

# Lowering Humidification Requirements

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September 16, 2010



# About Talecris

- Company that inherited the assets and 60-year history of Bayer HealthCare's blood plasma business.
- Develops and produces critical-care treatments for people with life-threatening disorders in a variety of therapeutic areas including immunology, pulmonology and hemostasis.
- Manufacturing facility located in Clayton, NC.

# Current Conditions

- Site required minimum relative humidity level of NLT 35% for Class C and D manufacturing areas.
- ASHRAE Standard 55-1992 recommended minimum 30% RH for human comfort.
- Humidification achieved using Clean Steam in duct or unit mounted humidifiers.
- 47 Manufacturing AHUs at 655,500 cfm.

# Why Change?

- ASHRAE Standard 55-2004 superseded 55-1992 stating that the standard no longer specified a minimum humidity level.
- On site study proved low relative humidity has no correlation to environmental monitoring data (statistical analysis for C and D). [\(chart\)](#)
- Significant capital and operational costs could be avoided.

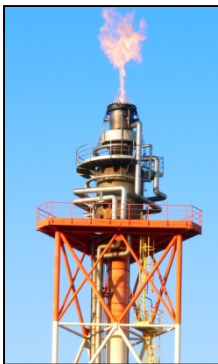
# Maintenance



Humidification requires additional maintenance and time that could be allocated elsewhere.



- \$90 per year per humidifier
- 25 humidifiers currently in use
- \$2160 per year total

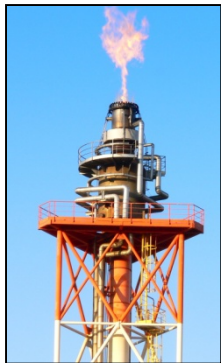


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# Water Usage



Humidification requires additional city water usage to provide the amount of steam necessary for the process.



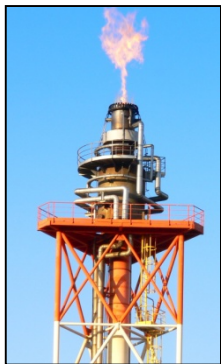
- 4,769,047 gal per year
- \$4.11 per 1,000 gal
- \$19,600 per year

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# Wastewater Treatment



Humidification adds additional loading to the wastewater treatment plant. All of the water used in the humidification process must be treated.



- 1,907,590 gal per year
- \$5.45 per 1000 gal
- \$10,396 per year

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# WFI Production



In order to produce steam for humidification, the city water must be converted to WFI water.



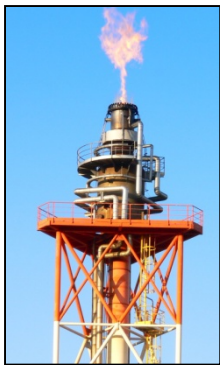
- 2,861,457 gal per year
- \$50 per 1,000 gal
- \$143,072 per year total



# Steam Generation

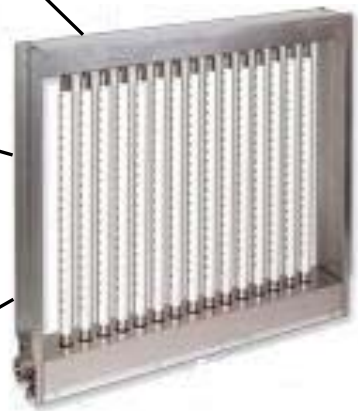
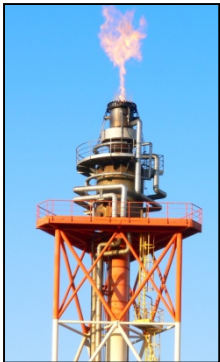


Humidification requires additional steam production.



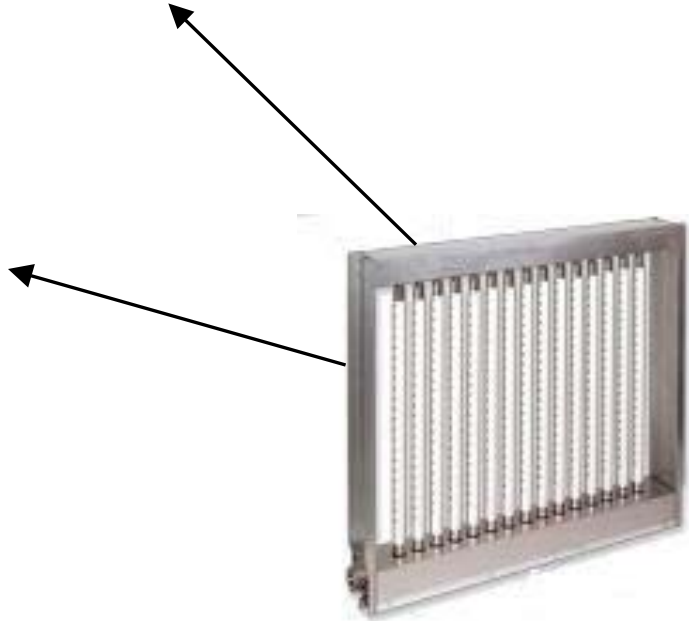
- 26,011,831 lbs plant steam per year
- 23,879,714 lb clean steam per year
- \$164,071 per year

# Gas Usage



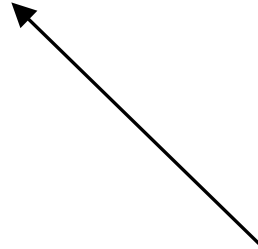
Additional steam production leads to extra consumption of natural gas.

# Power Consumption



Unnecessary humidification requires extra power to produce.

# Costs



Cost are incurred in all of the categories discussed due to the unnecessary humidification.

# Cost Savings – Operational Yearly

- Clean steam cost \$14.25 / 1000 lbs
- Total clean steam use 23.8 MM lbs/year

**TOTAL Cost Saved \$340,000 / year**

# Cost Savings – Capital

Clean Steam Generation	\$1.8MM
WFI Generation	\$1.2MM
RO Generation	\$1.2MM
WWTP	\$0.7MM
Plant Steam	<u>\$2.0MM</u>
<b>TOTAL</b>	<b>\$6.9MM</b>

# Summary

- Successfully reduced lower limit requirement for relative humidity from 35% to 10%.
- Predicted annual savings of \$340,000.
- Significantly reduced future capital costs for utility generating equipment.