

# CASE STUDY

## PROJECT BACKGROUND

Our client is a global leader in manufacturing medical devices for both domestic and international clients around the world. Their manufacturing plant covers an area of over 98,000m<sup>2</sup>.

In September 2020, we approached our client to launch a 4-phased Energy Management Program on-site, to reduce our client's energy usage, and save them money in a co-share arrangement. The client agreed and we created a phased 2-year plan to co-share the savings created.

## PURPOSE



**Reduce**  
energy costs for  
factory operations



**Effectively use**  
energy and  
facility equipment



**Identify**  
"big buckets" of  
energy usage (\*)

(\*) for Phase 2 onwards of the energy management program

## GOALS AND OBJECTIVES

### SAVINGS

**5%**

Electricity

**10%**

Water

**5%**

Gas

**\$0**

Capital  
Investment

## PLAN

### Phase

**01**

- Installation of 8-10 power meters
- Manual checking via Rounds & Readings (once per shift)
- Initial Big-bucket identification
- Initial measurable results of PM/Other maintenance etc.

**02**

- Installation of additional required power meters
- First round of improvements/adjustments to the existing setup

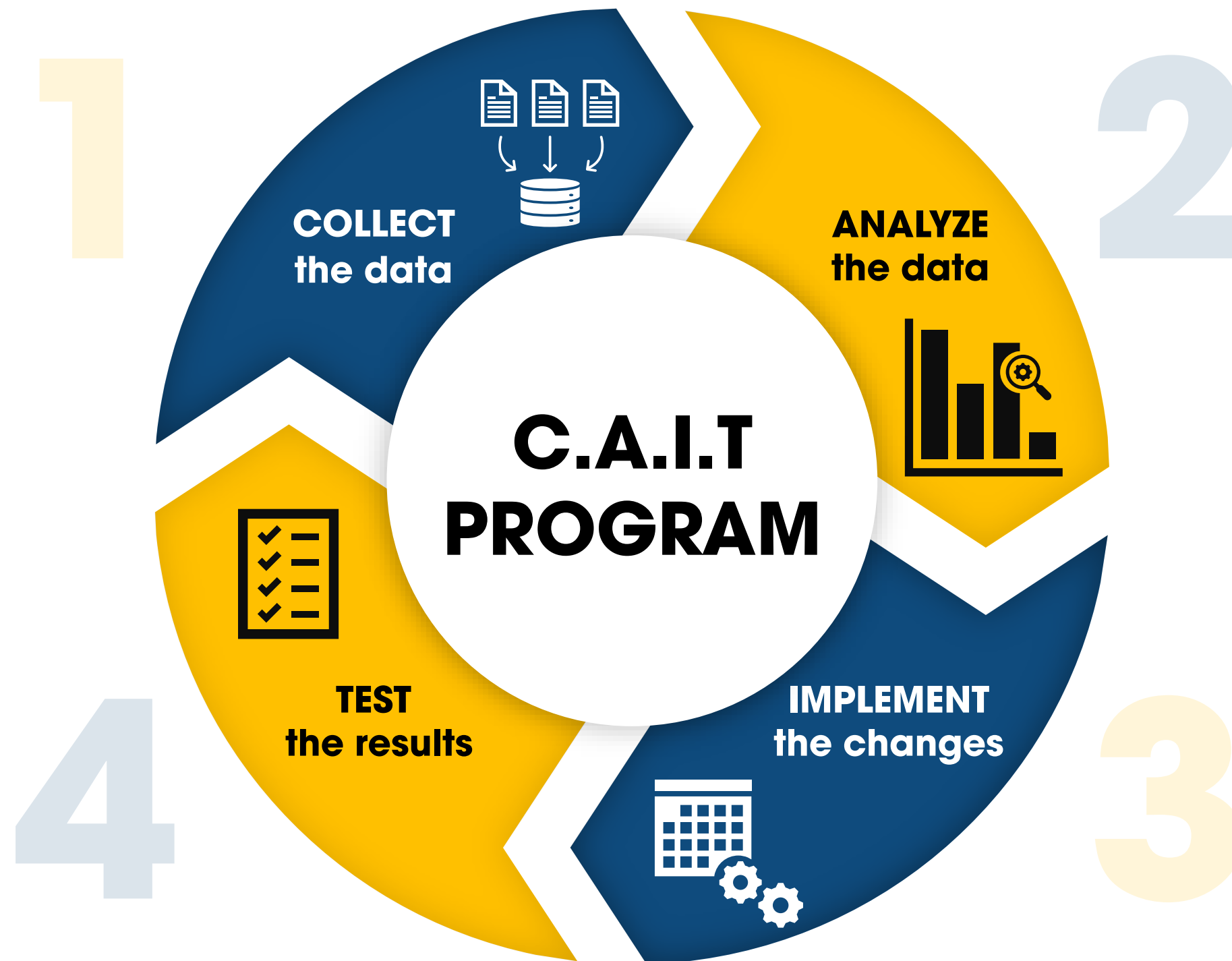
**03**

- Installation of remaining Power Meters
- Final calibration to the existing system
- Linking of Power Meters to BMS / Remote reading (cloud/Wi-Fi)

**04**

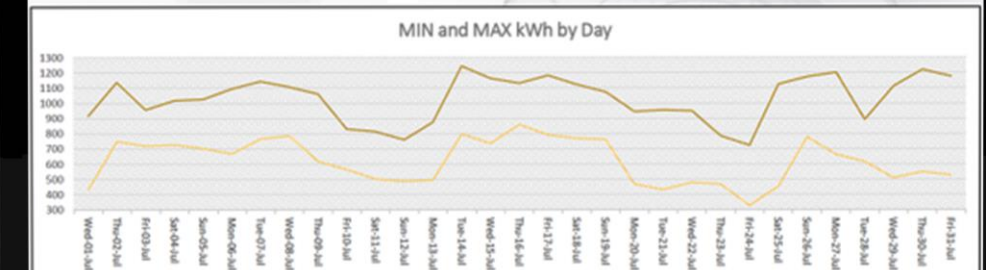
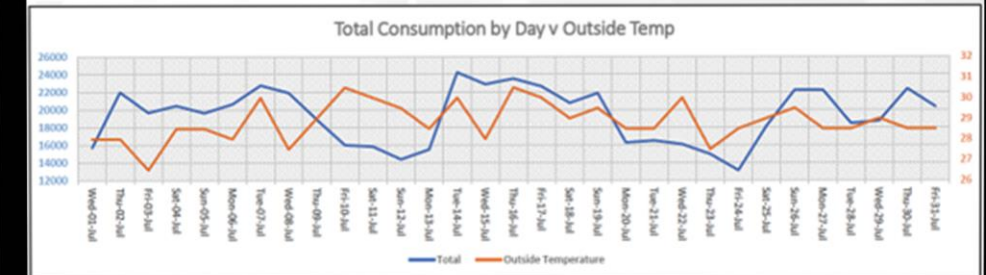
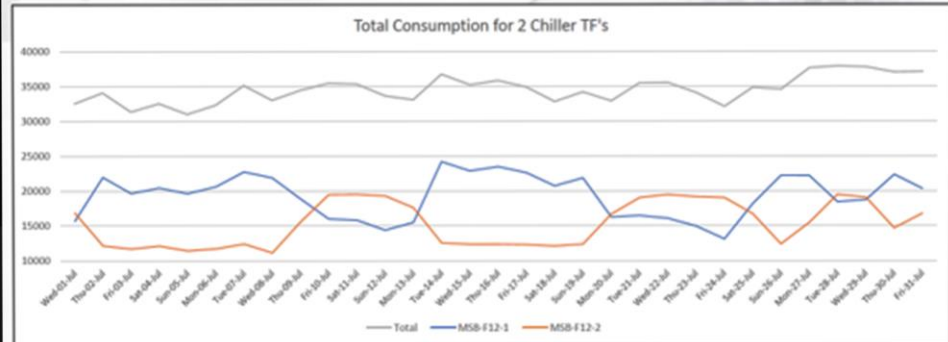
- Establishment of Energy Committee (Enco)
- Setting of initial Energy Performance Indicators (EnPi) and Benchmarks

# RCR'S ENERGY MANAGEMENT SYSTEM



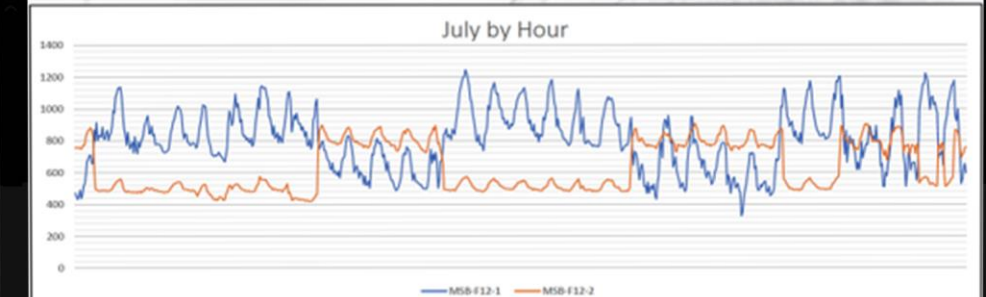
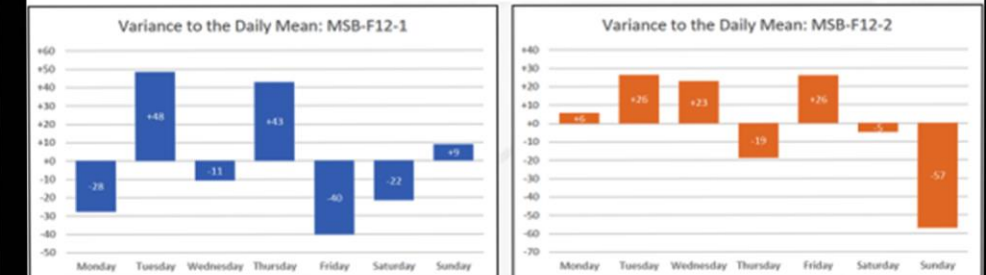
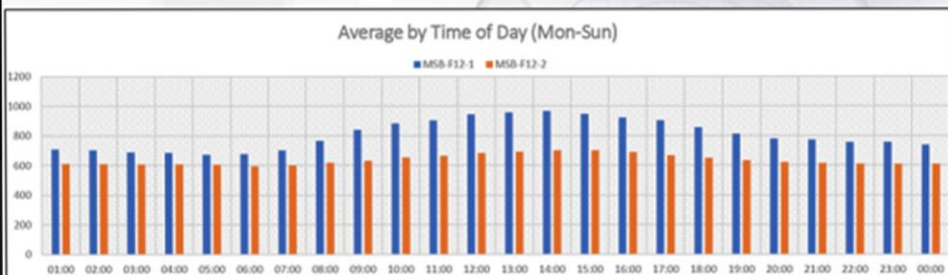
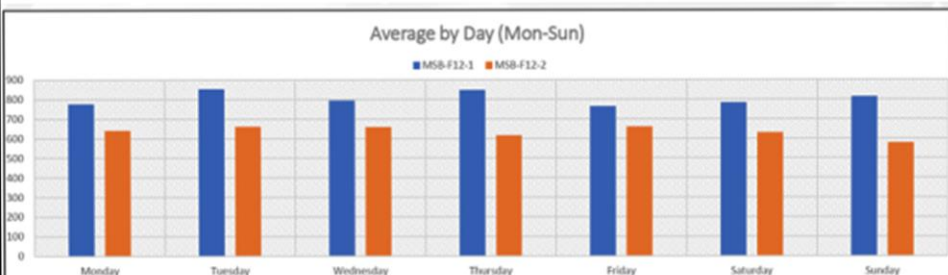
MSB-F12-1: Recorded Chiller Consumption per Hour																									
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MIN	472	453	433	453	327	352	444	491	526	587	644	687	675	687	621	502	521	508	486	468	537	468	529	469	
AVE	708	702	687	684	670	676	700	764	840	882	900	941	951	969	944	920	901	851	830	776	770	754	736	736	
MAX	906	926	872	879	906	892	915	991	1,037	1,098	1,136	1,172	1,198	1,220	1,244	1,220	1,184	1,146	1,068	1,026	1,023	1,038	998	922	

MSB-F12-2: Recorded Chiller Consumption per Hour																									
	01:00	02:00	03:00	04:00	05:00	06:00	07:00	08:00	09:00	10:00	11:00	12:00	13:00	14:00	15:00	16:00	17:00	18:00	19:00	20:00	21:00	22:00	23:00	00:00	
MIN	422	427	425	419	422	420	424	436	442	460	465	477	456	426	411	441	438	439	415	429	411	430	429	427	
AVE	630	629	625	626	604	594	600	617	630	651	663	682	691	700	706	686	665	647	632	619	632	609	608		
MAX	789	789	783	783	784	781	786	811	811	857	881	901	892	908	899	891	885	828	811	815	808	799	795	801	



## COLLECT THE DATA

Before the implementation of any projects, it was critical to collect the "base" data, verify that data and then analyze it.





# TEST THE RESULTS

Now that everything had been verified and systems were calibrated, when then started to implement our Energy Management solutions, ensuring that they had zero effect on output and production.

We started to measure the results, and present them to the key stakeholders of the business.

# ANALYZE THE DATA & IMPLEMENT THE CHANGES

Once the raw data was collected, a number of tests and simulations were completed in order to check the veracity of said data.

Once the data had been collected, we then had to understand where the data was coming from, what did it mean, and what did it represent. More simulations and physical exams were carried out to understand the system, the limits, and redundancies of the system, and identification of possible marginal gains.

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MSB-F12-2 CHILLER 4.5				Time	1 kWh	2 kWh	3 kWh	4 kWh	5 kWh	6 kWh	7 kWh	8 kWh	9 kWh	10 kWh	11 kWh	12 kWh	13 kWh	14 kWh	15 kWh	16 kWh	17 kWh	18 kWh	19 kWh	20 kWh	21 kWh	22 kWh	23 kWh	24 kWh										
01:00				755	488	479	481	487	447	484	493	422	789	772	768	762	490	486	498	492	485	480	482	771	771	774	761	770	492	496	785	786	705	774				
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07:00				759	494	483	484	483	448	485	492	424	786	787	741	739	498	486	495	486	493	489	490	779	773	781	771	753	492	494	771	684	772	520				
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09:00				774	519	485	507	485	509	521	509	442	828	824	796	823	510	502	514	517	672	801	818	827	792	818	827	792	818	526	529	831	766	532	529			
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13:00				870	552	503	533	527	513	558	456	865	883	869	844	867	563	549	538	553	560	554	874	841	883	888	866	861	558	567	897	882	564	569				
14:00				883	555	503	528	522	522	556	456	879	881	882	872	895	564	560	548	557	534	555	837	840	890	892	860	874	564	575	893	876	571	564				
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19:00				481	468	491	468	491	468	491	468	491	468	491	468	491	468	491	468	491	468	491	468	491	468	491	468	491	468	491	468	491	468	491	468	491	468	491
20:00				488	478	496	496	438	497	510	429	808	799	806	805	855	525	514	505	488	467	508	780	790	789	745	767	511	503	815	795	720	533	692				
21:00				484	488	496	491	491	503	411	808	790	793	805	849	505	514	505	499	491	506	773	780	789	735	772	497	490	808	785	767	526	709					
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23:00				487	480	482	491	429	485	500	430	795	779	782	788	492	497	503	490	488	488	488	488	488	488	488	488	488	488	488	488	488	488	488	488	488	488	
24:00				491	474	484	491	427	486	500	439	793	778	776	792	492	488	495	499	492	492	492	492	492	492	492	492	492	492	492	492	492	492	492	492	492	492	
MAVN				16.854	11.228	11.705	12.118	11.401	11.708	12.388	11.428	11.551	19.476	10.517	19.703	17.609	12.541	12.955	12.952	12.275	12.086	12.348	16.673	10.949	19.158	19.013	16.708	12.568	15.451	19.498	18.009	14.688	16.739					

# PROJECT HIGHLIGHTS

We helped our client to

**SAVE ENERGY**

by utilizing our methodologies and best practices

RCR Vietnam continues to move towards Phase 3 and Phase 4 to bring further savings, sustainability solutions, and initiatives.



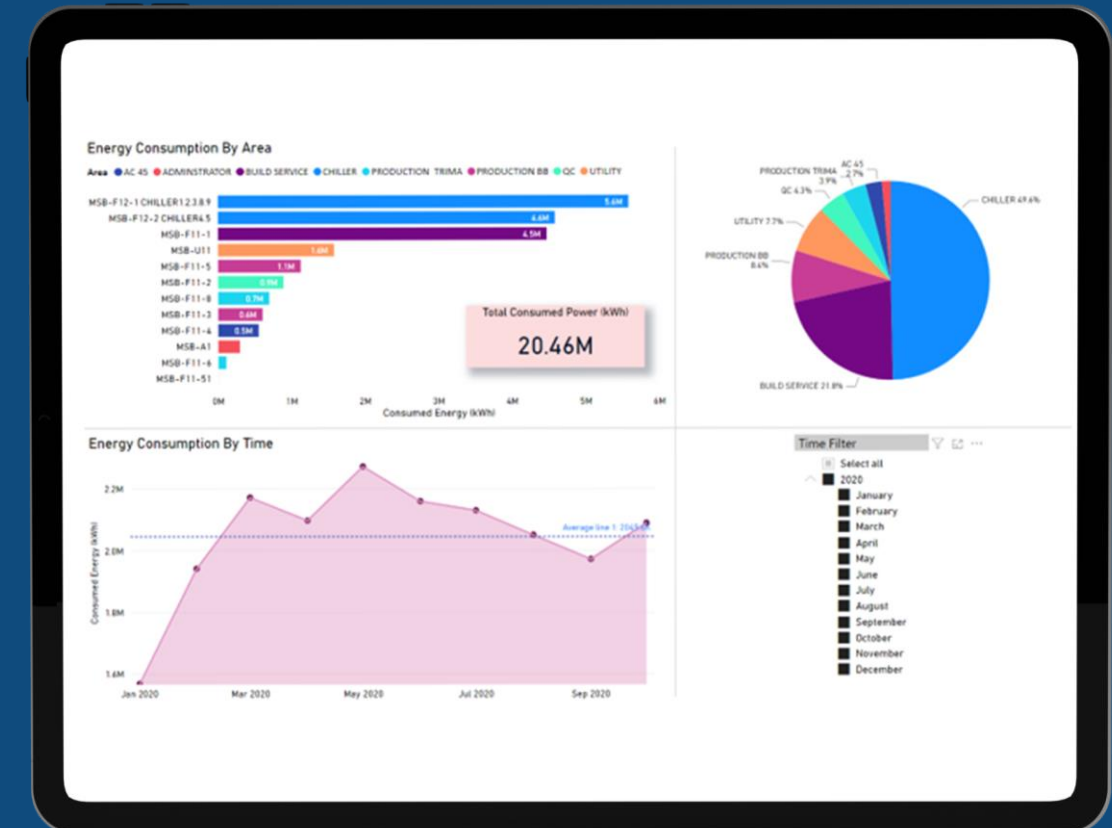
**12.7%**  
in **reduction**  
of **ELECTRICITY**  
consumption



**58.2%**  
in **reduction**  
of **WATER**  
consumption



**21.9%**  
in **reduction**  
of **CNG**  
consumption



The data is recorded from September 2020, and the completion of Phase 1 and Phase 2 without any reduction in production output

## RESULT



**> \$180,000**  
in **COST SAVING**

1

The CEO rolled out the same process and project philosophy to all production with basic knowledge of Energy Management and with minimal investment costs.

2

The client has indicated the additional capital investment will now be provided for Phase 3 and Phase 4.