proSELECTA II Manual

With proSELECTA II, a selection software for fans, GebhardtVentilatoren offers you a tool for easy configuration of different fan systems matching you special needs.

- **Summary / Introduction to proSELECTA II**
- **Settings**
- **Selection routines**

Summary / Introduction to proSELECTA II:

After having logged in successfully into **proSELECTA II** you are on the "summary" display. Here you can search for a project that already has been set up or you start with a new selection/configuration of a fan.

Search of a project: When searching for an existing project you input the project title into the line project and you select the project status according to the search criteria **"Quotation"**, **"Order"** or **"Customer"**. You have the possibility to take as search criteria project nr, customer's name, customer's nr, quotation nr or the order nr..

Click then the button „FIND".

The now appearing list of all matching projects may enable you to find what you are looking for.

The **"LOAD"** button will pop up your selected project. Example: Search of a project Beispiel - Projektsuche

List of projects: The project list shows you all fans which you already have selected previously.

Technical configuration: This area enables you to select or configure a fan immediately. By clicking the button "Technical Selection" a selection routine for a new fan is started within the index "Actual Selection". Aktuelle Auswahl .

Default Values:

Your default value setting screen is made for introducing once for the whole project contact, addresses and selection parameters for the entire project. These parameters will be used for every fan selection. According to the selection band admitted the number of fans, selected for a certain duty point, will be different.

In general:
The address data will be automatically transferred, for secure identification, to every data sheet when it printing out for a quotation.
The possibility is given to change you password or the language.
The language that you choose will then be the standard language for the entire programme.
Further on you have the possibility to select between measures according to the SI System or the US-System.
You finally can choose the number of positions after the comma you want to have displayed/printed for the prices.

Centrifugal fan settings:
In this index chapter technical selection parameters und tolerances are fixed by us. Please change these data only after having checked your required values with our specialists.

Belt drive settings: In this index chapter technical selection parameters und tolerances are fixed by us. Please change these data only after having checked your required values with our specialists.

Settings for process air fans:
Here you can fix the selection band for flow rate and total pressure. Especially when selecting direct driven fans you influence the number of fan proposals for a duty point through this procedure.

Example – Default values
Beispiel - Voreinstellungen

Actual Selection:

When loading up a certain project or when starting newly a fan selection you will get to the index "Actual Selection". This is the area where the proper selection is taking place. You first have to define in which range of fans you want to find you product: Centrifugal fans (RV), Process air fans(PV), Smoke extract fans, Fan-Filter-Units (FFU), Roof fans(DV), or Axial flow fans.
This screen offers you a search mode or a catalogue mode

- **Search mode** (Example - Search mode) (Beispiel - Suchmodus), or
- **Catalogue mode** (Example - Catalogue mode) (Beispiel - Katalogmodus)

and to continue selection.
The catalogue mode enables you – as a search through the paper catalogue - to select directly the fan if you now the range and type of fan which you are looking for.
Example: If you are targeting the fan range RZR then you follow the sequence:
Centrifugal fans --> for installation into AHU --> variable speed_ Belt drive_ Casing_ backward curved --> RZR only.
Using the search mode you find a fan by introducing the technical parameters as flow rate, pressure etc.

Technical Configuration
After having decided for a fan type you simply click on the corresponding button or the corresponding image entsprechende Bild, in order the open the search screen.
You can limit your selection if you mark the corresponding fan range in the directory tree by highlighting the RZR range, for example.

Directory Tree: The directory tree for centrifugal fans is divided in fan for AHU, free standing fans, direct driven (free standing direct) and free standing, belt driven (free standing belt)
Please note the for the following abbreviations
backw (Variable_ speedl_ inverter_casing_ backw)
for backward curved blades and
forw for forward curved blades.
The abbreviation **inverter** stands for frequency inverter control.
Going to **"Options"** you will find further parameters which can be used for the fan selection.
After having defined your selection criteria you may start your selection by activating
"Calculate Fans" and a list of results will appear.
(see example search mode) or (see example catalogue mode).
(siehe Beispiel Suchmodus) oder (siehe Beispiel Katalogmodus) .
The list of results shows all fans matching with your selection criteria. The fan having the highest total efficiency has already been highlighted. A sort mode enables you to display the list according to your wishes (see sort function for example search mode) (siehe

), by clicking on the symbols of the technical parameters.
The result list is showing the following abbreviations and units:

- **V** = Flow rate
- **Δpt** = Total pressure rise
- **pd2** = dynamic pressure at fan discharge
  The dynamic pressure is related to the flange section when ducted (Installation B or D), for free discharge (Installation A or C) it is related to the free discharge section
- **Δpfa** = static pressure
- **pv** = intake losses
  Pressure losses due to obstructions at intake as intake grid, belt drive guard, pulley, flow disturbance by close wall in AHU etc. The field „Pressure loss factor" of the index „Options" is provided to introduce the estimated losses of the different elements around the fan.
- **Pw** = Power on shaft
  The power on shaft indicates the required power of the fan shaft (w/o taking into account losses of drive, motor or inverter).
- **PN** = Motor rating
  For belt driven fans the motor selection of single speed motors is automatically made by using the safety margins for the motor rating determined by Gebhardt Ventilatoren. If another motor than the standard one is required (e.g. with a higher margin, EFF1 –motor etc.) this can be selected through the subsequent function „Motor".
- **P1** = Absorbed power by the motor or the frequency inverter.
  The value P1 indicates the absorbed power of the motor or the frequency inverter from the feed line. In addition to the power on shaft of the fan it includes the motor efficiency losses, the belt drive losses and the inverter losses, if there is one.
- **ηt** = Total efficiency of the fan (w/o drive, motor, inverter)
- **ηfaS** = static system efficiency
  indicates the system efficiency of the fan unit consisting of fan, motor, and drive. For belt driven fans it includes the belt drive losses, when using an inverter it includes also the inverter losses.
- **LwA** = A-weighted sound power level at discharge/ intake
  Acc. to DIN 45 635, part 38 there are 8 different sound measurement arrangements. In function of the type of installation selected the software is always showing a value for discharge and intake.
    - LW1 Total fan sound power level
    - LW2 Sound power level of the casing
    - LW3 Intake sound power level of ducted fan
    - LW4 Discharge sound power level of ducted fan
    - LW5 Sound power level of free suction arrangement
    - LW6 Sound power level of free discharge arrangement
    - LW7 Sound power level of the casing and free intake arrangement
    - LW8 Sound power level of the casing and free discharge arrangement
- **nv** = Fan rpm
- **Price** = Fan list price
  The list price of belt driven fans (e.g. RZR 10) includes the basic fan price w/o any option or accessory. For direct driven fans (e.g.: REM 10) this price always includes the drive motor. For direct driven speed controlled fans by inverter RZM 10 this price includes, beside the motor, also the base frame. For direct driven speed controlled fans by inverter RLM 50 this price includes, beside the motor, also the base frame and the flow meter. List prices for accessories will be found when clicking on „Next" under function „Options / Prices".
- **r.Price** = relative Price
  This price is provided for a quick appreciation of all found proposals to each other.

The best price solution is fixed to 100%. Based on this solution all other selections are displayed in relation to this base.

- **SFP** = Specific Fan Power
  The Specific Fan Power is a energy parameter for HVAC installations acc. to DIN EN 13779. It enables to compare similar fan systems to each other. There are 5 categories defined SFP1 (< 1000 W / (m³/s)) .... SFP5 (> 4000 W / (m³/s)). A low Specific Fan Power figure implies a high fan efficiency and low pressure losses in the installation.

When having taken a decision for a selected fan, highlight the line and continue by clicking on button **"Next"** .
It appears the text of the specification. Clicking on **"Go back"**, you may go to the previous screen.

Toggling "Back to selection", you will go back to the initial selection screen showing still your initial selection data.

Close the button **" Back to selection "** you find a list of alternative executions which enables you to select a different available fan execution if required.
Highlight the required execution and click button **"Other execution"**.

(Example) (Beispiel). The fan curve to the fan selected can be made appearing by clicking **"Fan Curves"**.
The duty point in the curves can be varied by clicking directly to the point which may be required. All related data to the new point will appear in the window at the left side. You also can input new duty point data into the corresponding field (V Flow rate and Δpfa static pressure) and the read duty point will change to the new pace in the curves after having activated the procedure through **"new duty point".**

Attention: This function made for information only, but allows an easy simulation of changing duties.

The modification of a duty point in the curves does not change the initial duty point of the selection even when activating **"new duty point".** (Example) (Beispiel). For a real change of the selection with a new duty you have to start a new selection routine from the beginning.

"Dimensions" (Example) (Beispiel) is helping you to check the handing and rotational direction or to modify them to your needs. When changing the handing you have to activate it by pushing "Accept". The drawing can as well be opened in a DFX Format. For this push the button at the right border.

"Motor"(Example) (Beispiel) gives you the opportunity to modify the selected motor. The actually selected motor will be highlighted. And another motor can be selected by clicking on the required type of the list displayed and finally clicking on "Accept Motor". If you want to keep the motor being initially selected pleas confirm this choice as well by activating "Accept Motor".
The motor data in the resulting data sheet are shown as follows:

- **Power.res. (Power reserve)**
  The power reserve of the motor indicates the percentage of motor rating PN which is available in relation to the power on shaft Pw of the fan. By having this power reserve it will be avoided that power increase due to modified fan rpm (belt drive adaptations), belt drive losses, air density variations, not precisely given duty points, etc. the motor will suffer from overload. The rules applied for the power reserve when

selecting a motor automatically are as follows:

- **Fans with backward curved impeller** (RZR 10; VZR 70; RER 10)
  0 kW < PW < 0,84 kW: fp = 1,3
  0,84 kW < PW < 1,76 kW; fp = 1,25
  1,76 kW < PW < 4,58 kW; fp = 1,2
  4,58 kW < PW < 9,57 kW; fp = 1,15
  9,57 kW < PW < 40 kW; fp = 1,125
  40 kW < PW < 227 kW; fp = 1,1
  Fans with forward curved impeller (TZR B0; TZR 00)
  0 kW < PW < 1,69 kW: fp = 1,3
  1,69 kW < PW < 4,4 kW; fp = 1,25
  4,4 kW < PW < 9,17 kW; fp = 1,2
  9,17 kW < PW < 227 kW; fp = 1,15
- **Rated power** = Motor rating
- **Poles** = Number of motor poles
  In function of the fan required speed the software is always proposing an motot of 2, 4 or 6 pole single speed motor.
- **Efficiency-class**
  Acc. to EU /CEMEP – standard 2 and 4 pole motors from 1,1 to 90 KW are put into 2 efficiency classes EFF 1 and EFF 2. EFF 2 = Improved Efficiency
  EFF 1 = High Efficiency
  When selecting a motor of class EFF 1 you will increase the system efficiency of your fan system considerably.

There the possibility too to change motor data **"manually"** by clicking on **"Change Motor data"**. Ensure that first the button "Accept Motor" has been activated because otherwise the fields of the motor data will stay empty. When having selected a belt driven fan e.g. a RER, you have to calculate the belt drive first using button **"Belt drive"**. (Example) (Beispiel) The selected drive is highlighted in the list of possible selections. If you prefer to choose another belt drive highlight it by clicking onto. Your new selection will be automatically taken over.

The list of possible belt drives is using the following expressions:

- **Belt type = V-belt**
- **Qty** = Quantity of V-belts or grooves of pulley
- **Profile** = Type of belt profile (SPA, SPB, SPC or SPZ)
- **Length** = Effective length of the V-belt
- **dRS-M** = Effective diameter of motor pulley
- **dRS-V** = Effective diameter of fan pulley
- **n/n(requ.)** = Ratio of effective fan rpm after selection of belts and theoretically necessary fan rpm for reaching the duty point. Only solutions are displayed which do not exceed the default value set in the field „Speed tolerance".
- **PN/Pw** = Ratio of motor rating PN to absorbed power on fan shaft Pw (Pw is the finally working rpm to the corresponding belt drive)
- **F_dyn** = Sum of the dynamic (during operation!) belt forces of all belts at the level of the pulley. The indicated figures for F_dyn are valid exclusively if the belt drive has been tensioned exactly according to the default values given with the belt data sheet. There will be given results which will not overload the fan design. V-Belt drives which will overload the motor bearings are marked with a read tick. In this case a motor with reinforced bearings has to be chosen.
- **L10h** = Nominal bearing lifetime of the fan bearing at drive side acc. to DIN ISO 281/1. Only results are given corresponding to the default values given with the belt data sheet. As the dynamic belt force is presenting the essential value for L10h their

values indicated can only be kept if the belt drive has been tensioned exactly according to the default values given with the belt data sheet. L10h is, acc. to the standard, a probability figure indicating after how many operating hours 10% of fans working under similar conditions will fail due to a bearing damage.

- **Belt Guard**= The software can select between 19 standard belt guards (R1 - R19), suitable for centre distances <= 1200 mm and for pulley diameters <= 355mm. For these sizes a standard belt guard will be displayed.
- **Belt type = Flat**
- **Profiel** = There stored 6 flat belt profiles from HABASIT comprising the profiles: F-0, F-1, S-140H, S-250H, S390H and TC-55ER), graded for app. 6 – 8 widths each. All calculations made relate to the HABASIT – Flat belts documented in this software ; they cannot be applied to products of other flat belt manufacturers.
- **Length** = Effective flat belt length
- **dRS-M** = Effective diameter of motor pulley
- **dRS-V** = Effective diameter of fan pulley
- **bRS** = Width of both flat belt pulleys
- **bR** = Width of both flat belt

Using button **"Options/Prices"** (Example) (Beispiel) the number of ordering positions and quantities can be modified. Using the button **"Add order line"** you can add further positions concerning your order. If making a change or if adding a position activate **"Accept"** for validation.

Button **"Inquiry/Print order"** (Example) (Beispiel) finally will print out your inquiry or your order of the fan selected. There is the possibility of printing them in different languages independently of the working language for your selection. Select the language of your choice.
The working language for your selection will be displayed as default value. Ther the possibility too to create a zip file for your inquiry/order. Just tick the zip-box, then activate print through the button „Print inquiry".

Technical Selection Process Air Fans:

If you have decided to choose a process air fan actually a simple seek function is available. Punch in your required data and activate **"Next"**.
Now your parameters are fed into the system and through **"Next"** the available fans are listed. You can sort your list of available fans by clicking on the technical parameter symbols.
After highlighting an fan of your choice you click on **"Next"**. The following functions do correspond to the functions described under centrifugal fans. The only difference is that under listed results you can go back and print out an order directly (Example) – Process air fans