
ESL
Energy Solutions (Pvt.) Limited
www.eslpk.com | 111-222-ESL (375) | +92-308-2572-ESL (375)
CALENDAR
2018
Cummins

2018 A different kettle of fish

زراہٹ کے۔۔۔

JANUARY

A gas generator is quite unlike a diesel generator and is a different kettle of fish. What is sauce for the goose is not the sauce for the gander.
They are different in terms of:

a. **Types of application**
b. **Power / volume ratios**
c. **Ignitions systems**
d. **Compression ratios**
e. **BMEPs**
f. **Hours to overhaul**
g. **Oil change intervals**
h. **Response to single step torque loads**
i. **Minimum average load permissible and why?**
   The list goes on----

More information is available in ESL Training book and also covered in our "Meet & Treat" sessions.

CUMMINS GAS GENERATORS – AT A GLANCE

Power (Kilowatt)	1160kW	1540kW	1750kW	2000kW	1200kW	1400kW	1540kW
Electrical Efficiency	39.3%	37.6%	38.9%	41.0%	42.8%	43.5%	43.8%
Total Efficiency	87.9%	88.3%	87.8%	89.0%	90.1%	90.3%	90.3%
Fuel Consumption (Nm^3 / kWhe)	0.25	0.26	0.26	0.24	0.23	0.23	0.23

2018 JANUARY

MON	TUE	WED	THU	FRI	SAT	SUN
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

■ Shaukat Khanum Hospital

2018 *A thing of beauty is*
FEBRUARY *a joy forever*

خوبصورت بات، رہے یاد، تاحیات۔۔۔

CUMMINS GAS GENERATORS – AT A GLANCE

Power (Kilowatt)	1160kW	1540kW	1750kW	2000kW	1200kW	1400kW	1540kW
Type	High Torque, High Performance Models (with engine driven water pumps)				High Efficiency, Low Fuel Models (without engine driven water pumps)		
Methane Number	78	63	71	80	70	71	76
	Cummins generators are ideal for low quality gas						
BMEP (Bar)	16.0	14.0	16.0	18.0	16.5	19.2	21.2
Electrical Efficiency	39.3%	37.6%	38.9%	41.0%	42.8%	43.8%	43.8%
Total Efficiency	87.9%	88.3%	87.8%	89.0%	90.1%	90.3%	90.3%
	Highest efficiency as compared with other brands						
Fuel Consumption (Nm^3 / kWhe)	0.25	0.26	0.26	0.24	0.23	0.23	0.23
	Fuel LHV ~ 36000 kJ / Nm^3 (For actual fuel consumption at site, please seek assistance)						
Lube Oil Consumption (liters / hour)	0.2	0.5	0.5	0.5	0.2	0.25	0.3
Torque Load Capability	50%	75%	75%	10 ~ 15%	10 ~ 15%	10 ~ 15%	10 ~ 15%

Additional Features

- Larger engines per MW
- Lower maintenance / longer overhaul intervals than contemporary products
- Sulfur resistant after cooler cores
- Excellent single-step-load acceptance capability
- Ideal for cogeneration
- Highest total efficiencies (not matched by competitors)
- No or low deration at high temperatures and altitudes
- Start large motors like diesel engines

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2018 FEBRUARY

MON	TUE	WED	THU	FRI	SAT	SUN
			1	2	3	4
5 Kashmir Day	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28				

■ Three 2000 kWe, 11 kV Tetra Pak Application

2018 MARCH

A piece of Cake

حلوہ!!

ADVANTAGES OF GAS GENERATORS

Gas generators are designed to operate at 100% load. They are meant for base load applications, which is a cakewalk for them.

Gas generators can also easily achieve overhaul intervals of five to six times those of diesel generators.

Similarly, oil change is also required after ten to fifteen times the change interval of diesel generators. So easy like a piece of cake, isn't it.? To know more, get hold of a copy of our training book.

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2018 MARCH

MON	TUE	WED	THU	FRI	SAT	SUN
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23 Pakistan Day	24	25
26	27	28	29	30	31	

■ Public Sector Organization

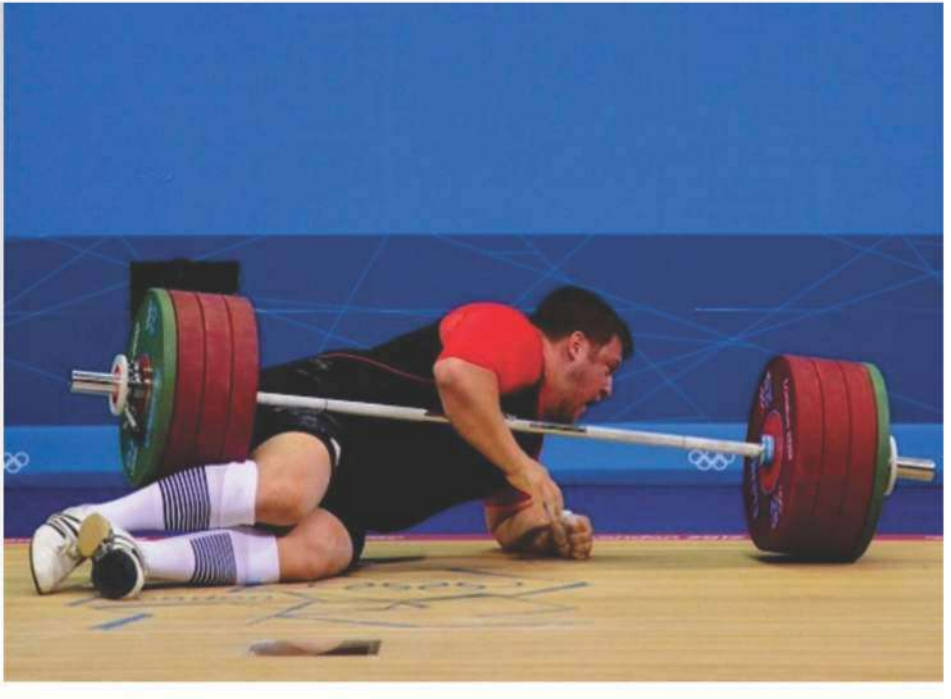
2018 APRIL

Achilles' heel

کمزوری / گرنے کا سبب

Unlike diesel generators, gas generators are cut to the quick when called upon to handle heavy load of large motors. This is the biggest disadvantage of most gas generators.

Where the others falter, fumble and fail, Cummins gas generator is probably "ONE" exception. For reasons, please see our training book.



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2018 APRIL

MON	TUE	WED	THU	FRI	SAT	SUN
30						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

2018 MAY

You can't get oil from stones

ان تلوں میں تیل نہیں!

Gas generators are generally poor in handling torque loads. They stutter, stumble and ultimately stop while starting large, heavy motors. They also do poorly when loads are suddenly withdrawn.

When it comes to handling torque loads, the above phrase truly applies to them. But then how do Cummins Gas Generators tackle torque loads??

Please seek answers in our "Meet & Treat" sessions.

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2018 MAY

MON	TUE	WED	THU	FRI	SAT	SUN
	1 Labour Day	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

■ Shahtaj Textile Limited

2018 JUNE

Chips of the same block

ایک ہی تھیلی کے چٹے بٹے!

Cummins diesel and gas engines are equally good and strong products.

ESL is trying its best to secure the rightful place for Cummins gas generators in Pakistan. The day is not far when both will enjoy equal and enormous success (IA).

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2018 JUNE

MON	TUE	WED	THU	FRI	SAT	SUN
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15* Eid-ul-Fitr	16* Eid-ul-Fitr	17
18	19	20	21	22	23	24
25	26	27	28	29	30	

*Subject to the sighting of moon.

■ Shahtaj Textile Limited

2018 JULY

Taste of the pudding is in the eating ! .... کھیر کا ذائقہ

Cummins showcases two types of gas generators.

a. High performance or high torque models likened to Land Cruiser

b. High efficiency models likened to Ferrari

Land Cruiser symbolizes power, strength and performance while Ferrari symbolizes efficiency.

Whether you buy a Cummins Land Cruiser or a Cummins Ferrari, you will relish its taste for ever and would long for more!

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2018 JULY

MON	TUE	WED	THU	FRI	SAT	SUN
30	31					1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29

■ University of Engineering & Technology (UET)

2018
AUGUST

An ounce of demonstration is better than tons of description

ہاتھ کنگن کو آرسی کیا؟

SEEING IS BELIEVING!!!

Customers using Cummins gas engines know that they can handle large torque loads in the blink of an eye. In one application in a textile mill a 1750 kW Cummins gas generator is handling torque load of 600 ~ 800 kW motor with effortless ease, just like diesel engines. Cummins gas generators often do away with the need of buying two sets. Just one Cummins gas generator is often enough to handle torque loads. Please contact ESL for a demonstration because seeing is believing.

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2018 AUGUST

MON	TUE	WED	THU	FRI	SAT	SUN
		1	2	3	4	5
6	7	8	9	10	11	12
13	14 Independence Day	15	16	17	18	19
20	21	22* Eid ul-Azha	23* Eid ul-Azha	24	25	26
27	28	29	30	31		

*Subject to the sighting of moon.

■ Factory Fly-in to Cummins, UK (2017)

2018 As fit as a fiddle

SEPTEMBER

ہر گھڑی تیار کامران ہیں ہم!

A properly maintained Cummins gas generators when subject to a minimum 70% load always remain as fit as a fiddle. It can "practically" attain the following hours to overhaul intervals.

1st Top	15,000 Hours
2nd Top	30,000 Hours
Inframe	45,000 Hours
3rd Top	60,000 Hours
4th Top	75,000 Hours
Major	90,000 Hours

.fit

AS A FIDDLE

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2018 SEPTEMBER

MON	TUE	WED	THU	FRI	SAT	SUN
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20* Ashura 9th Muharram	21* Ashura 10th Muharram	22	23
24	25	26	27	28	29	30

*Subject to the sighting of moon.

■ University of Engineering & Technology (UET)

2018 OCTOBER

Rome was not built in a day

ہتھیلی پر سرسوں نہیں جمتی

Service is the forte of ESL. It has taken ESL a very long time to reach to this stage. We will leave no stone unturned to ensure that our Cummins gas customers not only feel satisfied but delighted with our 24 by seven presence, availability of parts, continuous improvement efforts, backup generators, etc.

S	Safe	Safety first
E	Empathetic	Putting your feet in customers' shoes and feeling their pain
R	Responsive	Performance which responds to customers' needs with speed and excellence
V	Virtuous	Performance which is conscientiously, morally and ethically right
I	Innovative	Performance different than the others
C	Compliant	Performance meeting with community, country and customers' requirement
E	Effective	Performing the right things, efficiently, timely, consistently and cost effectively

SERVICE at ESL stands for **S**afe, **E**mpathetic, **R**esponsive, **V**irtuous, **I**nnovative, **C**ompliant and **E**ffective.

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2018 OCTOBER

MON	TUE	WED	THU	FRI	SAT	SUN
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				

■ Dow University of Health Sciences (DUHS)
OJHA Campus

2018 Get going when going gets tough
NOVEMBER

■ تُندیٔ بادِ مخالف سے نہ گھبرا اے عقاب
یہ تو چلتی ہے تجھے اونچا اُڑانے کے لیے

Cummins gas generators stand by you in thick and thin; rain or shine; fire or water. They never leave you high and dry.

Cummins high torque series is known to perform well with minimum deration at high altitudes and high temperatures. They also work well at low methane numbers especially in our winters. After cooler cores are also not affected by Sulphur in the gas. For an in depth knowledge on how and why engines derate and why gas engines derate more than diesel engines, please contact ESL.

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2018 NOVEMBER

MON	TUE	WED	THU	FRI	SAT	SUN
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21* Prophet's (S.A.W.) Anniversary	22	23	24	25
26	27	28	29	30		

*Subject to the sighting of moon.

■ Cummins 1160 kW High Torque Automotive Application

2018 Killing two birds with one stone

DECEMBER

اِک پنتھ، دو کاج!

CO-GENERATION!

Gas Generators are often used for generating electricity as well as heat for absorption chilling. Cummins gas generators are specially known for their very high total efficiencies amongst all contemporary products. Cummins high torque generators (C1540 & C1750) allow recovery of heat from LT circuit also. This heat can be used for domestic heating or heating feed water for boilers.

Co-generation example using Cummins High Torque, High Performance C1540N5 generator (D-3293d)	
	As per data sheet
Total Fuel Input	4094 KW
Engine Output	1584 KW
Generator Output (100%)	1540 KW
Heat rejected in HT circuit	502 KW
Heat rejected in LT circuit	468 KW
Total Heat Rejected to the cooling system	970 KW
Exhaust flow from Specification Sheet	2.48 KG/S
Exhaust Stack Temperature	523 °C
Available Exhaust Heat at 120 °C (248 °F)	= Specific Heat of Exhaust Gas x Total Exhaust Flow x ΔT = 1.107 KJ / KG °C x 2.48 KG / S x (523-120) = 1106.4 KW
Total Recoverable Heat Energy	= Total heat rejected to cooling system + Available exhaust heat at 120 °C = 970+1106 = 2076 KW
Recoverable Heat in % =Thermal Efficiency	= 2076 / 4094 x 100 = 50.7%
Electrical Efficiency	= (1540 / 4094) x 1.015* = 38.2%
Total Efficiency	= Electrical Efficiency + Thermal Efficiency = 38.2%+50.7% = 88.79%
Total Efficiency	**88.7%**
*1.5% added to account for power consumed by water pumps and draw parity with all other suppliers	

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2018 DECEMBER

MON	TUE	WED	THU	FRI	SAT	SUN
31					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25 Christmas & Quaid-e-Azam Day	26	27	28	29	30

Calendar 2019

January

Su	Mo	Tu	We	Th	Fr	Sa
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

February

Su	Mo	Tu	We	Th	Fr	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28		

March

Su	Mo	Tu	We	Th	Fr	Sa
31					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

April

Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30				

May

Su	Mo	Tu	We	Th	Fr	Sa
			1	2	3	**4**
5	6	7	8	9	10	**11**
12	13	14	15	16	17	**18**
19	20	21	22	23	24	**25**
26	27	28	29	30	31	

June

Su	Mo	Tu	We	Th	Fr	Sa
30						1
2	**3**	4	5	6	7	8
9	**10**	11	12	13	14	15
16	**17**	18	19	20	21	22
23	**24**	25	26	27	28	29

July

Su	Mo	Tu	We	Th	Fr	Sa
	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

August

Su	Mo	Tu	We	Th	Fr	Sa
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

September

Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

October

Su	Mo	Tu	We	Th	Fr	Sa
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

November

Su	Mo	Tu	We	Th	Fr	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

December

Su	Mo	Tu	We	Th	Fr	Sa
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31				