

# Going Green With CMMS

Ave Maria Utility Company



CH2MHILL®

Maintenance Connection Inc.



# Overview

## Project:

Case Study based on CH2MHill/Ave Maria Utility Company's use of Maintenance Connection's CMMS.



## Objective :

Establish a Green based initiative through use of CMMS, focusing on Key Green CMMS Elements.



## Core Study:

Narrowed focus of 5 Key CMMS Capabilities. Examined both current and future plans to fulfill each Green Element.



# Presenters:

**Cary Yocum:****Maintenance Connection Inc.**

Cary Yocum is the Director of Sales and Marketing for Maintenance Connection, Inc. Cary has been with Maintenance Connection since 2004 and came to the company as a customer. As a previous customer, Cary understands the perspective a customer has on using CMMS and leverages this knowledge when finding the best fit for any given organization. Cary has worked on most of the larger customers that Maintenance Connection has partnered with. This includes City of Orlando, Mary Kay, McLane Company, County of Maui, Sodexo and many others. One of the areas of strength for Cary is his understanding of a wide verity of technologies. This understanding stems from his over 15 years of technology related employment. Cary resides in Denver, Colorado, is married, and has four young boys.

**Ralph Stewart:****Maintenance Connection Inc.**

Ralph has an extensive background in IT training and implementation. He joined Maintenance Connection in 2006, and has provided CMMS training and implementation services throughout the US. Ralph has a B.S. in Education from East Carolina University.

**Jason Vogel:****Ave Maria Utility Company; CH2M Hill**

Jason began working with Ave Maria in 2006 to oversee the construction and start-up of the water and wastewater facilities. He is currently responsible for all aspects of the Ave Maria Utility Company and irrigation operations for the Ave Maria Stewardship Community District. During his 13 years with CH2M HILL, Vogel has provided professional utility and public works services for clients in Charlotte, Savannah, Jacksonville, Stuart (FL), Macon (GA), and The Villages (FL). Jason has a B.S. in Environmental Management from the University of Florida.

## Town of Ave Maria

- ✓ Fully self-contained walk able community
- ✓ Critical services (utilities, healthcare, public safety)
- ✓ Necessities (retail, grocery, bank, post office, gas)
- ✓ Ave Maria University
- ✓ Neighborhoods, Parks, Trails, Lakes/Ponds



# Town of Ave Maria



Before Construction

After Construction



# Ave Maria Utility Company

## Utility Facts:

- CH2M Hill Design-Build-Operate Project
- Winner 2007 Design-Build Institute of America Merit Award

## WTP Facts:

- 1.7 MGD Nanofiltration Plant
- Construction Completed August 2006
- Winner 2010 Best Tasting Drinking Water



## WWTP Facts:

- 1.25 MGD Conventional Activated Sludge WWTP
- 100% Reuse of Treated Effluent
- Construction Completed September 2006
- 160 Acre Natural Treatment Wetland

# Motivation for Green Initiative

U.S. companies spend over \$100 Billion Annually on capital equipment and related services\*

U.S. companies spend over \$400 Billion annually on energy spending\*

# CMMS + Efficient MRO = Sustainability

Even if the current buzzword “green” is replaced by a new trend or business concept, what this term represents will remain as a key component of any effective maintenance management operation.

When used and implemented to high standards, a proper CMMS can be the most powerful tool you own along your path towards achieving sustainability.



# 5 Green CMMS Elements



Electronic Data Collection



Energy Monitoring



Efficient PM Program



Notifications/Reporting



Paperless Environment



# Electronic Data Collection

Integration With Data Collection Systems (SCADA, BMS, BAS)

Monitor Detailed Asset Information

Track Energy Consumption

Maximize Equipment Efficiency

Provides For More Sustainable Equipment

Leads To Increased Durability





## Energy Data Collection - Ave Maria Details

### Current

Use SCADA, but not integrated with CMMS

Gather data manually, using paper Work Order

Minimal Administrative Users Entering Information into CMMS

Tracking Energy Consumption in MS Excel

### Future Plan

Integrate with SCADA and other collection systems

Use mobile devices for paperless collection

Use Technician Work Center to allow more users to update information

Tracking /Trending of Energy Consumption within CMMS



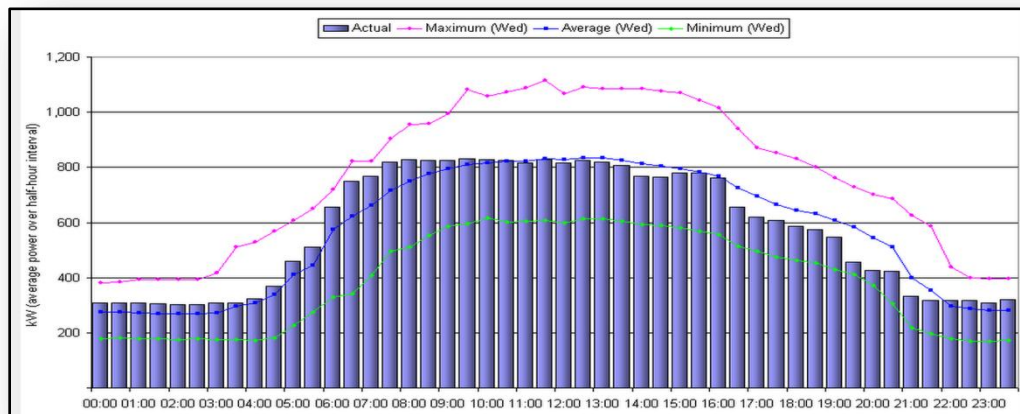
# Energy Monitoring

User-Definable Condition-Based Monitoring Of Asset Information

Energy Consumption Reporting/Trending = Better Decisions

Energy Consumption Roll-up reporting (Parent/Child Consumption Analysis)

Optimal/Min/Max Consumption Values Used To Initiate Various Activities





## Energy Monitoring - Ave Maria Details

### Current

Assets under condition monitoring program are not monitored real time  
Assets using CMMS monitoring capabilities are limited (amps, voltage, HP, etc.)  
Reactive work orders are initiated only by request

### Future Plan

Proposing client add more assets to condition based assessment (healthcare, fire, public safety, wetland care, hiking trails)

Incorporate more assets into CMMS specification/meter based monitoring capabilities

Use features of CMMS to automatically initiate reactive work requests



# Efficient PM Program

Most Important Factor In Deploying  
An Effective Green CMMS

Starting Point To Increase Equipment  
Durability And Sustainability

**Labor Hours**  
Set My Total Labor Hours to:

**Meter Readings**  
Meter 1 Reading:  Meter 2 Reading:

**Failure Analysis**  
Problem:   
Failure:   
Solution:

Failed Work Order  
 Create Follow-up WO(s)  
Single WO for all Failed Tasks

Preventive Maintenance: Valve Acuator Semi-annual, Annual

Details Schedule Procedures Assets Automation Attach Reports

Schedule Start / End

1. Select the schedule for this to recur:

Time Based or Meter Based Schedule (one or the other)  
 Time Based and Meter Based Schedule (whichever hits first)

Daily  
 Weekly  
 Monthly  
 Yearly

Select a Monthly schedule option from the three different types below:

Every 1 month(s)  
 The 1st of every 1 month(s)  
 The first Sunday of every 1 month(s)

OR

Meter  
Every meter 1 units  
Every meter 2 units

Use the Meter Reading at the Work Order Completed Date when calculating the next Meter interval

Proper CMMS Provides For Time  
And Meter Based PMs

Extend Asset Lifecycle

Reduction In Waste Contributes  
To A More Environment Friendly  
MRO



## Efficient PM Program - Ave Maria Details

### Current

Many established PM Schedules:

- |                                  |   |
|----------------------------------|---|
| <i>blowers</i> -                 | (inspections, oil and lube, filter replacements, motor tests)                 |
| <i>golf carts and vehicles</i> - | (weekly inspections and O&M based services)                                   |
| <i>reclaimed water systems</i> - | (pumps, buildings, flow meters, motors, A/C units, etc.)                      |
| <i>Generators</i> -              | (weekly inspections [e.g., fluids, battery] and load test and annual service) |

### PM Frequency Examples:

Filter replacements, fluid inspections [e.g., oil, coolant], general lubrication, quarterly electric motor checks [volts, amps, ohms], annual A/C service, annual calibration of flow meters, annual vibration testing, annual backflow testing, annual infrared testing, etc.

### PM Triggers:

Calendar based frequency, manually created on a weekly basis by maintenance manager.

### Future Plan

Incorporate notifications and automated PM generation capabilities of CMMS

Expand use of meters in combination with calendar to initiate PM schedules



## Notifications/Reporting

Strengthens Green Decision Making Capabilities

Automated Notifications When Certain Metrics Are Out Of Range

Scheduled Reports Provide Accurate Information When Needed

JCAHO, ISO, Sarbanes Oxley - Allow For Submission Of Electronic Reports To Satisfy Compliance

Real Time KPI Dashboard







## Notifications/Reporting - Ave Maria Details

### Current

Manually run reports as needed

Typically use reports on a monthly basis

(Contract-required reports for Completed WOs, Completed SRs, certifications, installations, backlog, and response time)

### KPI's

(Assets in service, OT vs Reg Hrs, Backlog Hrs, Backlog Priority 1 WOs, Average Response Time [service requests], % PM WOs Completed vs. Open, WOs Overdue)

### Future Plan

Implement Scheduled reports

CMMS Smart Reporting Capabilities for interaction with CMMS records

Implement Automated Notifications Based on System Events

Develop Use of KPIs



# Paperless Environment

Create, Distribute, Complete Work Assignments In Electronic Format

Electronic Reports Emailed From CMMS

Inventory, Documents, History Available In One Location

Materials Conservation



Enhance Efficiency

Administrative and Material Cost Savings (Filing, Paper Costs, Etc.)

Mobile Component





## Paperless Environment – Ave Maria Details

### **Current:**

CH2MHill Corporate Averages 3000 paper work orders per month  
Approximately 70% are paperless  
Some projects accessing via laptop and wireless card

### **Future Plan:**

As Ave Maria grows.....need for paperless becomes more evident, etc.  
Proposed Ave Maria to go completely paperless by 2013  
Implement Handheld devices  
Use Barcode enabled scanners  
Complete WOs electronically to reduce administrative labor hours



## Project Summary

A crucial stop on the path to sustainability and becoming “green” is in the implementation of an Enterprise Asset Management / Computerized Maintenance Management System (EAM/CMMS). For more information about implementing this type of solution using CMMS:

Visit: [www.maintenanceconnection.com](http://www.maintenanceconnection.com)

Or contact Cary Yocum at Maintenance Connection:

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