



**Hurricane MK** cyclone for product recovery of api's from a spray dryer.

**Gas Flow:** 820m<sup>3</sup>/h at 85°C | **Expected Efficiency:** 99.1% – 99.2%  
**Client:** Hovione | **Location:** Loures, Portugal | **Year:** 2016

RF3038



**Hurricane HR** cyclone system optimized for pharmaceutical product recovering in a NIRO mobile minor spray dryer.

**Gas Flow:** 820m<sup>3</sup>/h at 85°C | **Expected Efficiency:** 99.1% – 99.2%  
**Client:** Hovione | **Location:** Loures, Portugal | **Year:** 2016

MW2995



**Hurricane MK** cyclone for product recovery of api's from a spray dryer.

**Gas Flow:** 820m<sup>3</sup>/h at 85°C | **Expected Efficiency:** 99.1% – 99.2%  
**Client:** Hovione | **Location:** Loures, Portugal | **Year:** 2016

JB2754



**Hurricane MK** cyclone for product recovery of api's from a spray dryer.

**Gas Flow:** 820m<sup>3</sup>/h at 85°C | **Expected Efficiency:** 99.1% – 99.2%  
**Client:** Hovione | **Location:** Loures, Portugal | **Year:** 2016

MW2375



**Hurricane HR** system for baby powder milk recovery.

**Gas Flow:** 26.000m<sup>3</sup>/h | **Expected Efficiency:** >98.09% | **Expected Emissions:** <385mg/Nm<sup>3</sup>  
**Client:** Werner | **Location:** Denmark | **Year:** 2016

MW2686



**Hurricane HR** for the product recovery after a spray dryer.

**Gas Flow:** 112 kg/h N<sub>2</sub> at 89°C | **Expected Efficiency:** 78.3 - 83.1%  
**Client:** Hovione | **Location:** Loures, Portugal | **Year:** 2016

RF2699



**ReCyclone® EH** system for recovery of nanoparticles of metal oxides (ZnO) placed downstream of a reactor. The objective was to replace an existing wet scrubber in order to increase efficiency with a completely dry system.

**Gas Flow:** 260m<sup>3</sup>/h at 80°C reactor | **Efficiency:** 90 - 96%  
**Client:** Innovnano | **Location:** Coimbra, Portugal | **Year:** 2009

P1121



**Hurricane HR** for the product recovery after a spray dryer

**Gas Flow:** 390m<sup>3</sup>/h at 53°C | **Expected Efficiency:** 80 – 81.5%  
**Client:** Hovione | **Location:** Loures, Portugal | **Year:** 2016

RF2604



**Hurricane HR** cyclone system for the recovery of atmospheric airborne particles.

**Gas Flow:** 200m<sup>3</sup>/h at 25°C | **Type of Particles:** Atmospheric airborne particles | **Emissions:** N/A  
**Client:** Leibniz Institute | **Location:** Cabo Verde | **Year:** 2016

H2572



**Hurricane HR\_MK** for the product recovery after a spray dryer

**Gas Flow:** 410m<sup>3</sup>/h at 85°C | **Expected Efficiency:** 99.1 - 99.2%  
**Client:** Hovione | **Location:** Loures, Portugal | **Year:** 2016

MW2378



Hurricane HR cyclone system designed for product recovery on a nitrogen gas stream.

**Gas Flow:** 113m<sup>3</sup>/h at -85°C | **Efficiency:** >99.98%  
**Client:** IPSEN | **Location:** Nice, France | **Year:** 2016

RF2540



Hurricane system for pharmaceutical powder recovery after a spray dryer.

**Gas Flow:** n/a | **Expected Efficiency:** n/a  
**Client:** Hovione | **Location:** Loures, Portugal | **Year:** 2016

MW2348



Hurricane MK for product recovery and reduction of particulate emissions in the exhaust gases from the dryer of sulphanilic acid.

**Gas Flow:** 14.000m<sup>3</sup>/h at 70°C | **Efficiency:** 99.5-99.6% | **Emissions:** 40-80mg/Nm<sup>3</sup>  
**Client:** Quimigal S.A. | **Location:** Estarreja, Portugal | **Year:** 2016

P2415



Hurricane HR cyclone and Hurricane MK cyclone optimized for product recovering in a milling line.

**Gas Flow:** 38 m<sup>3</sup>/h at 20°C | **Expected Efficiency:** 87.90 – 90.80% | **Emissions:** 6 mg/Nm<sup>3</sup>  
**Client:** Omrix S.A. | **Location:** Jerusalem, Israel | **Year:** 2016

JB2344



Hurricane HR cyclone system designed for product recovery on a nitrogen gas stream.

**Gas Flow:** 113m<sup>3</sup>/h at -85°C | **Efficiency:** >99.98%  
**Client:** IPSEN | **Location:** Nice, France | **Year:** 2015

P2392



Hurricane system for pharmaceutical powder recovery after a spray dryer.

**Gas Flow:** 1500(N<sub>2</sub>)kg/h + 40(H<sub>2</sub>O)kg/h at 85°C | **Expected Efficiency:** 96%  
**Client:** Hovione | **Location:** Loures, Portugal | **Year:** 2015

MW2348



Hurricane HR cyclone, to recover paprika powder from 3 milling lines.

**Gas Flow:** 11.010m<sup>3</sup>/h at 47,5°C | **Expected Efficiency:** 99.7%  
**Client:** Albarracín | **Location:** Murcia, Spain | **Year:** 2014

H2007



Hurricane HR cyclone for dry yeast recovery from a stream of air

**Gas Flow:** 398m<sup>3</sup>/h at 25°C | **Expected Efficiency:** 90.70%  
**Client:** Confidential | **Location:** Setubal, Portugal | **Year:** 2014

MW1870



Hurricane HR-HYD cyclone system for liquid-solid separation of living cells from medium in the vaccine production.

**Gas Flow:** 500l/h | **Expected Efficiency:** 80%  
**Client:** Merial | **Location:** Lion, France | **Year:** 2014

HT1933



Hurricane MK cyclone system for the recovery of pharmaceutical powder.

**Gas Flow:** 112m<sup>3</sup>/h | **Expected Emissions:** 336 mg/Nm<sup>3</sup> | **Capture efficiency:** 85.08%  
**Client:** Pulmatrix | **Location:** Massachusetts, USA | **Year:** 2014

MW1966



Hurricane HR cyclone system for the recovery of pharmaceutical powder.

**Gas Flow:** 112m<sup>3</sup>/h | **Expected emissions:** 646mg/Nm<sup>3</sup> | **Performance guarantee:** 71.29%  
**Client:** Pulmatrix | **Location:** Ponte Cremenaga, Switzerland | **Year:** 2014

MW1965



Hurricane HR system for product recovery of powder coating from exhaust-air of painting booth 31°C

**Gas Flow:** 10.372m<sup>3</sup>/h at 31°C | **Expected Emissions:** 47mg/Nm<sup>3</sup> | **Expected Efficiency:** 97.1-97.6%  
**Client:** Thermolaquage de Vendée | **Location:** Poitiers, France | **Year:** 2013

HT1720



Hurricane HR system for baby powder milk recovery.

**Gas Flow:** 26.000m<sup>3</sup>/h | **Expected Efficiency:** >98.09% | **Expected Emissions:** <385mg/Nm<sup>3</sup>  
**Client:** Werner | **Location:** Denmark | **Year:** 2013

P1706



Hurricane HR cyclone to capture particles produced in a buchi spray drying process.

**Gas Flow:** 3m<sup>3</sup>/h at 40°C | **Expected Efficiency:** 88.14% | **Expected Emissions:** <198mg/Nm<sup>3</sup>  
**Client:** Hovione | **Location:** Loures, Portugal | **Year:** 2014

MW2020



Hurricane HR system for pharmaceutical powder recovery after a spray dryer. It was installed to replace an existing high efficiency cyclone from the spray dryer manufacturer in order to increase powder recovery.

**Gas Flow:** 82kg/h N<sub>2</sub> at 70°C | **Global collection efficiency:** XXXXXXXXXXXX%  
**Client:** Hovione | **Location:** New Jersey, USA | **Year:** 2013

MW1819



Hurricane HR cyclone system for bio-char recuperation from a biomass (straw) pyrolysis process.

**Gas Flow:** 2.243m<sup>3</sup>/h at 750°C | **Expected Efficiency:** 99.6-99.7% | **Guarantee Emissions:** 1500mg/Nm<sup>3</sup>  
**Client:** Frichs | **Location:** Horsens, Denmark | **Year:** 2013

MW1715



Hurricane HR cyclone system designed for the recovery of atmospheric airborne particles in an air stream.

**Gas Flow:** 200m<sup>3</sup>/h flowrate at 25°C | **Global collection efficiency:** 61.3-66.96%  
**Client:** ETH | **Location:** Switzerland | **Year:** 2013

P1623



ReCyclone® EH system to increase silicon nanoparticle collection (30-60 nm) after a supersonic expansion of a SiH<sub>4</sub> plasma jet.

**Gas Flow:** 62m<sup>3</sup>/h at 100 °C | **Expected and measured efficiency:** >90%  
**Client:** Physical Sciences | **Location:** Andover, USA | **Year:** 2013

P1536



Hurricane HR system designed for product recovery of food ingredient on an air stream from a spray dryer.

**Gas Flow:** 57.878m<sup>3</sup>/h at 75 °C | **Expected collection efficiency:** 98.62-98.96 %  
**Client:** Arla Foods | **Location:** Holstebro, Denmark | **Year:** 2013

HT1349



Hurricane HR system for baby powder milk recovery.

**Gas Flow:** 26.000m<sup>3</sup>/h | **Expected capture efficiency:** >98.09% | **Expected Emissions:** <385mg/Nm<sup>3</sup>  
**Client:** Werner | **Location:** Reutlingen, Denmark | **Year:** 2013

P1706



**Hurricane MK** cyclone system designed for product recovery on a GEA Niro SD Micro spray dryer.

**Gas Flow:** 39m<sup>3</sup>/h at 165°C | **Expected efficiency:** 70-73.5 %  
**Client:** MannKind Corporation | **Location:** California, USA | **Year:** 2012

HT1488



**Hurricane HR** cyclone system optimized for API recovery after a mixer. The cyclone is ø 800 mm, manufactured in AISI 316L under the most strict pharmaceutical quality standards.

**Gas Flow:** 3.400m<sup>3</sup>/h at 75°C | **Expected efficiency:** 98.6-98.8 %  
**Client:** Merck | **Location:** Meyzieu, France | **Year:** 2012

P1391



**Hurricane HR** system aiming to increase the recovery of milk proteins' powder after a spray dryer. It was installed to replace an existing high efficiency cyclone from the spray dryer manufacturer in order to increase powder recovery.

**Gas Flow:** 92.000m<sup>3</sup>/h at 65°C | **Expected Efficiency:** 98.9-99.3% | **Measured Efficiency:** 99.1%  
**Client:** Arla Foods | **Location:** Holstebro, Denmark | **Year:** 2012

HT1384



**Hurricane HR** cyclone system designed for the collection of flakes and dust from a milling process.

**Gas Flow:** 6.769m<sup>3</sup>/h at 35°C | **Expected Efficiency:** 99.09-99.42%  
**Client:** Dexera | **Location:** Paris, France | **Year:** 2012

HT1366



Single Hurricane cyclone system to increase powder recovery after spray dryer processing.

**Gas Flow:** 74m<sup>3</sup>/h gas at 40°C | **Emissions:** 95%  
**Client:** Teva | **Location:** Gajraula, India | **Year:** 2012

P1202



Hurricane system designed for product recovery on a nitrogen gas stream

**Gas Flow:** 113m<sup>3</sup>/h at -85°C | **Efficiency:** >99.98%  
**Client:** IPSEN | **Location:** Nice, France | **Year:** 2011

P1376



**Hurricane HR** system for recovery of dried powder milk from the flue gases of a drying tower. The objective is to avoid the use of a bag filter and comply with regulatory emission limits.

**Gas Flow:** 31.100m<sup>3</sup>/h at 75°C | **Emissions:** <50mg/Nm<sup>3</sup>  
**Client:** Nestlé – Prolacto | **Location:** Azores, Portugal | **Year:** 2010

P1045



**Hurricane HR** cyclone system for active pharmaceutical ingredient recovery. This equipment designed for an easier cleaning.

**Gas Flow:** 12.5m<sup>3</sup>/h at 25°C | **Efficiency:** 99.95%  
**Client:** Pierre Fabre | **Location:** Gaillac, France | **Year:** 2011

P1164



**Hurricane HR** system and sedimentation chamber for mining machine for the recovery of leftover material in mining operations.

**Gas Flow:** XXXXXX | **Emissions:** N/A  
**Client:** Fermel | **Location:** Cape Town, South Africa | **Year:** 2010

P1114



**Hurricane HR** system designed to increase fat powder recovery.

**Gas Flow:** 4.875m<sup>3</sup>/h at -5.5°C | **Efficiency:** 99.94%  
**Client:** AZO | **Location:** Antwerpen, Belgium | **Year:** 2010

P1380



Hurricane HR system designed for fat powder recovery in the food industry.

**Gas Flow:** 3.900m<sup>3</sup>/h at 5°C | **Expected Efficiency:** 99.96%  
**Client:** AZO | **Location:** Antwerpen, Belgium | **Year:** 2010

P1100



Hurricane HR cyclone system designed for PTFE powder in a chemical industry.

**Gas Flow:** 2.550m<sup>3</sup>/h at 20°C | **Expected Efficiency:** 98.76%  
**Client:** AZO | **Location:** Antwerpen, Belgium | **Year:** 2010

P985



Hurricane HR system designed for product recovery of fine dust obtained in a steel industry process. System was installed to recover uncontaminated white slag powder before reaching the bag filter and reducing heavy maintenance costs of the filter.

**Gas Flow:** 158.500m<sup>3</sup>/h at 165°C | **Efficiency:** >97 %  
**Client:** Corrugados Getafe | **Location:** Madrid, Spain | **Year:** 2010

P1002



Hurricane HR system designed for product recovery of very fine metakaolin particles.

**Gas Flow:** 21.368 m<sup>3</sup>/h at 650°C | **Emissions:** 89.2-92.6%  
**Client:** Moengo Minerals | **Location:** Marowijne, Suriname | **Year:** 2010

P1012



Hurricane HR cyclone system for pharmaceutical powder recovery after a spray dryer. It was installed to replace an existing high **Efficiency** cyclone from the spray dryer manufacturer in order to increase powder recovery

**Gas Flow:** 82kg/hN<sub>2</sub> at 70°C | **Emissions:** N/A  
**Client:** Hovione | **Location:** New Jersey, USA | **Year:** 2010

P1112



ReCyclone® EH system for recovery of nanoparticles of metal oxides (ZnO) placed downstream of a reactor. The objective was to replace an existing wet scrubber in order to increase efficiency with a completely dry system.

**Gas Flow:** 260m<sup>3</sup>/h at 80°C reactor | **Efficiency:** 90-96%  
**Client:** Innovnano | **Location:** Coimbra, Portugal | **Year:** 2009

P1121



Hurricane HR cyclone system for pharmaceutical powder recovery after a spray dryer. Installed to replace an existing high efficiency cyclone from the spray dryer.

**Gas Flow:** 1.500kg/h N<sub>2</sub> + 40kg/h H<sub>2</sub>O at 85°C \ **Efficiency:** >97%  
**Client:** Hovione | **Location:** Loures, Portugal | **Year:** 2008

P1024



ReCyclone® MH system for chemical powder recovery (sulfanilic acid) In a fluidized bed dryer. It was installed to replace a pulse jet bag filter in order to increase powder recovery

**Gas Flow:** 14.000m<sup>3</sup>/h at 70°C | **Efficiency:** 99.5-99.6 % | **Emissions:** 40-80 mg/Nm<sup>3</sup>  
**Client:** Quimigal S.A. | **Location:** Estarreja, Portugal | **Year:** 2001

PXXXX