1. Hardware / software requirements

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Minimum requirements and minimum recommendations

The following minimum requirements apply to all computers on which the OPEN MIND software products are installed. These represent the minimum computer configuration required for **installing** the software.

They are listed in the table in the **Minimum** column.

The following minimum recommendations go beyond the minimum requirements and represent the computer configuration recommended by OPEN MIND. These minimum recommendations apply to the use of the hardware under real **production conditions** and can vary greatly depending on the working method, parts to be manufactured and many other factors.

They are listed in the table in the **Recommended** column.

> All notes are recommendations for computer configuration.
>
> OPEN MIND does not provide support for the configuration and maintenance of the system.

Automatic check

The installation checks automatically whether a 64-bit program version of the software products can be installed and whether all requirements for the respective variant on your computer have been met. If necessary, any missing but necessary components or programs will be installed automatically.

> If Microsoft .NET Framework is installed, your system may have to be restarted afterwards.

General notes on hardware recommendations

The following hardware components influence the performance of a computer's toolpath calculation.

Number of cores of the CPU

The higher the number of cores of the CPU, the faster a calculation is performed if parallel processing is possible. Please note that not all *hyper*MILL® machining strategies can use the maximum number of available cores simultaneously for the calculation.

Clock rate and computing performance

Core speed describes the clock rate and computing performance of each core. More cores at the same core speed increases performance for parallelizable tasks, as more threads can be executed simultaneously. A higher core speed with the same number of cores increases performance for single threads or non-parallelizable tasks. A combination of more cores and higher core speed typically offers the best overall performance, as both parallelizable and non-parallelizable tasks benefit from the improvements.

In current processors, a distinction is made between performance cores ("big cores") with maximum computing power and higher clock speeds, and energy-efficient cores ("eco cores") with high energy efficiency, low power consumption, and lower clock speeds. Current performance cores typically support two logical processors (i.e. virtual CPU units) generated through technologies like Hyper-Threading.

For the toolpath calculation in *hyper*MILL® the **speed of the performance cores** is crucial. Therefore, it can be beneficial in some cases to restrict the calculation to the performance cores or to prioritize them for the calculation.

Main memory (RAM)

The memory requirements of *hyper*MILL® depend on the complexity of the parts to be machined. The more processor cores are used and the more parallel threads are executed during the toolpath calculation, the larger the computer's main memory (RAM) must be.

The RAM used by Windows must also be subtracted from the total size of the installed RAM. For a computer with **Windows 11**, Microsoft currently recommends at least **8 GB**, preferably **12 GB** of main memory.

The following rule of thumb applies to *hyper*MILL®:

Free main memory (RAM) before the calculation > (1 gigabyte * number of logical processors).

Example:

On a current i7 computer with Windows 11 and *hyper*MILL® in productive mode with 20 cores (8 Performance and 12 Eco), *hyper*MILL® therefore requires 28 cores * 1 GB = 28 GB free main memory.

This results in a total memory requirement of at least 40 GB main memory (RAM) (28 GB for *hyper*MILL® + 12 GB for Windows) for the computer.

Hardware component	Minimum	Recommended
Number of cores of the CPU	4 performance cores with hyper-threading (= 8 logical processors)	8 or more performance cores with hyper-threading (= 16 or more logical processors)
Clock frequency and computing power	greater than 2GHz	4 GHz for the performance cores
Main memory (RAM)	16 GB	Number of logical processors * 1 GB + 12 GB for Windows
Free hard disc space [1]	10 GB [1]	-
OpenGL-compatible graphics card [2]	-	x

Hardware component	Minimum	Recommended
USB connection (min. 2.0)	x	-

Possible operating systems		
Windows 10		x
Windows 11		x

> (1) Minimum memory space for use of the respective product; with increasing complexity of the machined parts, more memory is required.
>
> (2) Graphics card suitable for CAD/CAM workstation. Recommendation: NVIDIA Quadro with at least 4 GB.

The recommendations of the respective CAD manufacturer apply for *hyper*MILL® for Autodesk® Inventor® and *hyper*MILL® for SOLIDWORKS

The following applies to *hyper*MILL®: Correct functioning cannot be guaranteed when using `AMD-ATI` graphics cards.

Further information on graphics cards can be found in the CAD product documentation in the section **Appendix → Information for administrators → Graphics card and monitor**.

> The hardware listed there has been automatically tested for use and is being used inday-to-day work. This does not mean that *hyper*MILL® can be run only with the hardware recommended. It should run on any graphic platform with a full implementation ofOpenGL.

A graphics card with an OpenGL-accelerated graphics card driver from OpenGL version 4 is recommended. Please refer to the overview of graphics cards and graphics card drivers recommended for the use of the CAD system on the OPEN MIND website.

Windows does not support any OpenGL-accelerated drivers. As a user, you must install a manufacturer's or OEM driver for the direct use of hardware-accelerated OpenGL. These drivers are available from the websites of most graphic hardware manufacturers.

Network and licence server

If your computers are connected to a network, please note that the **maximum transfer rate of the network card** itself is a crucial factor for network speed, as are the **read and write speeds of the data storage devices** (HDD oder SSD). Both factors therefore determine the performance when calculating and creating toolpath data and when starting a Virtual Machine.

To ensure efficient licence management with minimum delay on your OPEN MIND network licence server, the data should be transferred with a latency of less than 50 ms.