

## **Chiarimenti (Clarifications)**

### **Lista (List) #5**

### **Chiarimento (Clarification) #5.1**

#### **Domanda (Question):**

Can a foreign legal entity bid for this tender or must the bidder be registered in the Italian chamber of commerce (as currently required in the tender)?

#### **Risposta (Answer):**

Si riporta quanto previsto dal Disciplinare al punto 6.1 "Requisiti di idoneità professionale".

Costituiscono requisiti di idoneità professionale per i Lotti n° 1, 2 e 3:

- a) Iscrizione alla C.C.I.A.A. per oggetto di attività corrispondente all'oggetto dell'appalto o ente analogo in caso di operatore estero.

Ai fini della comprova, l'iscrizione nel Registro è acquisita d'ufficio dalla stazione appaltante tramite il FVOE.

Gli operatori stabiliti in altri Stati membri caricano nel fascicolo virtuale i dati e le informazioni utili alla comprova del requisito, se disponibili.

## Chiarimento (Clarification) #5.2

### Lotto 1

#### Domanda (Question):

According to our preliminary simulations, it seems that  $\pm 2 \times 4 \text{ kV}$  maximum output voltage is not sufficient for correctly following the triangular current references on the spec. For example: Triangular waveform 4 (500A peak, 833Hz) -> The load values of L and R are (in worst case, simplifying to only fundamental frequency, from fig.3):  $L = 4.85 \text{ mH}$ ,  $R = 1440 \text{ m}\Omega$ .

...

Similar lack of voltage is found for the 3 other waveforms.

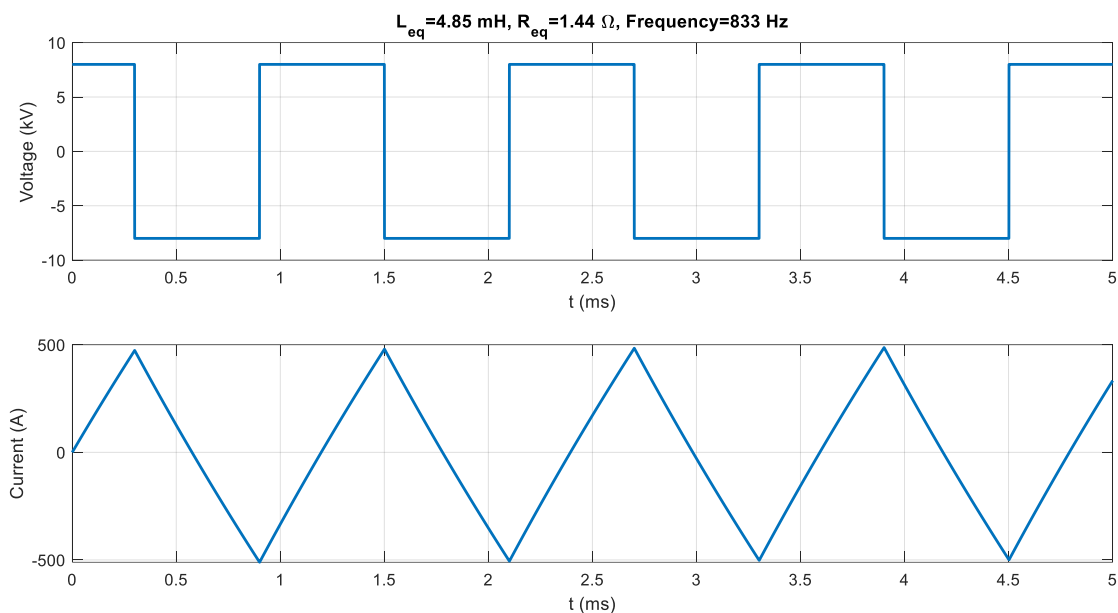
#### Risposta (Answer):

It is actually not immediate, but the behavior of a rectangular waveform is different with respect to sinewave.

You can simulate a circuit with a voltage source with rectangular wave on a load with the L and R for the corresponding frequency.

The numerical values at 833 Hz are slightly different, but this is not relevant. Your values are used in the following.

The result is shown in the plots below.



The same for other frequencies.

Be careful that, as reported in Section 4.3, “the waveforms achievable in the circuit will be not exactly triangular but the first part of exponential charges” and this may lead to a transient behavior. This effect is more evident at low frequency.

The rectangular waves shall be obtained in short circuit.

We expect that the actual equivalent R and L will be better than those shown in Figure 3. In any case, the effect of the load will be considered in the acceptance tests.

For pure sinewaves, this effect is already considered in Figure 6.

### **Chiarimento (Clarification) #5.3**

#### **Lotto 1**

#### **Domanda (Question):**

Transfer function

The equivalent transfer function is defined as a first order low pass + delay. The real inverter + filter will be a second order filter (damped LC filter). Please clarify the criterion for validating the dynamic response, knowing that models will not match exactly. Could a criterion be that when at a step voltage reference is applied, rise time (in this case, due to the delay, time from step start to 90% of  $V_{ref}$  is reached) is equal or lower than the one of the specified transfer function? (rise time = 115 $\mu$ s with  $\tau_1=50\ \mu$ s &  $\tau_2=50\ \mu$ s).

#### **Risposta (Answer):**

You are right that the transfer function of a real system may be different from first order low pass + delay.

We will be glad to insert a more accurate transfer function in the general model. We will discuss it with the Contractor once the procurement will be assigned.

As a criterion for the system acceptance, we can accept:

1. A delay  $\leq 50\ \mu$ s;
2. A rise time to 90% of the final voltage  $\leq 115\ \mu$ s.