Imager
- No Infrared Sounder
- No Ultraviolet, Visible and Near-Infrared Sounder

**MTG**

- Fully operated from the control centre in EUMETSAT headquarters in Darmstadt, Germany
- Geostationary orbit, 36,000km above the Earth
- Three-satellite constellation consisting of two imagers and, for the first time in geostationary orbit, an operational infrared sounding satellite.
- Three-axis stabilisation: the satellite views the Earth 100% of the time
- Images of Europe are delivered every 2.5 minutes
- Images of Europe and Africa are delivered every 10 minutes
- Spatial resolution of 0.5 to 2km, depending on the instrument
- The full constellation distributes 110Mbps of data every day via EUMETCast Europe.
- The Lightning Imager instrument provides data crucial for detecting and “nowcasting” storms, which is of significant benefit to the aviation industry, for example
- The Infrared Sounder makes its world debut on an operational satellite mission. It will provide 3D-profiles of temperature and humidity over Europe every 30 minutes.
- The Ultraviolet, Visible and Near-Infrared Sounder (the Copernicus Sentinel-4 mission) measures trace gases and aerosols over Europe every 60 minutes. This information will be used for monitoring and forecasting air quality.
### Meteosat Second Generation

**Dimensions**
- Height: 3.70m
- Width: 3.20m

**Mass**
- Without fuel: 1,070kg
- In orbit: 2,000kg

**Power & stabilisation**
- 600W / spinning at 100rpm

**Payload instruments**
- Spinning Enhanced Visible and Infrared Imager
- 12-channel imager
- Full Earth scan every 15 minutes
- Rapid scan of Europe every 5 minutes

### Meteosat Third Generation – Imager (MTG-I)

**Dimensions**
- Length: 2.80m
- Height: 2.30m
- Width: 5.20m

**Mass**
- Without fuel: 1,800kg
- In orbit: 3,800kg

**Power & stabilisation**
- 2,000W / three-axis stabilised

**Payload instruments**
- Flexible Combined Imager
- 16-channel imager
- Full Earth scan every 10 minutes
- Rapid scan of Europe every 25 minutes
- Lightning Imager
- Continuous monitoring of lightning activity over full Earth disc

### Meteosat Third Generation – Sounder (MTG-S)

**Dimensions**
- Length: 2.80m
- Height: 2.30m
- Width: 5.20m

**Mass**
- Without fuel: 1,800kg
- In orbit: 3,800kg

**Power & stabilisation**
- 2,000W / three-axis stabilised

**Payload instruments**
- Infrared Sounder
  - Vertical profile of temperature and moisture over Europe every 30 minutes
- Sentinel-4 Ultraviolet and Near-Infrared Sounder
  - Measurements of aerosols, O₃, NO₂, and SO₂ over Europe and North Africa every 60 minutes