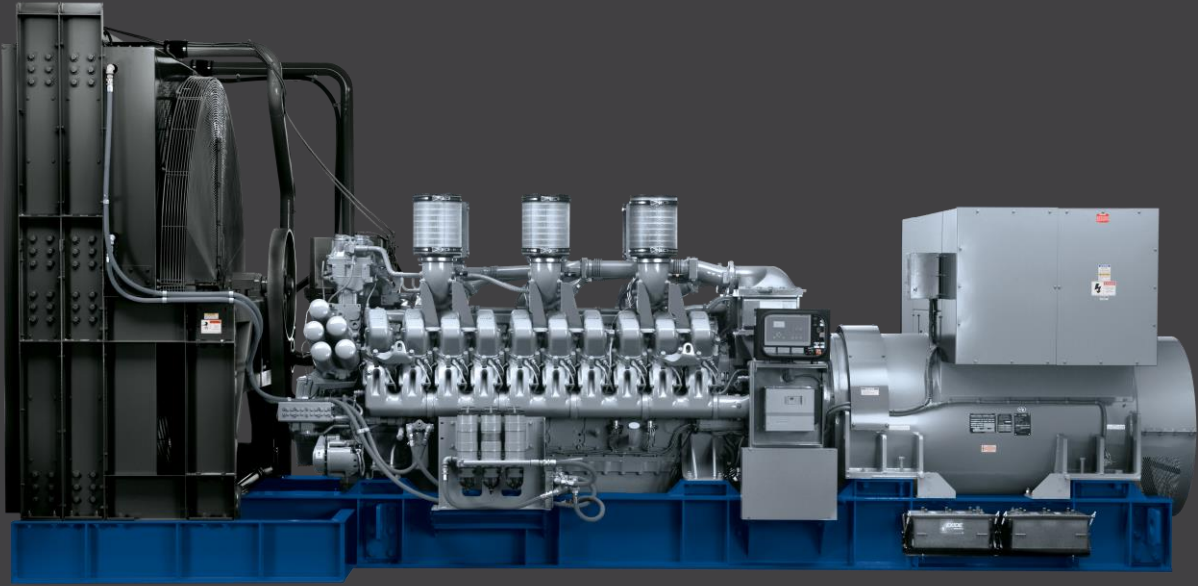


WHAT IS ISO-8528-1 & HOW DOES IT IMPACT YOU?



ISO-8528 is the International Standard Organization's standard for "reciprocating internal combustion engine driven alternating current generating sets." Now that is a mouthful!

More simply stated, ISO-8528 is an internationally recognized standard for engine powered generators.

So why should you care about this and how does it impact you?

The short answer to this question is that most generator manufacturers follow this standard and the generators in the marketplace today have their applications, ratings, and performance defined by it.

So, to ensure that you are purchasing the best generator for your application, you must understand how ISO-8528 defines generator ratings!

This basic level of understanding could end up saving you some money!

THE DEFINITION

ISO-8528 defines four types of Power Ratings for generators:

1. Emergency Standby Power (ESP)
2. Prime Power (PRP)
3. Limited-Time Running Power (LTP)
4. Continuous Power (COP)

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These power ratings are further defined by three Rating Criteria:

1. Annual run-time expectation
2. Load Variability
3. Load factor

These ratings and criteria are further defined in the tables and examples below.

ANNUAL RUN-TIME EXPECTATION

The first rating criteria is the expected number of hours that a generator will run in a year. This is easiest to illustrate in table format.

Rating Type	Emergency Standby Power (ESP)	Prime Power (PRP)	Limited-Time running Power (LTP)	Continuous Power (COP)
Expected Annual Run-time	≤ 200 hours	Unlimited	≤ 500 hours	Unlimited

LOAD VARIABILITY

The second rating criteria, Load Variability, looks at the load that the generator will be powering. This is defined as either constant or variable.

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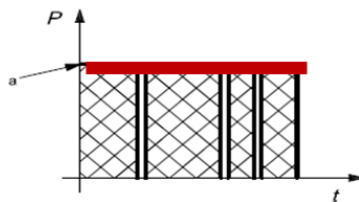
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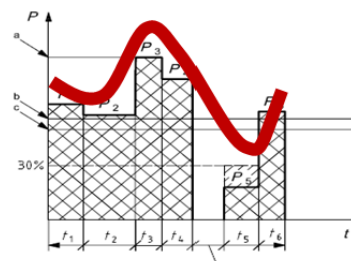
Basically, a constant load is a load that does not change over long periods of time as illustrated in the diagram below.

Constant Load Example



A variable load is one that fluctuates over a period of time as shown in the diagram below.

Variable Load Example



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The four Power Ratings are further defined by the load variability as shown in the table below:

Rating Type	Emergency Standby Power (ESP)	Prime Power (PRP)	Limited-Time running Power (LTP)	Continuous Power (COP)
Expected Annual Run-time	≤ 200 hours	Unlimited	≤ 500 hours	Unlimited
Load Variability	Variable	Variable	Undefined	Constant

LOAD FACTOR

The third rating criteria, Load Factor, determines the expected average load on a generator over any 24-hour operating period. Its definition is best shown using the following example of a 1000kW standby unit:

Power Output (kW)	Time (hours)	kW x hrs
1000	0.0	0
700	12.5	8750
650	8	5200
500	3.0	1500
300	0.5	150
Totals	24	15,600

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The average load and the average load factor are calculated as follows:

$$\text{Average Load} = \frac{15,600 \text{ kW} * \text{hrs.}}{24 \text{ hrs.}} = 650 \text{ kW}$$

$$\text{Average Load Factor} = \frac{650 \text{ kW}}{1000 \text{ kW}} = 65\%$$

Putting this into the table format, the four Power Ratings are further defined by the Load Factor as follows:

Rating Type	Emergency Standby Power (ESP)	Prime Power (PRP)	Limited-Time running Power (LTP)	Continuous Power (COP)
Expected Annual Run-time	≤ 200 hours	Unlimited	≤ 500 hours	Unlimited
Load Variability	Variable	Variable	Undefined	Constant
Average Load Factor	≤ 70%	≤ 70%	≤ 100%	≤ 100%

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Basically then, what the ISO-8528-1 standard is defining is that:

- an ESP unit must be able to run for at least 200 hours a year with a variable load and an average load factor of at least 70%
- a PRP unit must be able to run for continuously with a variable load and an average load factor of at least 70%
- an LTP unit must be able to run for at least 500 hours a year with an average load factor of 100%. Note that ISO-8528-1 does not define the load variability expectation for an LTP unit.
- a COP unit must be able to run for continuously with a constant load and an average load factor of 100%

BOTTOM LINE

So why should you care about all of this?

Well, if you are purchasing a generator and some manufacturers can meet the minimum ISO-8528-1 standard with a lower power range generator, you may be able to save money.

For example, in our average load factor calculation above, if we had a 800kW generator that was capable of an 85% average load factor, you could potentially downsize your generator from the 1000kW.

With all things being equal, an 800kW unit in this example would have an average load factor of 81%. If your ESP generator were rated at 85%, you could purchase the 800kW rather than the 1000kW.

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TAKE ACTION

Take some time to review your generator requirements and the generator specifications before you buy your next generator. Keep in mind that the ISO requirements described in this article are just a few of many factors that need to be considered when you are specifying and purchasing the proper unit.

Also, beware of generator manufacturers that have created their own rating systems that are not ISO recognized. This can create a lot of confusion when you are trying to find the best solution for your application!

If you need assistance with the proper sizing of your power generation equipment give us a call and we would be happy to assist you!

Finally, take a look at this related post for more generator purchasing information:

- [Don't Make This Mistake When Buying Your Power Generator](#)

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