Let's make full use of e-DPP / ETAP-DPP.

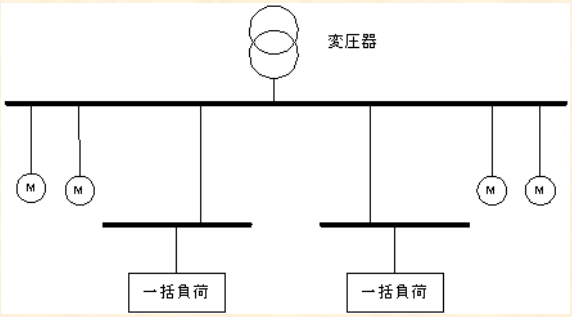
"Key Points for Load Summary" (Topic #15)
Part 4: Lumped Load Applications

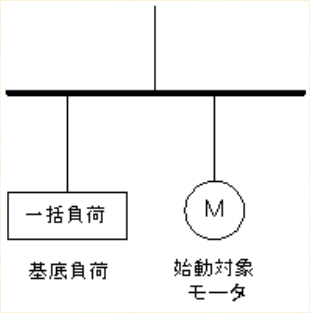
Previous issue discussed the relationship between ETAP PowerStation "Lumped Load" power factor calculation expression and "Lumped Load Calculation" in the **e-DPP** Load Summary Calculation feature. This issue discusses the handling of practical Lumped Load applications and various parameters.

There are following two major categories for applications of Lumped Load to be exported to ETAP.

① One element of objective network to be analyzed by steady state Load Flow Calculation, etc. (See below left)

② Base load for executing Motor Starting and Transient Stability Study (See below right)





Normally there is no distinction among applications when creating this Lumped Load, there is some difference which is to be paid attention. That is the relationship between the "Multiplying Factor" for Lumped Load Calculation being applied in e-DPP and the similar "Multiplying Factor" in ETAP. "Multiplying factor" means following parameters to be more precise.

e-DPP	ETAP
Load Factor（%Loading）	%Loading
Coincidence Factor	Demand Factor
	Load Diversity Factor
	Load Factor

The concept for Load Factor (%Loading) is the same for e-DPP and ETAP. This is an operation level for each rated equipment capacity. For example, it is a ratio operations shaft break horsepower (BHP) vs. rated capacity for power load. In order to differentiate from "Load Factor" which is given in the below expression, the term of "%Loading" is used.

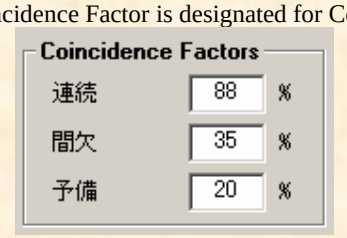
$$LoadFactor = \frac{AverageDemandPower}{MaxDemandPower} \times 100\%$$

(Continue to next page)

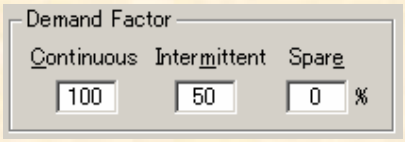
"Coincidence Factor" of e-DPP may be defined by User with regard to ETAP.Normally it is common to apply below expression for group load which is a part of Lumped Load.

$$\frac{MaxDemandPowerOfLumpedLoad}{TotalOfMaxEachLoad}$$

Individual Coincidence Factor is designated for Continuous, Intermittent and Spare Load. (See below left.)



<e−DPP>



<ETAP>

"Demand Factor" used in ETAP is the "Time Ratio" of each operating load. Enter percent value for Continuous, Intermittent and Spare. (See above right.) Therefore Coincidence factor in e-DPP and Demand factor in ETAP are different in definition but deeply tied with.

"Load Diversity Factor" of ETAP is entered in the Bus Editor. This value is multiplied by Load Operation Power when this parameter is applied in the Load Flow Calculation, etc. As a result, following expression is applied to the Load Operating Power in ETAP.

Operating Power = Rated Capacity ＊ %Loading ＊ Demand Factor ＊ Load Diversity Factor

Let us go back to ① in the previous page. As you can see, several "Multiplying Factors" are duplicated in e-DPP and ETAP. Therefore it is necessary to eliminate such duplication when you calculate Lumped Load in e-DPP and export to ETAP.
Below is one example of reasonable (rational) methodology.

Program	Parameter	Setting
e-DPP Lumped Load Calculation	Load Factor (%Loading)	Designate per Load
	Coincidence Factor	Designate individually per Continuous, Intermittent and Spare Load
ETAP Lumped Load	%Loading	100% （Objective Loading Category）
	Demand Factor	Continuous = 100% Designate as, Status = Continuous
	Load Diversity Factor	Do not apply at 100% or Study Case Editor.

The next issue will also discuss "Multiplying Factor" for Lumped Load Calculation.

If you have problems or requests and need solutions, please feel free to contact;
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