

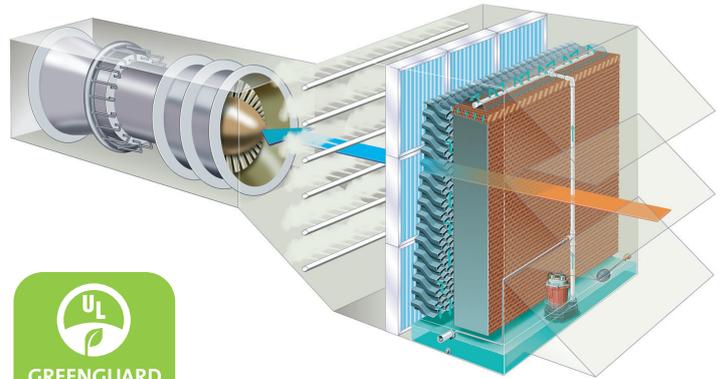
TURBOdek®

Evaporative Media

For over half a century, Munters has been the leading pioneer within humidity control, and we're just getting started.

Features

- Increase turbine power
- Output 1% per °C
- Improved thermal efficiency
- Greater NOx emission reduction
- Sound attenuation



TURBOdek is a high efficiency, low pressure drop, low drift media that delivers maximum cooling to optimize combustion turbine output. TURBOdek features Munters' patented unequal angle, unequal flute design for high velocity evaporative cooling up to 4 m/s. Manufactured from Munters' heavy cellulose media, that has been treated to resist deterioration and is protected by Munters' algae and weather resistant edge coating, makes TURBOdek easier to clean and maintain as well as extends media life. TURBOdek is GREENGUARD Gold certified, which means the chemical emissions from the material are extremely low.

Produce 20 % More Electricity with Inlet Air Cooling

Cooler air, being denser, gives turbines a higher mass flow rate and pressure ratio, resulting in an increase in power output and efficiency. It has been determined that the reduction of air inlet temperature improves the gas turbine output by as much as 1 % per °C. Turbines utilizing evaporative cooling systems have reported an increase in capacity as high as 20 % during peak summer demand. Increasing the water vapor in the air stream tends to lower the amount of oxides of nitrogen produced in the combustion process. At the same time, the air scrubbing effect of Munters' evaporative cooling media contributes to the removal of many airborne contaminants and particulates before they enter the turbine. This effectively extends the life and decreases the maintenance required on filters and other equipment.



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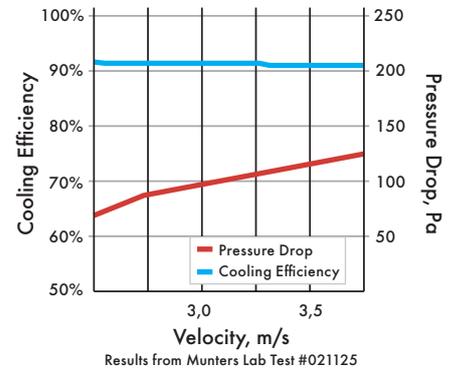
Pre-cooling Systems Available for New and Retrofit Applications

In new turbine construction, a TURBOdek evaporative cooling system is integrated into the inlet housing. In retrofits, TURBOdek is frequently installed in front of filters that remove particulates from inlet air. This simple retrofit installation typically involves removing the turbine inlet weather hoods and bolting the cooling system to the inlet. Whether a new installation or retrofit application, Munters' TURBOdek systems simply produce more electricity per cubic meter of natural gas.

Self-cleaning Design

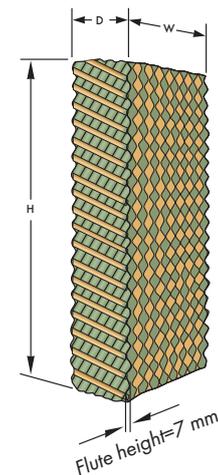
TURBOdek's unique self-cleaning design produces significant improvement in cooling efficiency with less than 55 Pa at 2,5 m/s and 92% efficiency. Consequently, turbine air inlet houses can be smaller and still achieve the cooling needed, resulting in reduced material.

300 mm Turbodek Performance Curves



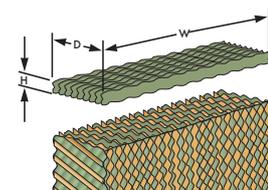
Turbodek Media

Standard height, H = 1000, 1500, 2000 mm
 Standard width, W = 600 mm
 Standard depth, D = 300 mm



Distribution Media

Standard height, H = 50 mm
 Standard width, W = 600 mm
 Standard depth, D = 300 mm



Calculated Annual MWhr Gains Compared to No Precooling						
City	Taurus 60	SGT 400	GT 13	SGT 6-2000	7 F	9 F
Vienna	555	475	7684	8119	15239	19352
Madrid	1050	1679	16756	17823	33241	42395
Cairo	1783	2888	24898	26425	49388	62897
New Dehli	1682	3871	26801	28467	53165	67738
Dubai	2228	4777	30659	33149	61885	77486
Kuwait	3630	7774	51367	54871	101919	130339

Estimated Annual MWhr Gains Replacing Current Media with TURBOdek						
City	Taurus 60	SGT 400	GT 13	SGT 6-2000	7 F	9 F
Vienna	33	29	461	487	914	1161
Madrid	63	101	1005	1069	1994	2544
Cairo	107	173	1494	1586	2963	3774
New Dehli	101	232	1608	1708	3190	4064
Dubai	134	287	1840	1989	3713	4649
Kuwait	218	466	3082	3292	6115	7820

Estimations based on weather bin data for selected cities and Munters lab test for 300 mm CELdek vs. TURBOdek media at 4 m/s average face velocity.

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