RAETTS air knives’ selection & calculation

We can know RAETTS air knives’ classification and features from the last article. And you can know how to choose the right air knives from this article.

First, let’s start with the spider arm air knife. In fact, follow our flow formula is ok. First, we need to know the flow of the air knife. And cross-sectional area multiplies by the airspeed, then we can get the flow of air knife. What’s more, take the flow of air knife multiplied by 3600 seconds, then we can get the air consumption per hour.

Let’s take a Coanda effect air knife with 500mm length and 1-millimeter opening gap for example. First, convert all units into the same unit before calculating. For example, if the airspeed unit is m/s, we should change the cross-sectional area unit into the meter. And 500mm is equal to 0.5 meters, 1 mm is 0.001 meters. And we can take the opening gap of air knife as a rectangle. So cross-sectional area is equal to 0.5 meters multiplied by 0.001 meters.

Then how to determine the airspeed? We divide drying into three types, like low difficulty, medium difficulty, higher difficulty. If low difficulty, about 80m/s is ok; If medium difficulty, 100 m/s-120 m/s is suitable; if higher difficulty, 120 m/s-150m/s is appreciated.

For example, if we need to dry a product with good flatness, 80 m/s is ok. Then take cross-sectional area multiplied 0.0005 by airspeed 80 multiplied by 3600 equals 144. So we can clear know that the air consumption of a Coanda effect air knife with 0.5 meters length and 1mm opening gap is 144 m³/h at 80m/s. If we have two, take 144 multiplied by 2. If we have three, take 144 multiplied by 3. And our stainless steel air knives and aluminum alloy air knives are also suitable to this formula.

So what about the pressure? We have the best working point in the application of our products. Then this working point is the lowest energy consumption and it is suitable for our air knife. The pressure ranging from 10 to 20 Kpa can be obtained from our past experience and our practice. As long as we get the flow, the pressure, we can choose the right air knives according to the working point in our blower selection manual.
If you are still confused about choosing the right air knives, you are welcome to contact us.

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