

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

### “Key Points for Load Summary” (Topic #14)

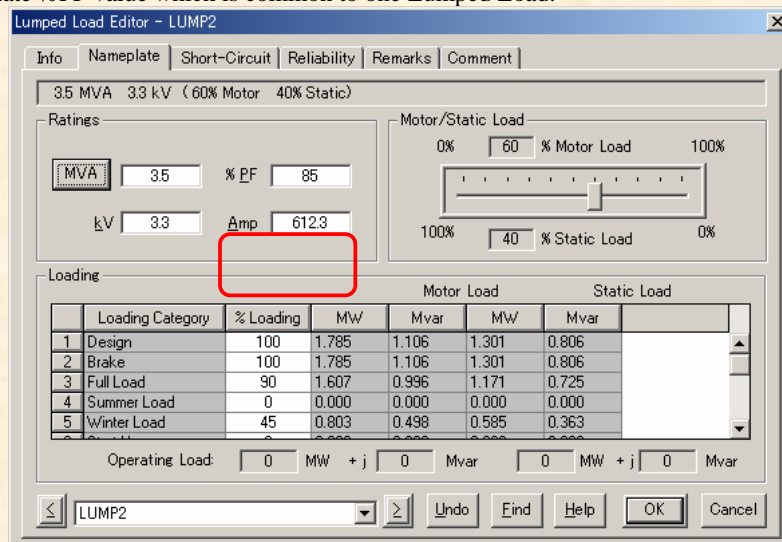
#### Part 3: Lumped Load Calculation

Previous issue discussed “How to consider Internal Bus” for e-DPP Load Summary. This issue discusses “Lumped Load Calculation” and describes the relationship of expressions for Lumped Load Calculation.

Lumped Load of e-DPP is provided for the calculation of “Lumped Load” which is one of the ETAP elements. e-DPP calculates the Power Factor individually (see below) for “Motor Load” and “Static Load” included in the Lumped Load Wise Calculation in the same manner as Bus Load Wise Calculation as well as Switchboard Wise Calculation.

軸馬力 (kW)	負荷率 (%)	負荷時力率 (%)	負荷時効率 (%)	連続 kW	連続 kVAR	連続 kVA	間欠 kW
12.0	80	81.72	90.56				
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73.95	87	90.0	100.0	73.95	35.82	82.17	
1.2	80	78.38	84.8	1.42	1.12	1.81	
105.6	80	89.14	93.72	112.68	57.29	126.4	
モータ負荷 (kVA)		131		188.04	94.23	210.33	
モータ負荷 (%)		62		P.F. (%)		89.4	P.F. (%)
静止負荷 (kVA)		82		C.F. (%)		100.0	C.F. (%)
静止負荷 (%)		38		C.F. x KVA		210.33	C.F. x

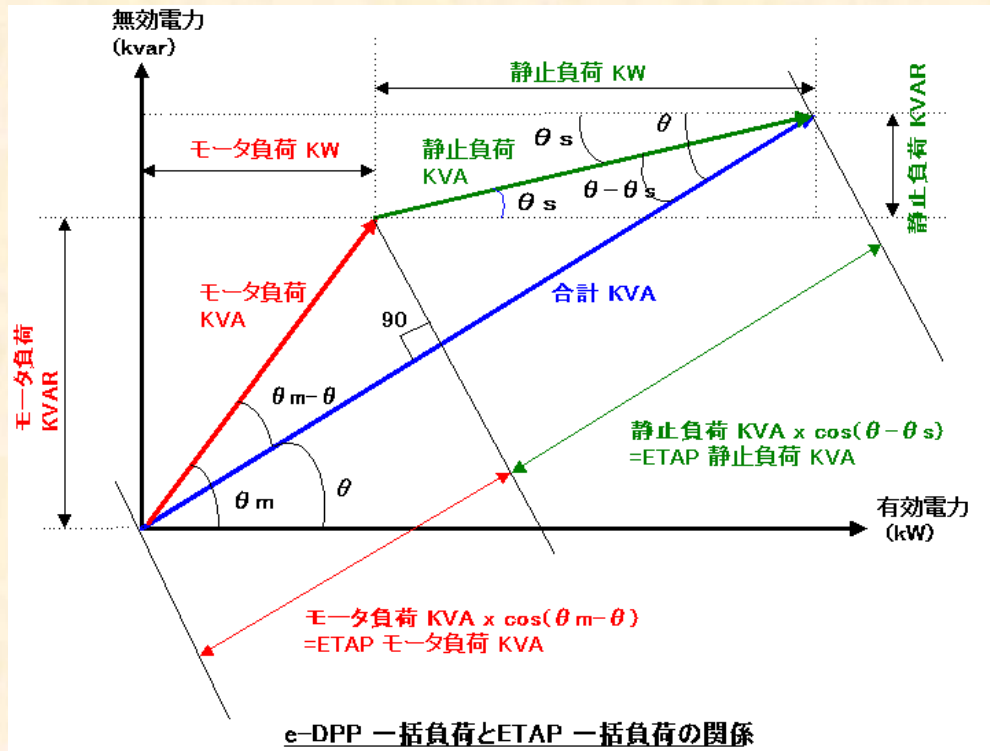
ETAP can designate %PF value which is common to one Lumped Load.



Therefore conversion of parameters would become necessary when transferring Lumped Load data from ETAP-DPP program to ETAP.

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e-DPP executes “Vector Orthogonal Projection” which is deemed as highest in approximation accuracy in most cases for exporting feature to ETAP. Although there will be a slight error for power consumption, power factor value as a single load is maintained between e-DPP and ETAP and the data transfer will become possible.



Another thing to remember is the power consumption of static load portion of the Lumped Load. In e-DPP load summary calculation, static load is calculated by multiplying load factor to KVA value. On the other hand, ETAP execute the following correction calculation for Static Load portion of the “Lumped Load” as Constant Impedance Load.

$$\text{KVA at Service Voltage} = \left( \frac{\text{Service Volt}}{\text{Rated Volt}} \right)^2 \times (\text{Constant KVA})$$

When calculating Lumped Load in e-DPP, static load needs to use KVA value at the rated voltage in order to avoid the error caused by the data transfer to ETAP.

The next issue will discuss “Key Points for Load Summary Part 4: Example of Application Lumped Load”.

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

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