REFRIGERACIÓN DE PC

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ÍNDICE:

Refrigeración de una PC

Es un hecho que los componentes electrónicos de una computadora, producen calor con su funcionamiento, que llegando a temperaturas extremas, pueden dañar en forma definitiva o en el mejor de los casos, acortar la vida útil de los mismos. Entre los más importantes podemos mencionar procesadores, discos rígidos, fuentes y placas de video.

Este calentamiento se acelera sobre todo si el usuario realiza actividades exigentes para cualquier pc (como trabajos de diseño y renderizado de imágenes, videojuegos), por lo que es necesario recurrir a métodos de refrigeración que contrarresten ese efecto.

Cabe destacar que existen otros factores responsables de que dichos componentes no funcionen a sus temperaturas normales, tales como la mala ventilación, ambiente perjudicial ya sea por el clima o alta presencia de polvo, falta de mantenimiento/limpieza. Por eso desarrollaremos cómo configurar correctamente la Refrigeración de una PC.

¿Qué es la refrigeración?
Según la Real Academia Española, ***Refrigerar*** significa "Hacer más fría una habitación u otra cosa por medios artificiales."

¿Y cómo se aplica esto a una PC?
Los métodos más comunes son la *Refrigeración por Aire* y la *Refrigeración Líquida*.

"La **refrigeración por aire** se utiliza en los gabinetes de computadoras y otros dispositivos electrónicos para refrigerarlos. Por lo general el aire caliente es sacado desde el interior del dispositivo con los coolers.
Los coolers se utilizan especialmente en las fuentes de energía, generalmente en la parte trasera del gabinete de la computadora. Actualmente también se incluyen coolers adicionales para el microprocesador y placas que pueden sobre calentarse. Incluso a veces son usados en distintas partes del gabinete para una refrigeración general."[1]

- En la refrigeración por aire se ocupan dos tipos de ventiladores, estos son los ventiladores de flujo de aire (más utilizados y conocidos) y los ventiladores de presión estática.

Los ventiladores de flujo de aire(o de caja) se utilizan en lugares que no hay obstrucciones ya que la potencia de su aire no llegá a profundidad y en cambio los ventiladores de presión estática son aquellos que brindan menos caudal de aire , pero su alcance es mayor. Así pueden atravesar obstáculos y brindar el flujo de aire e lugares complicados.

“La **refrigeración líquida** o watercooling es una técnica de enfriamiento que utiliza agua en vez de disipadores de calor y ventiladores (dentro del chasis) y logra así excelentes resultados en cuanto a temperaturas, y con enormes posibilidades de overclock. Se suele realizar con circuitos de agua estancos.
El agua, y cualquier líquido refrigerante, tienen mayor capacidad térmica que el aire. A partir de este principio, la idea es extraer el calor generado por los componentes de la computadora usando como medio el agua, enfriarla una vez fuera del gabinete y luego reintroducirla.” [2]
Mucha gente es reacia a este tipo de refrigeración por los excasos errores en los que por falla en la instalación o errores de fábrica, píerde parte del liquido interno y puede dañar los componentes eléctricos.

Flujo del Aire

Para que una PC esté correctamente refrigerada, una de las cuestiones más importantes a tener en cuenta, es la correcta circulación del aire. Para saber cómo hacerlo, es necesario entender qué tipos de presión de aire existen y cómo impacta su distribución dentro del gabinete de la PC.

Presión Positiva: Se produce cuando el ingreso del aire dentro del gabinete es superior al aire expulsado. Esto favorece tanto al enfriamiento del mismo, como así también a la acumulación del polvo, que se puede contrarrestar utilizando filtros anti-polvo.

Presión Negativa: Se produce cuando la salida de aire dentro del gabinete es superior a la entrada. Esto crea un efecto similar al vacío en el interior de la caja, lo que la hace ideal para el enfriamiento, ya que el aire caliente se expulsa más rápido. Sin embargo, la única desventaja es que el polvo se acumulará más rápido y probablemente mucho más en comparación con otras presiones. A diferencia de la presión positiva, la presión negativa del aire provocará que el aire sea empujado al interior de la caja a través de pequeñas aberturas y agujeros.

Presión Neutral: es cuando la presión del flujo de aire de entrada es igual a la de salida. En la mayoría de veces se ocupan la misma cantidad de cooler/ventiladores para generar un equilibrio con respecto al flujo de aire.

Es el método que mas se recomienda para el uso de una computadora, ya que adquiere los beneficios de las otras dos. Tal como el beneficio de reducción de temperatura y disminuir la suciedad(polvo) interna.

¿Cómo balancear el flujo de aire?

En cuanto a la ventilación la primera norma básica a tener en cuenta es que el aire caliente sube , por lo que el calor que genere el equipo dentro del chasis subirá.
Es recomendable colocar la misma cantidad de ventiladores que sacan e ingresan el flujo del aire si queremos tener una presión neutral o igualitaria.

Para lograr sacar de forma correcta el calor de la pc, es necesario colocar un ventilador en la parte inferior del gabinete , que este a su vez ingrese aire y otro en la parte superior para lograr sacar el aire. Así formando un flujo de aire optimo.

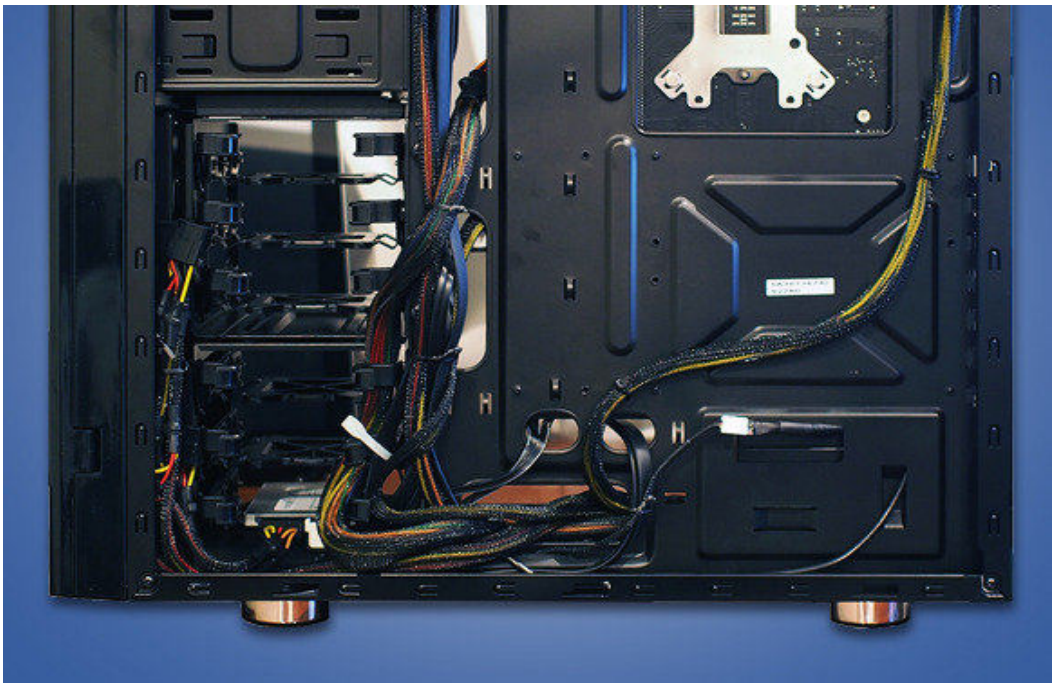
En medida que se agreguen ventiladores que ingresen el aire al gabinete , tendremos que colocar otro más ir sacándolo.

- Importante :

Para lograr una fluidez de aire optima dentro del gabinete, es fundamental tener ordenados los cables de una forma correcta.

Para conseguir la meta se utilizan precintos o mayas para tener unidos los cables correctamente, así evitan tocar algún cooler y afectar su funcionamiento.

Otros de los métodos esenciales para lograr la optimización de los cooler es diseñar un esquema dentro del gabinete que los cables de la fuente, disco,etc.. se ubiquen en la parte trasera de la placa madre. Muchos gabinetes vienen hoy en día con espacio suficiente en la parte posterior para ubicar y precintar los cables, como también orificios cerca de la placa madre para un acceso mas cómodo y facil.



Filtros de Polvo

De acuerdo a la Media Research Associates, la causa del 58% de los problemas técnicos en las pcs es debido al polvo y la suciedad acumulada en las mismas.

El polvo aisla los componentes de la pc causando aumento en la temperatura y es un hecho no muy conocido que el es conductor de la electricidad y la acumulación del mismo puede causar cortocircuitos y reducción en el rendimiento por acumulación de calor causada por el aislamiento en si o por obstrucción en los ventiladores y en el flujo de aire. En casos más extremos, incluso podrían quemarse los componentes.

Para proteger la pc de los peligros del polvo, uno debería considerar una limpieza frecuente de la pc y sus componentes, así como también evitar, o retrasar lo mayor posible la entrada y acumulación del mismo

Hay métodos para reducir la cantidad de polvo que entra en la pc como la ubicación de la misma en la habitación (generalmente se intenta mantener la pc lo mas elevada posible, lejos de las puertas y las esquinas de la habitación), la limpieza de la superficie además el ambiente en el que se encuentra y también la instalación de filtros para atraparlo antes de que llegue a los componentes.

Un filtro de aire busca de la forma más óptima atrapar la mayor cantidad de suciedad que entre a la pc, intentando al mismo tiempo no interferir con la velocidad y la intensidad del aire.

Los filtros, más frecuentemente se instalan en las aberturas donde están ubicados los ventiladores de entrada de aire, debido a que estos son los que atraerán mas polvo y lo esparcen al resto de los componentes.

Para crear un filtro casero, en este caso dispondremos de los siguientes materiales.

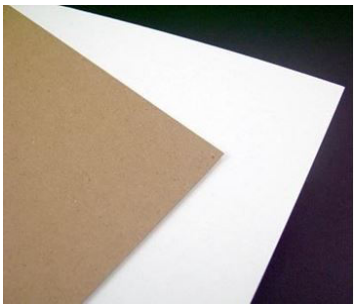
_Una pantimedia.

_Una tijera.

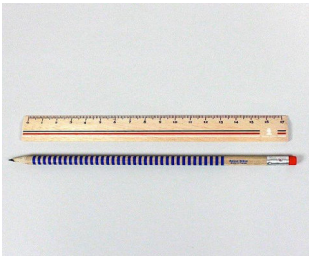
_Una pistola encoladora.

_Un Cutter o trincheta.

_Cartulina gruesa (En este caso encapada de 300grs).



_Lapiz y regla.



_Filtro de Aire Acondicionado (en reemplazo de la pantimedia).

A continuación podrán observar como armamos dis de los filtros “caseros” o artesanales. Hay una diferencia notable entre ambos: uno se atornilla al gabinete, entre el cooler y el chasis, o por fuera del mismo y el otro va directamente sobre el chasis del cpu por una entrada de aire.

Filtro externo de Chasis

Este filtro se instalara en una rejilla del gabinete Termaltake V3 Black en uno de los ventiladores donde ingresa el aire.

●Primero retiramos la rejilla de la parte delantera del gabinete donde se va a colocar el filtro.

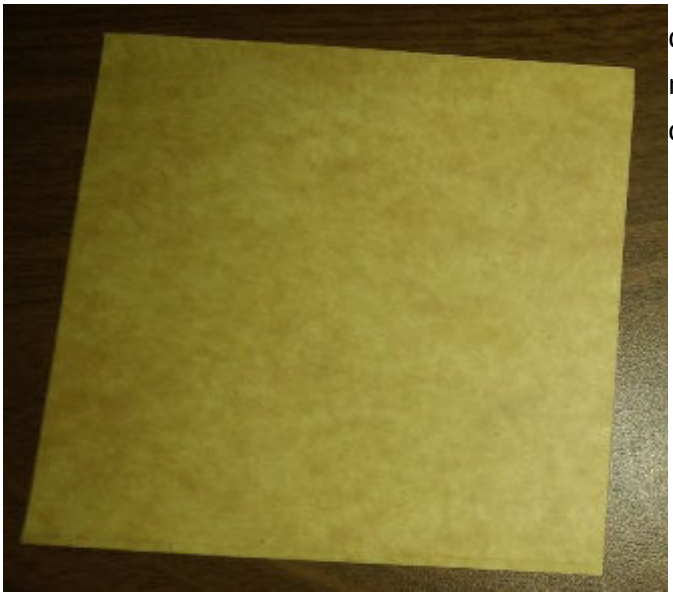
●Luego medimos y recortamos un pedazo de pantimedia, el cual será el filtro.

●A continuación se coloca encima de la rejilla y con la pistola de silicona lo pegamos en la parte trasera de la misma

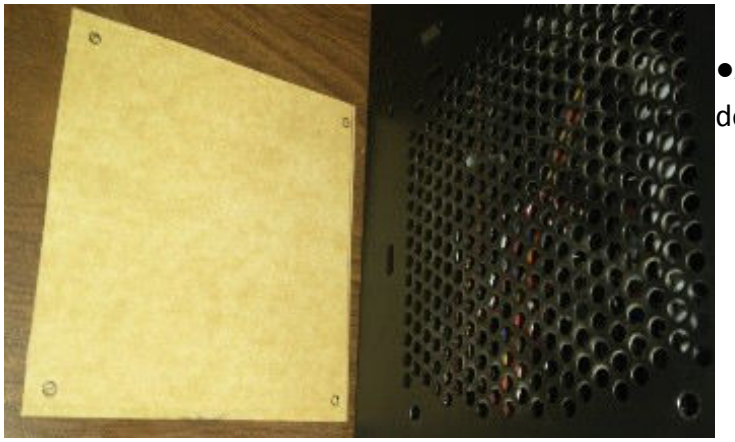
●Para terminar recortamos los bordes sobrantes y ya tenemos nuestro filtro armado y listo para colocar en el gabinete. Como podrán ver es muy fácil armar un filtro casero, y ayuda muchísimo a reducir la acumulación de polvo en los componentes de la pc.

Filtro Atornillado al chasis

Este filtro es una versión mas común en las pcs. Imita a los filtros comerciales que se compran en las tiendas de informática. Notese que se puede usar la pantimedia en vez del filtro de aire acondicionado. Se utilizó este para dar una visión amplia de los materiales que se pueden utilizar.

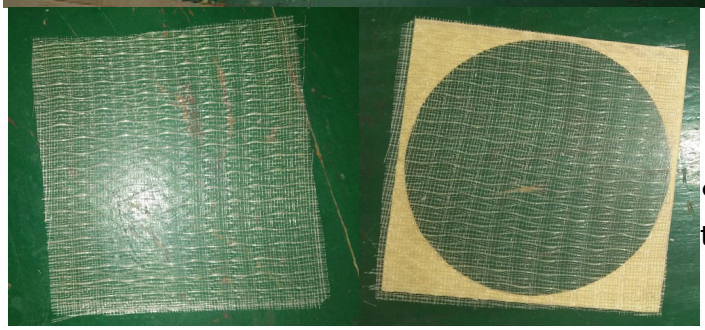


●Empezamos con el cartón o cartulina dibujando en este un cuadrado con las medidas de la abertura del gabinete (12x12 cm. en este caso). Para luego cortarlos.

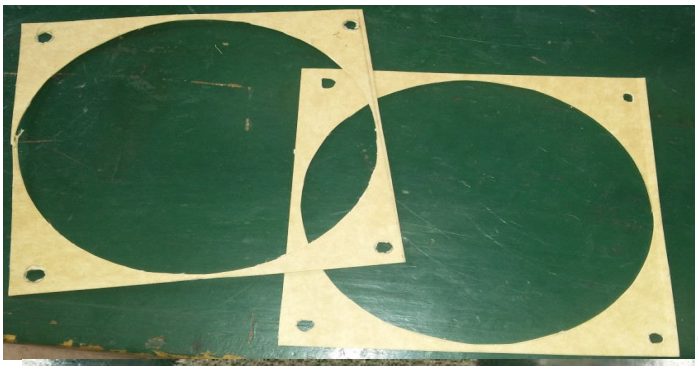


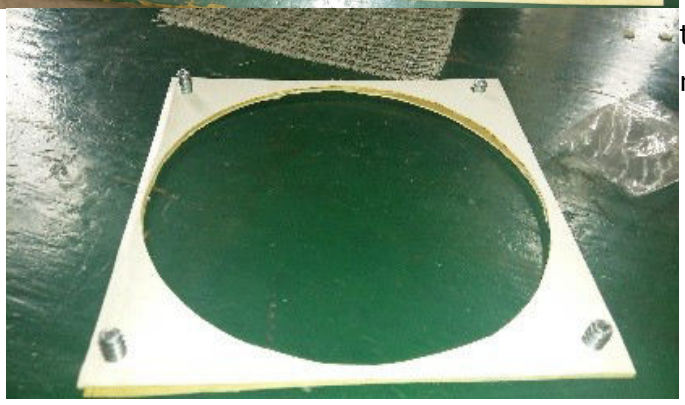
●A continuación dibujamos los huecos donde luego irán los tornillos

●Y se intentará dibujar un circulo un poco mas grande del diñametro de las paletas del cooler para luego cortarlo (Solo se utilizó el cutter).

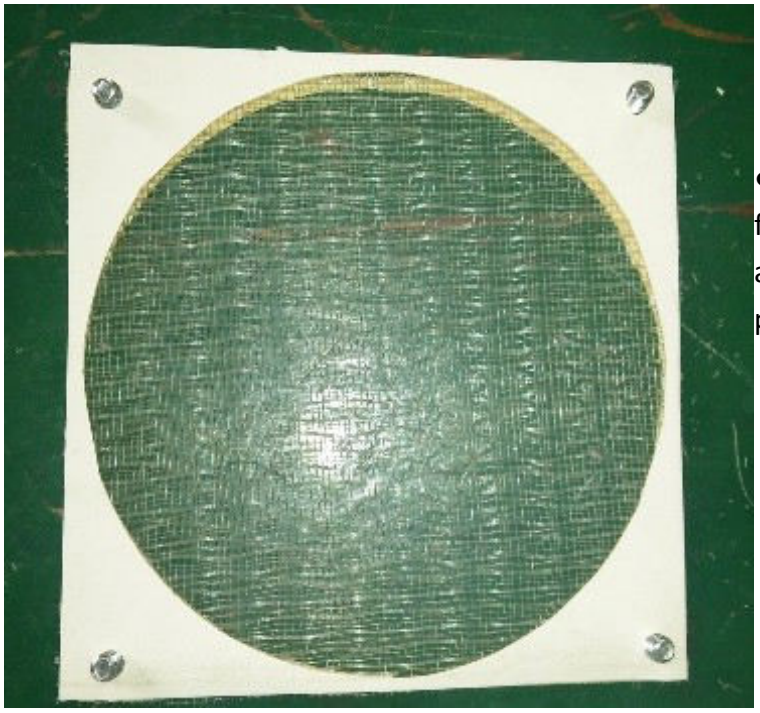


●Cortamos el filtro de aire con el mismo tamaño (12x12cm).



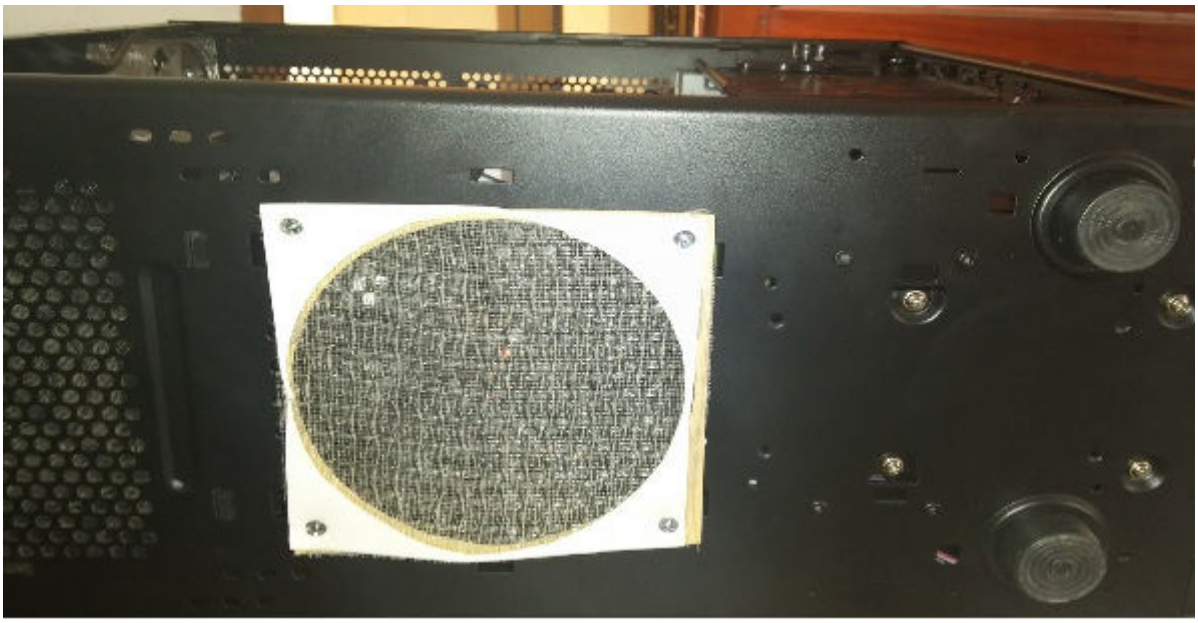


●Y se hacen los respectivos agujeros para los tornillos (dependiendo del filtro hacer lo mismo con este).



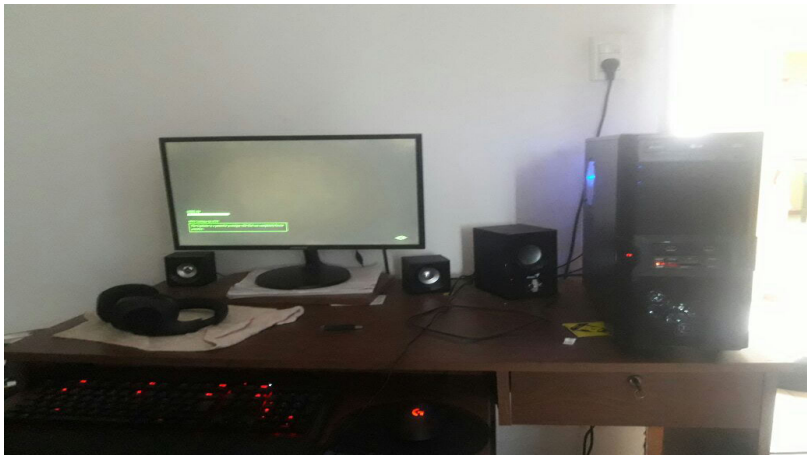
●Por último solo nos queda colocar el filtro entre ambos alineando los agujeros, recortando los bordes y pegarlos si es necesario.

●Y así nos quedará el producto terminado



Pruebas de temperatura:

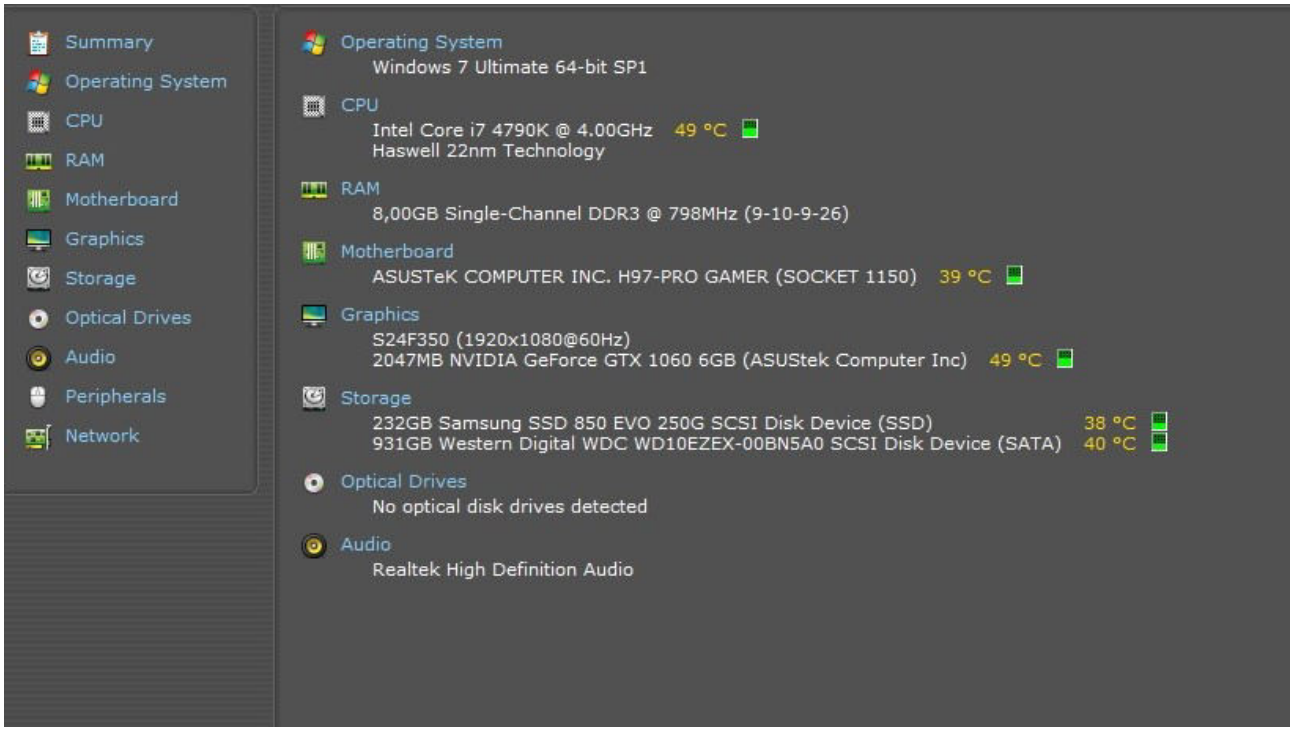
Como parte de la investigación realizamos pruebas con los distintos tipos de flujo de aire, utilizando los filtros caseros y observando la temperatura del hardware en Speccy. Se realizaron dos pruebas con cada tipo de flujo de aire: la primera sólo con la pc encendida y la segunda con un juego en calidad alta para observar los cambios cuando el hardware está al máximo funcionamiento. Cabe destacar que la PC en la que se realizaron las pruebas estaba en un lugar elevado, limpio y lejos de ventanas.



Flujo Negativo.

Prueba 1.

PC en modo stand-by.



Prueba 2.

PC al máximo funcionamiento.

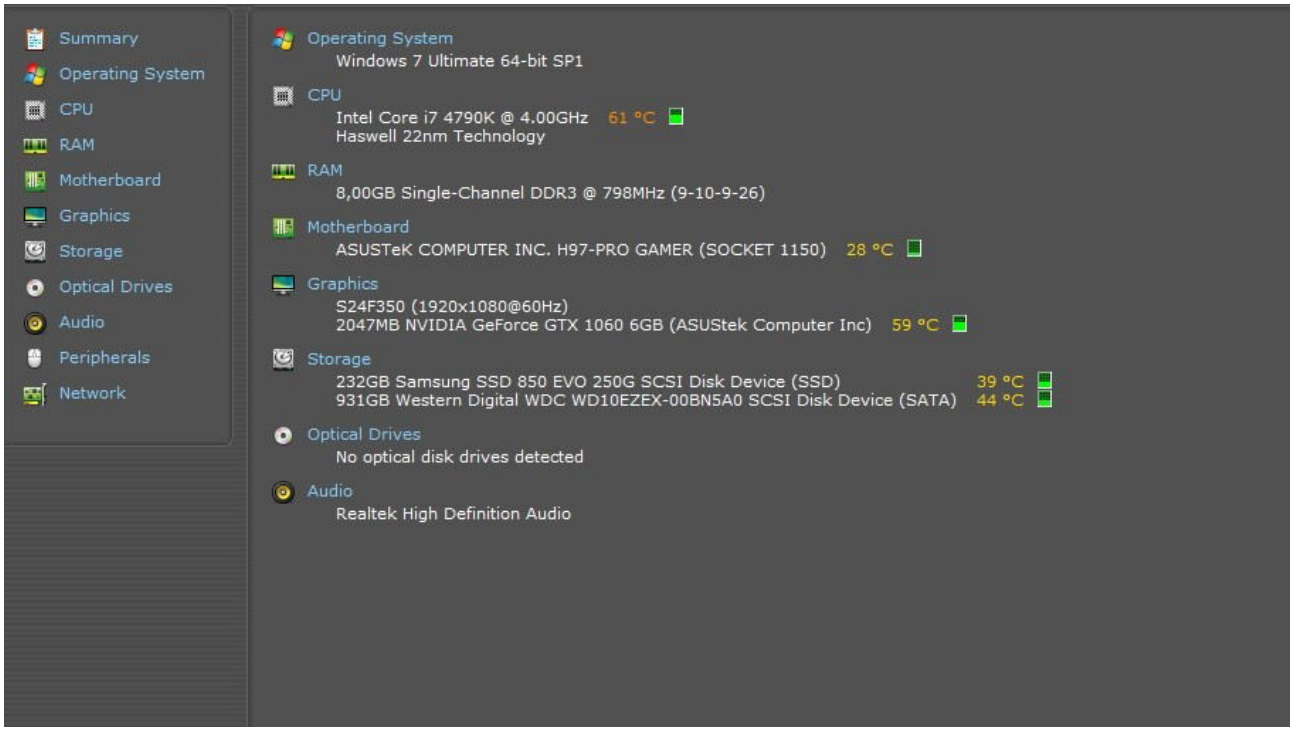
Flujo Positivo.

Prueba 1.

PC en modo stand-by.

Prueba 2.

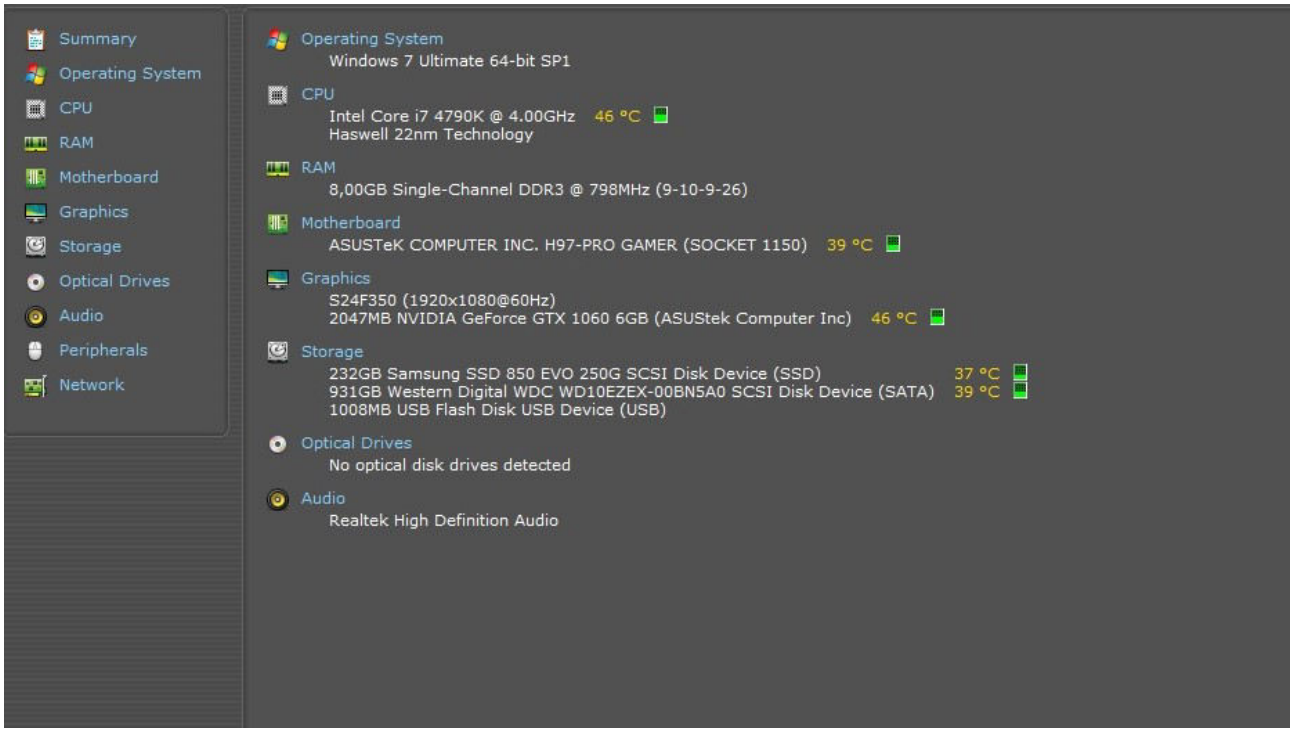
PC al máximo funcionamiento.



Flujo Neutro.

Prueba 1.

PC en modo stand-by.



Prueba 2.

PC al máximo funcionamiento.

Como se puede observar en las imágenes anteriores, no existe diferencia significativa de temperatura entre los distintos flujos de aire .Sin embargo en los distintos foros gaming de internet, cuando se realiza una consulta con respecto al armado de un pc, el flujo neutro es el más recomendado por la comunidad debido a que posee un equilibrio respecto al flujo de entrada y salida del aire, que a su vez no deja asentar las partículas de polvo dentro del gabinete ni de sus componentes.

Conclusión

La conclusión personal que sacamos en cuanto a:
1- El tipo de refrigeración: Elijiriamos la refrigeración por aire por dos simples causas, una que es mas económica y la otra es que es fácil de reemplazar y de limpiar en el caso que algo le pasar a algún cooler.
2- El tipo de presión que elegimos es la neutral, ya que es la mas recomendada y según nuestro punto de vista genera una equidad dentro del gabinete, entre la entrada y salida de flujo de aire y del polvillo.
3- El secreto para controlar la temperatura de nuestras computadoras, es ubicarlas en un lugar que tenga circulamiento de aire y que se encuentre en lo posible alejado del suelo(para evitar que ingrese algún polvillo desde el suelo), y cada tanto controlar y hacerle mantenimiento a los coolers y disipadores que nos traen.
Tanto en el punto 2, como en el 3 recomendamos utilizar filtros en los ventiladores que ingresan el aire para disminuir la cantidad que se asienta en el mismo.
Cabe aclarar que estas conclusiones las tomamos porque somos usuarios no tan exigentes, sin ánimos de hacer overclocking en nuestras pcs y no nos interesa tanto el aspecto final del interior de la misma.

Referencias y bibliografía:

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