Chettinad Cement Corporation Private Limited

Chettinad cement
Ariyalur Works

Presenter
Mr. K. Girisan - DGM /
Energy Manager

Company Profile & Products

Installed Capacity (Clinker)	2.72 mMTPA
Installed Capacity (Cement)	4.00 mMTPA
Captive Power Plant	3 * 15MW
Product Range	OPC, PPC, COC, Max Crete

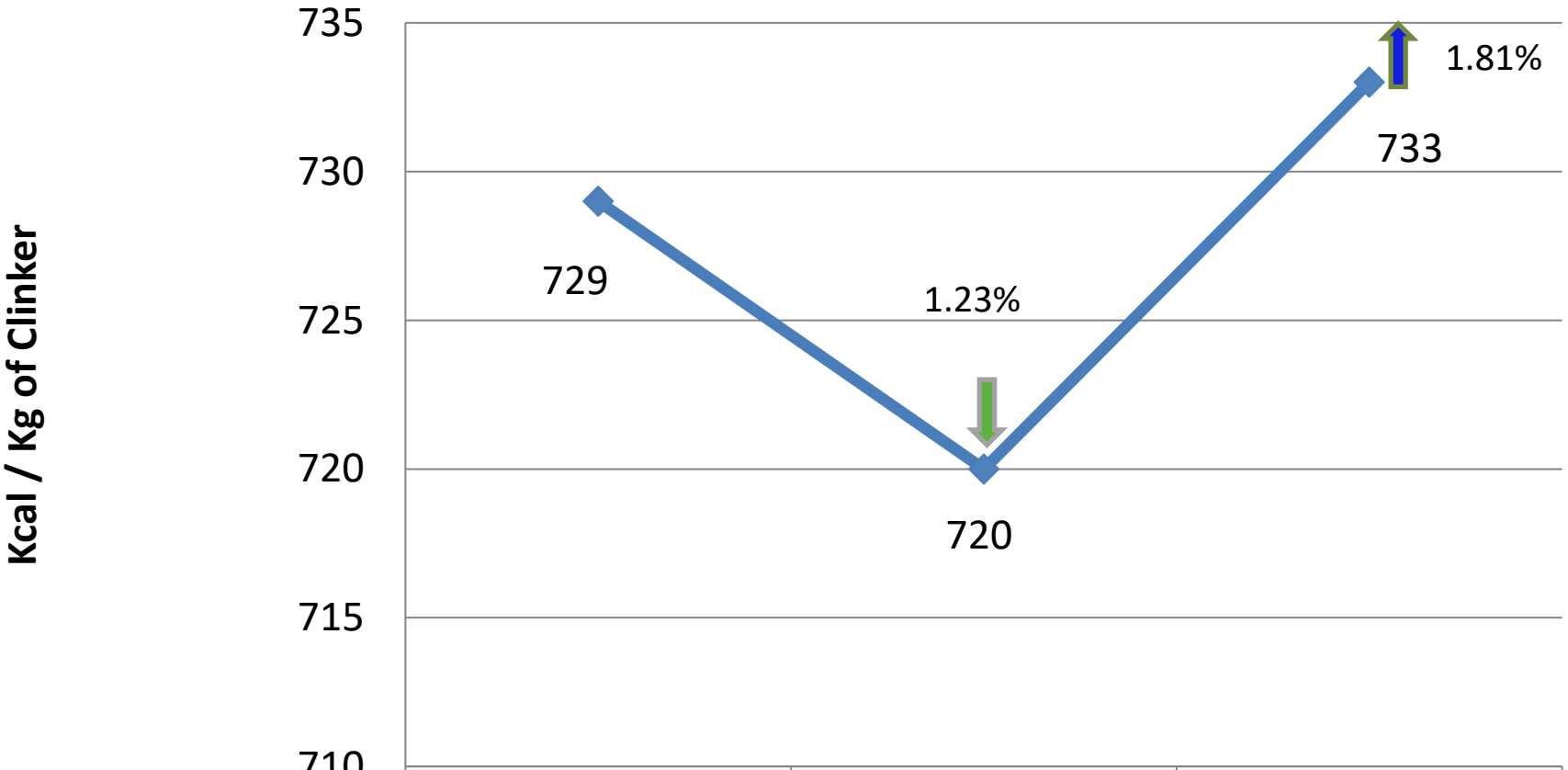
Technology/specifications of major sections

Section	Technology	Make	Installed capacity
Crusher	Twin shaft sizer	MMD	1000 TPH
Raw mill	VRM - Atox 42.5	FLS	350 TPH
Kiln & Pre-heater	5 Stage ,Single String ILC	FLS	4000 TPD
Clinker Cooler	SF cross bar SF3 X 5F	FLS	4000 TPD
Coal mill	VRM - Atox 22.5	FLS	33 TPH
Cement mill	VRM - LM 56.3+3C	LOESCHE	OPC-270 TPH PPC-305 TPH

Impact of COVID – 19

Annual production performance reduced	**10%**
Specific energy consumption / MT of cement increased	<2.3%
Stoppages units increased	4.5%
Cement dispatch decreased	11%

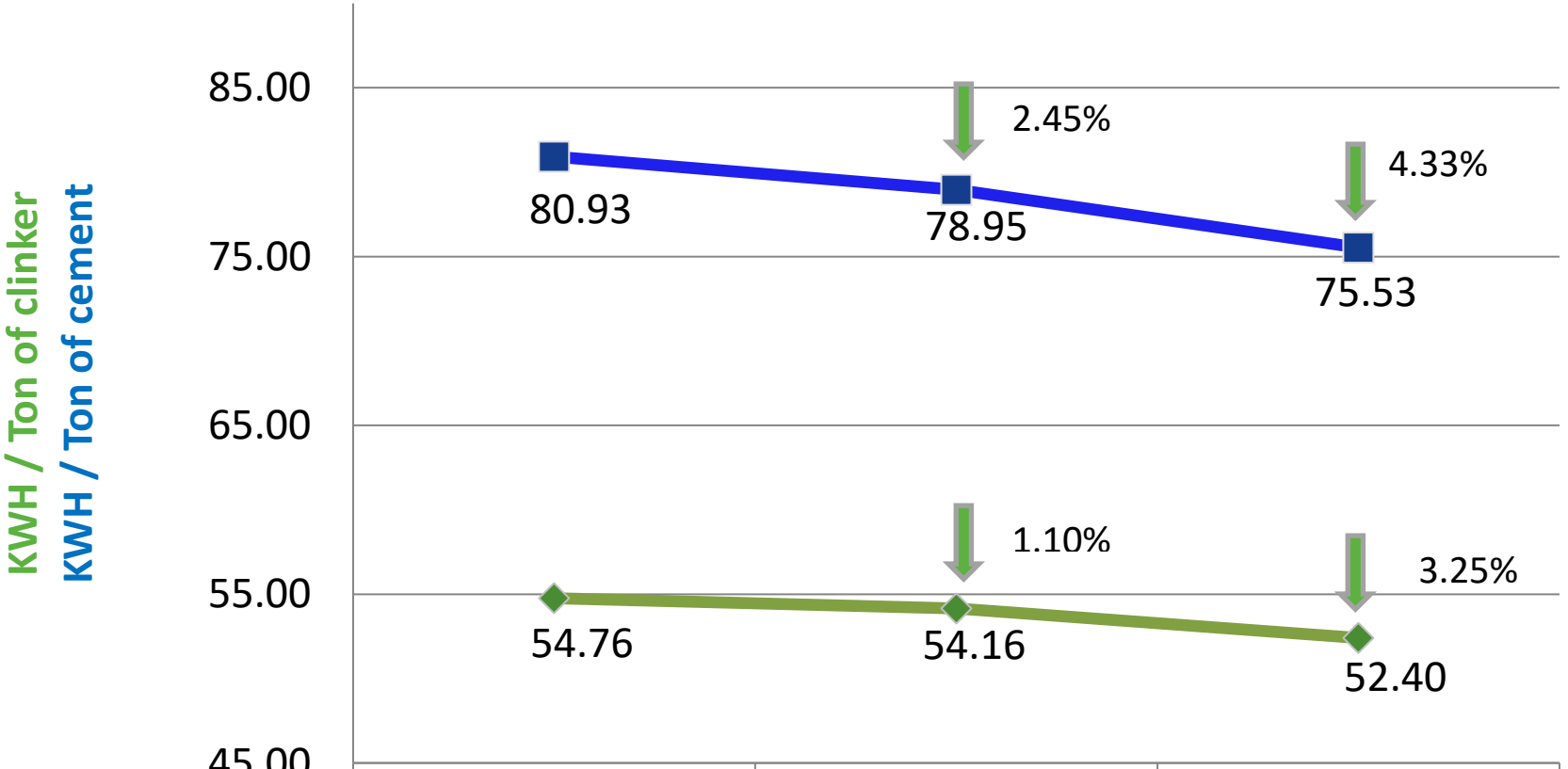
Sp. Energy consumption - Thermal



	2018-19	2019-20	2020-21
Kcal / Kg of Clinker	729	720	733

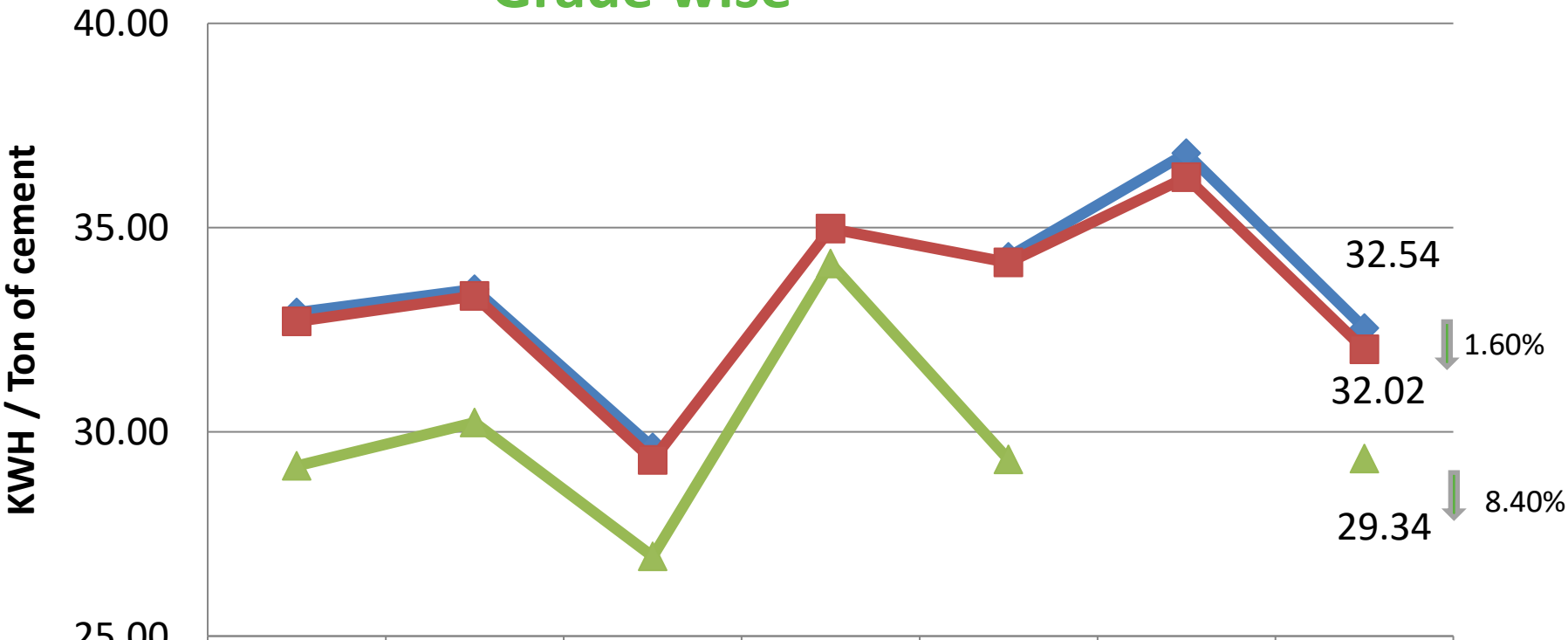
Reason: Variation in source of mines influenced burnability and reactivity

Sp. Energy consumption - Electrical



	2018-19	2019-20	2020-21
Upto clinker	54.76	54.16	52.40
Overall cement	80.93	78.95	75.53

Sp. Energy consumption - Electrical Grade wise



	OPC 43	OPC 53	PPC	Max crete	COC	PSC	Overall
2018-19	32.92	33.49	29.62		34.28	36.82	32.54
2019-20	32.70	33.32	29.31	34.97	34.14	36.23	32.02
2020-21	29.17	30.23	26.95	34.12	29.32		29.34

Comparison on Competitors, National & Global Bench marking

Bench marking	Plant	Electrical (Kwh/ Ton of Cement)	Thermal (Kcal / kg of clinker)
Achieved	Chettinad – Ariyalur	75.53	733
Internal benchmarking	Chettinad – Karikkali	73.95	726
External benchmarking	Competitor - 1	73.04 (CII Top Plant 9)	702 (CII Top Plant 10)
	Competitor - 2	73.02 (CII Top Plant 9)	698 (CII Top Plant 9)
	National level	72.85 (CII Top Plant 7)	690 (CII Top Plant 7)

Encon Projects Planned- FY2021-22

S.N.	Title of Project	Annual Electrical Saving (Million kWh)	Annual Thermal Saving (Million Kcal)	Investment (Rs in Million)
1	Erection and commissioning of New AFR Project	0	31500	60
2	Up-gradation of energy efficient controller for SPRS panels	1.044	0	2.2
3	Replace roots blower with energy efficient turbo blower	0.53	0	4.7
4	Replace HPSV with LED fittings for plant road lighting	0.1314	0	1
5	Install solar LED poles for plant main road lighting	0.03942	0	1
6	Replacement of ACC fan blades with FRP at CPP	0.289	0	3.5
7	Install energy efficient impeller in RABH fan	1.05	0	9.5

Energy savings projects implemented (2018- 19)

Financial Year	No of Energy saving projects	Investments (INR Million)	Electrical savings (Million Kwh)	Thermal savings (Million Kcal)	Savings (INR Million)	Impact on SEC (Electrical Kwh /MT cement, thermal)
2018-19	15	4.32	1.52	15275.98	23.64	1.005

Energy savings projects implemented 2019-20

Financial Year	No of Energy saving projects	Investments (INR Million)	Electrical savings (Million Kwh)	Thermal savings (Million Kcal/ MTOE)	Savings (INR Million)	Impact on SEC (Electrical Kwh /MT cement, thermal)
2019-20	12	1.98	0.85	0	3.84	0.732

Energy savings projects implemented 2020-21

Financial Year	No of Energy saving projects	Investments (INR Million)	Electrical savings (Million Kwh)	Thermal savings (Million Kcal/ MTOE)	Savings (INR Million)	Impact on SEC (Electrical Kwh /MT cement, thermal)
2020-21	19	53.30	1.65	0	7.41	1.193

Innovative projects implemented

Innovative project:

Removed the Venturi in Rawmill Fan Inlet Duct to reduce pressure drop across it.

Contribution and efforts:

- Raw material grinding is done with VRM, RM fan is Operated with SPRS for speed control and it's operating flow is measured online using venturi & monitored at CCR for effective mill operation.
- Observed that pressure drop across Venturi is on higher side (40mmwc) this pressure drop is equal to 4% of head developed by RM fan.

Project details and replication potential:

- Removed the venturi in fan inlet duct
- Maintain the same fan flow and reduce the speed correspondingly.
- Operate the mill with other parameters (Mill DP ,fan kw &Inlet pressure)
- The same methodology adopted in coal mill fan & cement mill fan.

Impact:

- Reduced the pressure drop (3.5%) & Fan speed
- Reduced fan KW and achieved more SPRS recovery power

Innovative projects implemented

Sl. No.	Description	Before Venturi	After Venturi
1	Motor Running KW (Avg)	2655	2503
2	SPRS Recovery KW	157	163
3	Motor Net KW	2498	2340
4	Speed	865	850
5	Static pressure mmwc	1010	980
6	Energy Saving / Hour	150	
7	Energy Saving in KWH / year (160 days *20hrs)	480000	
8	**Cost Saving in Lakh Rs/Year)**	**21.60**	
9	**Investment in Rs in Lakhs**	**6**	
10	**Payback in Months**	**3**	

Before

After

Renewable Energy Sources

Chettinad group units Renewable Source Details

Financial Year	Location	Type of Plant	Installed Capacity (MW)	Investment (Crores)	Remarks
2018-19	Kallur	Solar	3	12	Commissioned on Dec'19
2020-21	Sholapur	Solar	3	11.65	Commissioning under progress
2021-22	Karikkali	Solar	10	40	Under Proposal
2021-22	Ariyalur	Solar	5	20	Under Proposal
2021 -22	Puliyur	Solar	5	20	Under Proposal

Waste Utilization and Management

Year	Waste as fuel	Quantity (MT)	GCV (kcal/kg)	Waste as percentage of total fuel
2018-19	High CV Flyash	23489	2688	16.38
2019-20	High CV Flyash	7728	2427	7.51
2020-21	High CV Flyash , Hazardous waste , Non Hazardous waste , Plastic waste	3283	2166	2.59

Waste utilization and management

Year	Waste as raw material	Quantity (MT)	Replaced material	Waste as percentage of raw material
2018-19	ETP Sludge	1788	Limestone	0.0929
2019-20	ETP Sludge	643	Limestone	0.0483
2020-21	ETP Sludge	961	Limestone	0.0575

Learning from CII Energy Award 2020

- Sharing of Information
- Enthusiastic to Conserve Energy
- To enhance Energy Efficiency level
- Close Monitoring of Key Parameters
- Adoption of Modern Technology
- Focusing towards National Bench Marking
- Replication of Best practices will result in further saving
- To achieve Significant savings by technology up gradation with investments

GHG Inventorisation

Public disclosure
[Emission monitoring display]

Absolute Emissions and Emissions intensity

Financial Year	Total kg CO2 / Ton of Final Product
2018-19	560
2019-20	527
2020-21	547

Action plan for CO2 emission reduction

- Planned to install new Alternate Fuel feeding System to reduce the CO2 emission.
- Increase proportion of blended and multi blended Cement
- Planned to increase usage of alternate fuel and raw material
- Planned to install solar power plant inside the boundary

Green Supply Chain Management

- Having policy to procure BEE Star rated Energy efficient equipments
- Creation of awareness about green supply policy to our suppliers and stakeholders.
- Promote our Greening Efforts to Attract Customers & Employees
- To improve the rail dispatch instead of road dispatch through trucks.
- To increase dispatch through bulk loading instead of cement bags.
- Focusing on scope -2&3 GHG emissions apart from scope-1 GHG emissions.

Team work, Employee Involvement & Mentoring

- Regular review of KPI Data in Daily meeting.
- Review meeting chaired by Plant Head (Joint President -Works)
- Separate budget Allocated for Encon activities Rs 2.19 Cr. and AFR project 6.00 Cr.
- Energy efficiency / Awareness training on energy conservation being conducted monthly once.
- Conducting regular Encon cell meeting with Executives & Task force meeting with workmen .

Team work, Employee Involvement & Mentoring

Appreciation Reward to motivate Workmen & Executives for Encon Activities

Team work, Employee Involvement & Mentoring

❖ Kaizen Projects implemented (Workers and Supervisor level)

- ❖ Conversion of DOL to RDOL feeder for Corrective Crusher for ease of operation & maintenance.
- ❖ HT motor Speed control with GRR operation taken into DCS Control instead of panel PLC .

Implementation of ISO 50001:2011

- Implementation of ISO 50001 [Energy Management System Certification] since August 2017

- Total turnover of the company/plant
  FY 2020-21 (Rs. Million) : 7358
  Amount invested in Encon Projects
  FY 2020-21 (Rs. Million) : 53.03
  Investment : 0.78 %

भारतीय मानक ब्यूरो
BUREAU OF INDIAN STANDARDS
ऊर्जा प्रबंध पद्धति प्रमाणन लाइसेंस
LICENCE FOR THE ENERGY MANAGEMENT SYSTEMS CERTIFICATION

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लाइसेंस सं. इजमाएस- 6000086.1
Licence No. EN/L-6000086.1

By virtue of the power conferred on it by the Bureau of Indian Standards Act 2016 (11 of 2016), the Bureau hereby grants/recertifies to

Chettinad Cement Corporation Private Limited
Ariyalur Works, Keelapalur Post
Ariyalur –Trichy Road
Ariyalur District – 621 707
Tamilnadu, India

IS/ISO 50001:2011

(hereinafter called the Licensee) the right and licence to be listed in the Bureau's register(s) of Licensees of Energy Management Systems Certification in respect of the products and/or services or processes particularly described in the schedule hereto, bearing the same number as this licence. Such products and/or services or processes shall be manufactured/provided/carried out by the Licensee at only the address(es) given above, and under the Energy Management Systems in accordance with IS/ISO 50001:2011.

The licence is granted/recertified subject to the relevant provisions of the above Act and the rules and regulations made there under governing the licences referred to above, and the Licensee hereby covenants with the Bureau duly to observe with the said Rules and Regulations.

This licence shall be valid from 05 May 2020 to 20 August 2021 and may be renewed as prescribed in the Regulations

Note: Certification is granted for a maximum period of 3 years subject to the condition that all actions & verifications of transition to the revised version IS/ISO 50001:2018 are completed before 30 June 2021. If this condition is not the validity period will be allowed upto 23 March 2023 and a new certificate will be issued for the balance period.

Signed, Sealed and Dated this 4th day of Jun 2020

Sc G & Deputy Director General(Southern Region)
for BUREAU OF INDIAN STANDARDS

T. KALAIVANAN
Deputy Director General (South)
BUREAU OF INDIAN STANDARDS
CHENNAI-600 113

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Major Encon Achievements

S.N.	Description	Power Savings (KW /Hour)
1	CPP Frequency Reduction from 49.5 Hz to 48.7 Hz	182
2	Bell mouth provided for cooler fans instead of Silencer	38
3	VFD Installed for Compressors & Bag Filter Fans	87
4	Up gradation of Plant lighting with LED's & Voltage Optimization	114
5	Venturi Removed in coal mill fan & cement mill fan & Raw mill fan in line- 1&2 (6 nos)	514
6	DCS Logic modification Of boiler Feed pump Operation	33

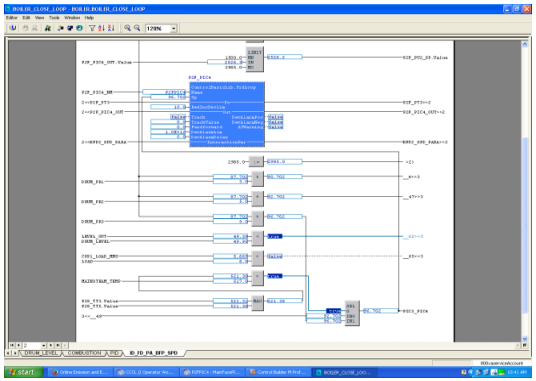
Major Encon Achievements

CPP Frequency Reduction up to 48.7 Hz from 49.5hz.

Plant lighting with LED's & Voltage Optimization

Removal of Venturi in major process fans

Boiler feed pump Operation DCS



VFD Installation for Compressors & BF fans

Cooler Fans Bell mouth

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