

LAUNDRY STARTUP REPORT – (03.12.2012 – 15.12.2012)

MARITIME PINE BEACH RESORT / BELEK - ANTALYA

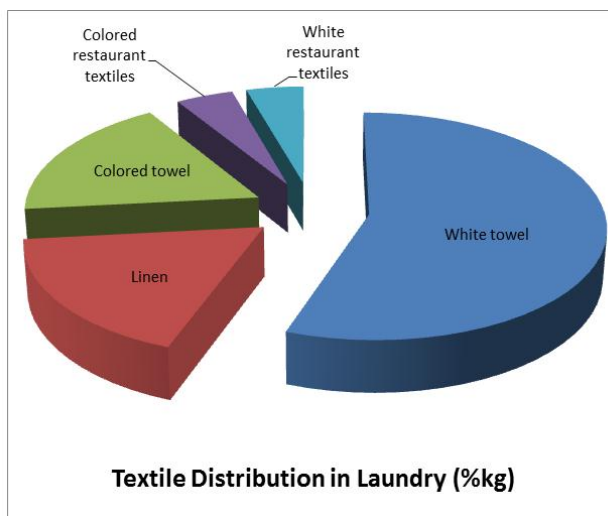
GENERAL

Ozone system was installed properly with voltage regulator and produce 2 ppm ozone at the constant water pressure of 6.5 bar in line. Air ventilation system runs properly.

Tap water is used for washing process. Conductivity of water is 812 microS at 47,2C and 790 microS at 22C in december month.

a.Hot water leaves the heater at 60C. But it may reach to laundry 40-45C in winter, 50-55C in summer. Approximately %80-90 of required heat for hot water is supplied from solar energy in summer.

b.Cold water 22-23C in summer, 13-14C in winter.



Here the textiles in the concern of laundry were grouped as regarding weight percentage:

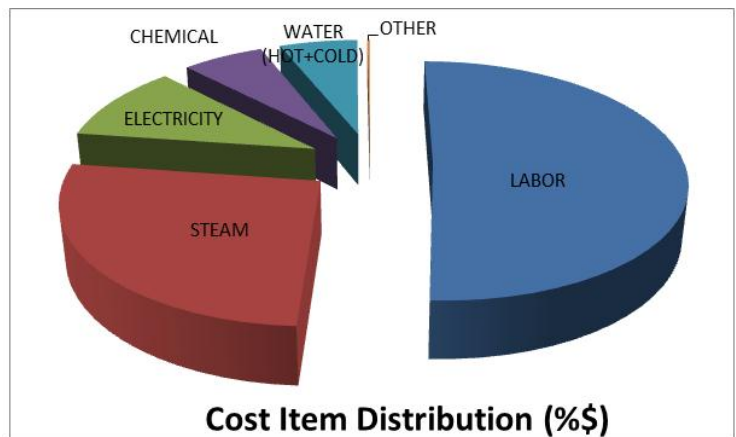
	Weight (%)
1.White towel	%56
2.Linen	%18
3.Colored towel	%18
4.Colored restaurant textile	% 4
5.White restaurant textile	% 4

The process improvement of white towel will effect the majority of cost saving

Each improvement in washing parameters will result saving in cost items.

Here is the main cost items and their percentages are as shown here:

	Percentage (\$)
1.Labor	%51
2.Steam	%26
3.Electricity	%10
4.Chemical	% 6
5.Water (hot+cold)	% 6



PS.: Maritime was warned for the operations for some installation works to be done.

TEST PROCEDURE

Our objective is “ ozone systems save money”

Stage 1:

Objective is the decision of suitable detergent that fulfills the current success criteria with white towel and current procedure. Detail of this stage was attached as “stage 1” in spreadsheet.

RESULTS:

We decided to go with Jonson Diversey product family as main components of needed detergent. Mid-range local detergent suppliers are not ready to produce for this type of products, because their R&D abilities are not sufficient in spite of their strong willings. Despite all, in second stage many opportunities were given them. Big suppliers are not so keen on producing the detergent which works at that temperature.

Stage 2:

Objective is the definition of TARGET process steps (1 wash - 1 rins) with the detergent that fulfills the current success criteria with all textiles. Detail of this stage was attached as “stage 2” in spreadsheet.

MSDS of the used detergents are available in the links below:

CLAX 100S 2BL1

http://msds.diversey.com/viewer/wvTR.asp?A=putHTM%00&RID=F_PDF%5C%27TR%27%5C%27EMA%27%5C%27MSDS1583%27%5C%27MTR%27%5C%27TR01%27%5C%7Bts+%272011-05-10+06%3A52%3A13%27%7D

CLAX EXTRA 3ZP5:

http://msds.diversey.com/viewer/wvTR.asp?A=putHTM%00&RID=F_PDF%5C%27TR%27%5C%27EMA%27%5C%27MSDS0945%27%5C%27MTR%27%5C%27TR01%27%5C%7Bts+%272011-05-10+06%3A51%3A52%27%7D

CLAX POWER FORTE 3PL2:

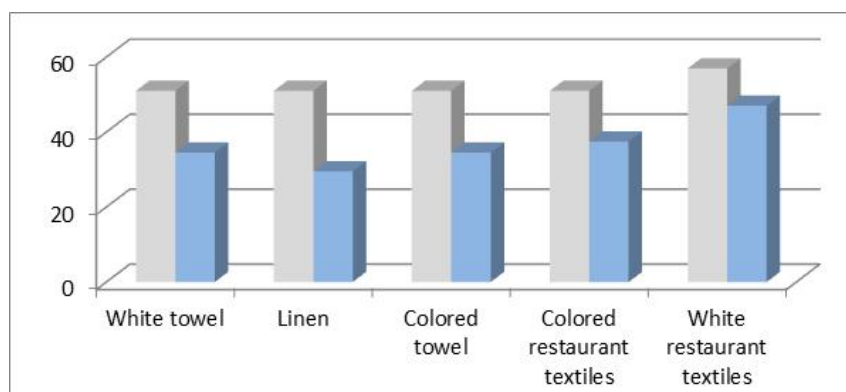
http://msds.diversey.com/viewer/wvTR.asp?A=putHTM%00&RID=F_PDF%5C%27TR%27%5C%27EMA%27%5C%27MSDS5631%27%5C%27MTR%27%5C%27TR01%27%5C%7Bts+%272011-05-10+06%3A52%3A50%27%7D

RESULTS

The results according to achieved parameters are summarized below. These parameters will be improved in next month.

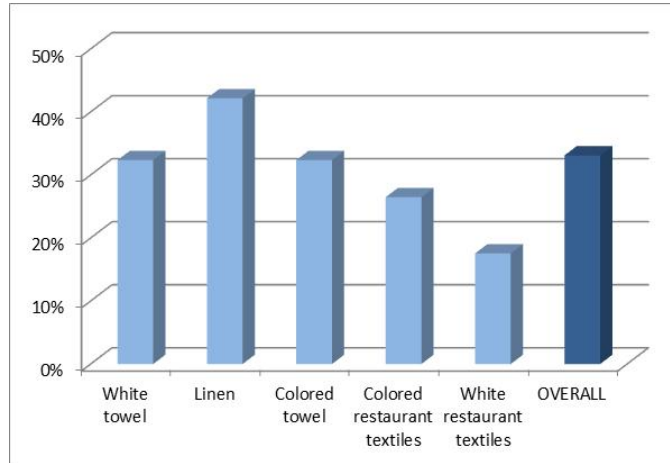
1. Steam cost item is completely eliminated for washing.
2. Total process duration is gross time of the process. Each textile group has different saving percentage.

TOTAL PROCESS DURATION (min)	PAST	CURRENT	SAVING
White towel	51	34,5	32%
Linen	51	29,5	42%
Colored towel	51	34,5	32%
Colored restaurant textiles	51	37,5	26%
White restaurant textiles	57	47	18%



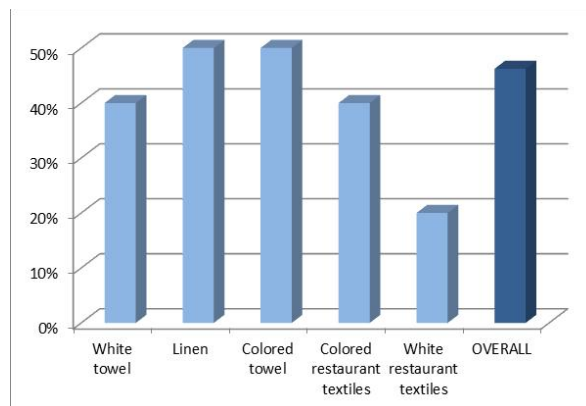
3. Since total process time is reduced, the overall capacity has increased.

CAPACITY SAVING with the Same Machines	PROCESS TIME		0,05	CAPACITY		
	PAST	CURRENT	CAPACITY (rewash added %5)	PAST	CURRENT	SAVING
White towel	51	34,5	787,5	40162,5	27168,75	32%
Linen	51	29,5	252	12852	7434	42%
Colored towel	51	34,5	252	12852	8694	32%
Colored restaurant textiles	51	37,5	63	3213	2362,5	26%
White restaurant textiles	57	47	63	3591	2961	18%
OVERALL				72670,5	48620,25	33%



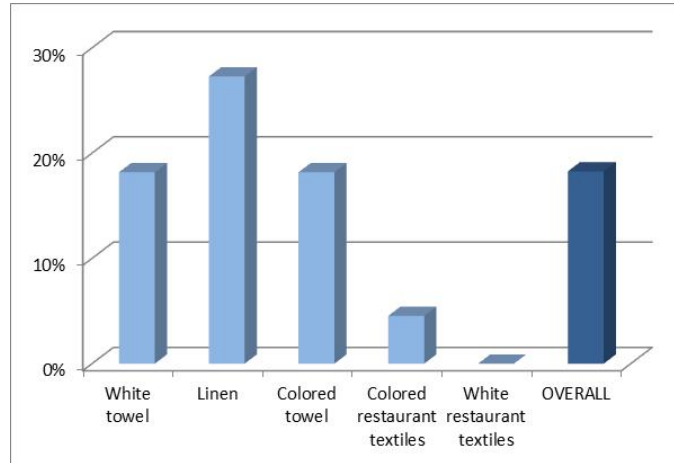
4. Since the value added operations was shortened or eliminated, water consumption were reduced as well. The gain values are shown.

WATER GAIN	PAST	CURRENT	0,05	WATER CONS		
			CAPACITY (rewash added %5)	PAST	CURRENT	SAVING
White towel	2000	1200	787,5	1575000	945000	40%
Linen	2000	800	252	504000	201600	60%
Colored towel	2000	800	252	504000	201600	60%
Colored restaurant textiles	2000	1200	63	126000	75600	40%
White restaurant textiles	2000	1600	63	126000	100800	20%
OVERALL				2835000	1524600	46%



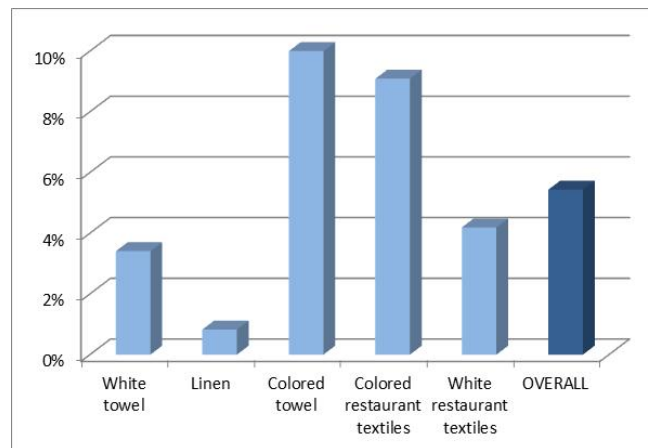
5. Since the value added operations was shortened or eliminated, electricity consumption was reduced as well. The gain values are shown.

ELECTRICITY GAIN (parallel to value added time gain)	PAST	CURRENT	0,05		ELECTRICITY CONS	
			CAPACITY (rewash added %5)	PAST	CURRENT	SAVING
White towel	22	18	787,5	17325	14175	18%
Linen	22	16	252	5544	4032	27%
Colored towel	22	18	252	5544	4536	18%
Colored restaurant textiles	22	21	63	1386	1323	5%
White restaurant textiles	25	25	63	1575	1575	0%
OVERALL				31374	25641	18%



6. Detergent saving is shown here:

TOTAL AMOUNT OF DETERGENT (kg)	PAST	CURRENT	0,05		DETERGANT CONS	
			CAPACITY (rewash added %5)	PAST	CURRENT	SAVING
White towel	1760	1700	787,5	1386000	1338750	3%
Linen	1210	1200	252	304920	302400	1%
Colored towel	1650	1400	252	415800	352800	15%
Colored restaurant textiles	1320	1200	63	83160	75600	9%
White restaurant textiles	1670	1600	63	105210	100800	4%
OVERALL				2295090	2170350	5%



7. Ozone washing technology has more advantages than conventional washing technologies. Ozone technology reduces the value added time in washing.

TOTAL VALUE ADDED PROCESS DURATION (min)	PAST	CURRENT	SAVING
White towel	22	18	18%
Linen	22	16	27%
Colored towel	22	18	18%
Colored restaurant textiles	22	21	5%
White restaurant textiles	25	25	0%

Stage 3:

Objective is the optimizing the process steps.

This stage is being still executed. Detail of this stage was attached as "stage 3" in spreadsheet.

All the saving graphs will be updated after 1 month real experience.