Management Review Preparation Information (example)

*Purpose: To provide an example of detailed information compiled for management review that would be summarized further and visually enhanced for presentation to top management. These details would then be maintained as back-up information for the management representative in the event it was needed to answer questions from management during the review.*

**Current Energy Opportunities - 1/27/2016**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
|  | **Opportunity Rating** | | | | |
| **Description of Opportunity** | **Anticipated annual energy cost savings** | **Expected**  **time required for implementation** | **Simple payback** | **EHS impact** | **Total Rating Score (x)** |
| Reduce Boiler Blowdown | 3 | 3 | 4 | 4 | 144 |
| Add Dryer Economizer | 3 | 1 | 2 | 3 | 18 |
| Recover Heat from Boiler Blowdown | 3 | 1 | 4 | 3 | 36 |
| Use Synthetic Lubricants on Compressors | 1 | 4 | 4 | 3 | 48 |
| Replace 40W tubes with 36W energy efficient tubes in office area | 1 | 3 | 4 | 3 | 36 |
| Replace Motors with Premium Efficiency Motors Instead of Rewinding | 2 | 1 | 2 | 3 | 12 |
| Repair Compressed Air Leaks | 1 | 3 | 3 | 3 | 27 |

**Energy Review Data**

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| --- | --- | --- | --- | --- | --- | --- |
| **Natural Gas** | | | | | | |
| Consumption and Cost | | | | | | |
|  | | | | | | |
|  |  |  | Conversion Factor (Btu/CF) |  |  |  |
|  |  | Consumption |  | Gas Cost | Total Cost |
| Start Date: | End Date: | (CCF) | MMBtu | ($) | ($) |
| 12/21/2014 | 1/23/2015 | 64922 | 1,030 | 6,687 | $56,839 | $60,818 |
| 1/23/2015 | 2/24/2015 | 69589 | 1,030 | 7,168 | $60,925 | $65,190 |
| 2/24/2015 | 3/24/2015 | 74520 | 1,030 | 7,676 | $65,243 | $69,810 |
| 3/24/2015 | 4/23/2015 | 68777 | 1,030 | 7,084 | $60,215 | $64,430 |
| 4/23/2015 | 5/22/2015 | 69617 | 1,030 | 7,171 | $60,950 | $65,216 |
| 5/22/2015 | 6/23/2015 | 63654 | 1,030 | 6,556 | $55,729 | $59,630 |
| 6/23/2015 | 7/23/2015 | 63928 | 1,030 | 6,585 | $55,969 | $59,887 |
| 7/23/2015 | 8/22/2015 | 64365 | 1,030 | 6,630 | $56,351 | $60,296 |
| 8/22/2015 | 9/21/2015 | 60413 | 1,030 | 6,223 | $52,892 | $56,594 |
| 9/21/2015 | 10/22/2015 | 61134 | 1,030 | 6,297 | $53,523 | $57,270 |
| 10/22/2015 | 11/22/2015 | 59988 | 1,030 | 6,179 | $52,520 | $56,196 |
| 11/22/2015 | 12/21/2015 | 59531 | 1,030 | 6,132 | $52,120 | $55,768 |
| Totals | |  |  | 80,385 | $683,275 | $731,105 |

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| **Electricity** | | | | | | |
| Consumption and Cost | | | | | | |
|  | | | | | | |
|  |  |  | Billing | Electricity | Total |  |
|  |  | Consumption | Demand | Cost | Cost |  |
| Start Date: | End Date: | kWh | kW | ($) | ($) | MMBtu |
| 12/21/2014 | 1/23/2015 | 792247 | 700 | $67,341 | $72,055 | 2,704 |
| 1/23/2015 | 2/24/2015 | 729456 | 700 | $62,004 | $66,344 | 2,490 |
| 2/24/2015 | 3/24/2015 | 724921 | 700 | $61,618 | $65,932 | 2,474 |
| 3/24/2015 | 4/23/2015 | 722250 | 700 | $61,391 | $65,689 | 2,465 |
| 4/23/2015 | 5/22/2015 | 725675 | 700 | $61,682 | $66,000 | 2,477 |
| 5/22/2015 | 6/23/2015 | 775897 | 700 | $65,951 | $70,568 | 2,648 |
| 6/23/2015 | 7/23/2015 | 864007 | 700 | $73,441 | $78,581 | 2,949 |
| 7/23/2015 | 8/22/2015 | 882346 | 700 | $74,999 | $80,249 | 3,011 |
| 8/22/2015 | 9/21/2015 | 885884 | 700 | $75,300 | $80,571 | 3,024 |
| 9/21/2015 | 10/22/2015 | 838777 | 700 | $71,296 | $76,287 | 2,863 |
| 10/22/2015 | 11/22/2015 | 819952 | 700 | $69,696 | $74,575 | 2,798 |
| 11/22/2015 | 12/21/2015 | 812427 | 700 | $69,056 | $73,890 | 2,773 |
| Totals | | 9,573,839 |  | $813,776 | $870,741 | 32,676 |

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| **SEU Identification** | | |
| Energy uses exceeding | 11,305 | MMBtu |
| Energy Use | MMBtu | Plant % |
| Motors | 17,725 | 17.28% |
| Dryer | 22,400 | 21.83% |
| Boiler | 20,329 | 19.81% |

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| **Boiler, Dryer and Facility Natural Gas Consumption** | | **Natural Gas Consumption** | | | | | | Production Data |
| Boiler Target | Boiler Actual | Dryer Target | Dryer Actual | Facility Target | Facility Actual |
| Start Date: | End Date: | MMBtu | MMBtu | MMBtu | MMBtu | MMBtu | MMBtu | lbs. |
| 12/21/14 | 1/23/15 | 3,371 | 3,506 | 2,842 | 2,862 | 5,613 | 6,238 | 609,995 |
| 1/23/15 | 2/24/15 | 3,440 | 3,604 | 2,900 | 3,043 | 5,963 | 6,647 | 636,200 |
| 2/24/15 | 3/24/15 | 3,635 | 3,752 | 3,064 | 3,245 | 6,391 | 6,997 | 650,330 |
| 3/24/15 | 4/23/15 | 3,532 | 3,719 | 2,977 | 3,023 | 6,023 | 6,742 | 657,521 |
| 4/23/15 | 5/22/15 | 3,339 | 3,525 | 2,815 | 3,160 | 5,953 | 6,685 | 674,675 |
| 5/22/15 | 6/23/15 | 3,108 | 3,205 | 2,620 | 2,812 | 5,447 | 6,017 | 663,600 |
| 6/23/15 | 7/23/15 | 2,875 | 2,935 | 2,424 | 2,756 | 5,480 | 5,994 | 625,322 |
| 7/23/15 | 8/22/15 | 3,012 | 3,391 | 2,539 | 3,059 | 5,525 | 6,820 | 773,329 |
| 8/22/15 | 9/21/15 | 3,245 | 3,360 | 2,736 | 3,126 | 5,565 | 6,756 | 758,885 |
| 9/21/15 | 10/22/15 | 3,543 | 3,728 | 2,987 | 3,245 | 5,735 | 6,895 | 759,679 |
| 10/22/15 | 11/22/15 | 3,616 | 4,130 | 3,046 | 3,332 | 5,952 | 7,197 | 749,291 |
| 11/22/15 | 12/21/15 | 3,702 | 4,345 | 3,120 | 3,522 | 6,029 | 7,397 | 752,393 |
| 2015 Totals | | 40,418 | 43,200 | 34,069 | 37,185 | 69,674 | 80,385 | 8,311,220 |
| 2015 Averages | | 3,368 | 3,600 | 2,839 | 3,099 | 5,806 | 6,699 | 692,602 |

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| **Boiler, Dryer and Facility EnPIs** | | **Energy Performance Indicator** | | | | | |
| Boiler Target | Boiler Actual | Dryer Target | Dryer Actual | Facility Target | Facility Actual |
| Start Date: | End Date: | Btu/lb | Btu/lb | MMBtu | MMBtu | Btu/lb | Btu/lb |
| 12/21/14 | 1/23/15 | 5,243 | 5,748 | 4,420 | 4,692 | 8,730 | 10,226 |
| 1/23/15 | 2/24/15 | 5,350 | 5,665 | 4,510 | 4,783 | 9,274 | 10,448 |
| 2/24/15 | 3/24/15 | 5,654 | 5,769 | 4,766 | 4,990 | 9,940 | 10,759 |
| 3/24/15 | 4/23/15 | 5,493 | 5,656 | 4,631 | 4,598 | 9,367 | 10,254 |
| 4/23/15 | 5/22/15 | 5,193 | 5,225 | 4,378 | 4,684 | 9,259 | 9,908 |
| 5/22/15 | 6/23/15 | 4,834 | 4,830 | 4,075 | 4,237 | 8,472 | 9,067 |
| 6/23/15 | 7/23/15 | 4,472 | 4,694 | 3,770 | 4,407 | 8,523 | 9,585 |
| 7/23/15 | 8/22/15 | 4,685 | 4,385 | 3,949 | 3,956 | 8,593 | 8,819 |
| 8/22/15 | 9/21/15 | 5,047 | 4,428 | 4,255 | 4,119 | 8,656 | 8,903 |
| 9/21/15 | 10/22/15 | 5,511 | 4,907 | 4,645 | 4,272 | 8,919 | 9,076 |
| 10/22/15 | 11/22/15 | 5,624 | 5,512 | 4,738 | 4,447 | 9,257 | 9,605 |
| 11/22/15 | 12/21/15 | 5,758 | 5,775 | 4,853 | 4,681 | 9,377 | 9,831 |
| 2015 Averages | | 5,239 | 5,216 | 4,416 | 4,489 | 9,031 | 9,707 |

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|  |  | **SEU Current Energy Performance** | | |
| **SEU** | **Relevant Variables** | Current Energy Performance | Evaluation Date | Evaluation Basis |
| Motors | Voltage, Washer load | 55% Average Load | 1/15/16 | Engineering estimate - Weekly motor amperage measurement |
| Dryer | Inside air temperature, air/fuel ratio, material moisture content | 80% Efficient | 12/30/15 | Stack gas analysis |
| Boiler | Air/fuel ratio, feed water temperature, production | 75% Efficient | 12/30/15 | Stack gas analysis |

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| --- | --- | --- | --- | --- |
|  | **Future Estimates January - March 2016** | | | |
|  | **Future Energy Use** | | **Future Energy Consumption** | |
| **SEU** | Use | Estimate Basis | Consumption | Estimate Basis |
| Motors | Continue to use electric motors | No change in production methods | Increase to 6,126,614 kWh/yr. Facility increase to 11,297,660 kWh and $1,027,222/yr | 18% increased production in last half of the year due to increased sales |
| Dryer | Continue to use gas dryer | No change in production methods | Increase to 43,880 MMBtu/yr. Facility increase to 94,859 MMBtu and $806,303/yr | 18% increased production in last half of the year due to increased sales |
| Boiler | Continue to use steam boiler | No change in production methods | Increase to 50,978 MMBtu/yr. Facility increase to 94,859 MMBtu and $806,303/yr | 18% increased production in last half of the year due to increased sales |

**Corrective/Preventive Actions**

Finding: Failure to meet stated objective and targets

Source: Energy review of 1/14/16

Action: Engineering analyzed data and determined that weather conditions (temperature) have a significant impact on energy consumption. Also the last half of 2015 saw a large increase in production attributing to an increase in energy consumption.

Status: Energy performance indicators to be modified to account for temperature changes.

Finding: Two out of date process control documents were being used on line #2

Source: Internal audit of 12/19/15 finding number 101219-1 and 101219-2

Action: Current versions of the documents were obtained, placed in appropriate floor locations and old documents were destroyed

Status: Corrective action has been completed.

Finding: Dryer was not being loaded according to operational procedure

Source: Internal audit of 12/19/15 finding number 101219-3

Status: A new employee on the line had not received complete training and was incorrectly loading the dryer.

Action: Employee has undergone training, his technique has been reviewed by his supervisor and he is now performing the operation according to procedure. New employee checklist modified to include all details of required training for dryer operations. Corrective action has been completed.

**Legal and other requirements compliance evaluation-**Evaluations of compliance with all legal requirements were conducted during 3rd quarter 2015. There were no negative findings. There have been no changes in legal requirements or other energy requirements subscribe to. Maintenance Manager is monitoring County consideration of outdoor lighting proposed ordinance.

| **Legal and Other Requirements – Identification, Responsibility and Tracking Matrix** | | | | | | |
| --- | --- | --- | --- | --- | --- | --- |
| **(1)**  **Title of Legal or Other Requirement** (include legal citation or reference, if applicable) | **(2)**  **Type of Requirement**  **Legal = L Other = O** | **(3)**  **Permit Number/ Issue Date**  (if applicable) | **(4)**  **Applies To:**  (List Affected Operations) | **(5)**  **Required Reports/**  **Report**  **Due Dates** | **(6)**  **Responsible**  **Position** | **(7)**  **Review Frequency** |
| Greenhouse Gas Emissions Reporting (40 CFR 86, 87, 89) | L | N/A | Entire facility | Annual report due March 31 | Energy Manager | Quarterly |
| Air Permit Emission Limits for Boilers, Generators, Diesel Air Compressors | L | 45726 | Boilers, Generators | Quarterly reporting of air emissions | Environmental Manager | Quarterly |
| State Boiler and Unfired Pressure Vessel Inspection Law, Rules and Regulations (Title 68, Chapter 122) | L | N/A | Boilers | Annual boiler inspection | Energy Manager | Quarterly |
| City Fuel Guidelines due to Nonattainment | L | N/A | Generators | Annual reporting | Energy Manager | Quarterly |
| Monthly Natural Gas Load Forecast | O | N/A | Entire facility | Submit to City 5 days before the end of each month | Energy Manager | Quarterly |
| Better Buildings, Better Plants Challenge Partner | O | N/A | Entire facility | Designate BBBP energy manager; Determine BBBP baseline; Develop energy management plan; Report energy intensity improvement annually by March 31. | Energy Manager | Quarterly |
| ENERGY STAR Plant Labeling | O | N/A | Entire facility | Annually by March 31 submit the Statement of Energy Performance, Safe lighting levels, and assessment of facility’s environmental record. | Energy Manager | Quarterly |
| Superior Energy Performance (SEP) | O | N/A | Entire facility | Triennial third party certification of ISO 50001 implementation and performance improvement with annual surveillance. | Energy Manager | Quarterly |
| Corporate Energy Performance Improvement Requirements | O | N/A | Entire facility | Quarterly submission of energy consumption and energy intensity improvement | Energy Manager | Quarterly |