BU VW Operations

Ramp-UP tool manual

Version 1.5



Table of Contents

[1. General Information 3](#_Toc52197685)

[1.1 Tool description 3](#_Toc52197686)

[1.2 Purpose and main use cases 3](#_Toc52197687)

[1.3 Interface 4](#_Toc52197688)

[1.3.1 Symbols and Icons used 4](#_Toc52197689)

[1.3.2 Example screen 5](#_Toc52197690)

[1.4 Abbreviations used 5](#_Toc52197691)

[1.5 Risks associated with using the tool 6](#_Toc52197692)

[2 Calculation approaches / options 7](#_Toc52197693)

[2.1 Light Approach 7](#_Toc52197694)

[2.2 FFG Approach 7](#_Toc52197695)

[3 Calculation process 8](#_Toc52197696)

[3.1 Base inputs 8](#_Toc52197697)

[3.1.1 Setting up the calculation approach 9](#_Toc52197698)

[3.1.2 Understanding the structure 9](#_Toc52197699)

[3.1.3 Special inputs 10](#_Toc52197700)

[3.2 DPCPS 12](#_Toc52197701)

[3.2.1 DPCPS Manual 12](#_Toc52197702)

[3.2.2 DPCPS Automatic 14](#_Toc52197703)

[3.2.3 DPCPS Mixed 18](#_Toc52197704)

[3.3 IPCPS 20](#_Toc52197705)

[3.3.1 IPCPS Light Approach Manual 20](#_Toc52197706)

[3.3.2 IPCPS Light Approach Automatic 21](#_Toc52197707)

[3.3.3 IPCPS FFG 24](#_Toc52197708)

[3.4 IPCCF 32](#_Toc52197709)

[3.4.1 IPCCF Light Approach Manual 32](#_Toc52197710)

[3.4.2 IPCCF Light Approach Automatic 33](#_Toc52197711)

[3.4.3 IPCCF FFG 36](#_Toc52197712)

[3.5 OPRC 57](#_Toc52197713)

[3.5.1 OPRC - Light and FFG approach 57](#_Toc52197714)

[3.5.2 OPRC - Formulas 57](#_Toc52197715)

[3.6 MCFTH 59](#_Toc52197716)

[3.6.1 MCFTH - Calculation 59](#_Toc52197717)

[3.7 Scrap 61](#_Toc52197718)

[3.7.1 Scrap - Light and FFG approach 61](#_Toc52197719)

[3.7.2 Scrap - Formulas 61](#_Toc52197720)

[3.8 PC 62](#_Toc52197721)

[3.8.1 PC - Light and FFG approach 62](#_Toc52197722)

[3.8.2 PC – Formulas 62](#_Toc52197723)

[3.9 TS 65](#_Toc52197724)

[3.9.1 TS - Light and FFG approach 65](#_Toc52197725)

[3.9.2 TS – Formulas 66](#_Toc52197726)

[3.10 PVC 69](#_Toc52197727)

[3.10.1 PVC - Light and FFG approach 69](#_Toc52197728)

[3.10.2 PVC - Formulas 73](#_Toc52197729)

[3.10.3 PVC PPE Table 85](#_Toc52197730)

[3.11 Results sheet 88](#_Toc52197731)

[4 Quick Guide 91](#_Toc52197732)

# General Information

The ramp up tool (further "tool") is an internal tool developed by the BU VW Operations team and shared to aid the Ramp up costs calculation process where applicable.

The tool aims to offer results that are trackable and extractable by various controlling tools.

Furthermore, as the tool became more detailed and complex, many formulas have been introduced and are all visible for the user during the calculation process.

Please note that the formulas are protected but may be edited when Protection mode is shut down in the "review" panel. If changes are made and the tool cannot be recovered in the traditional way or by ways offered by the authors, please download and use a fresh copy.

## Tool description

The tool consists of:

* One set up sheet (Base\_input sheet)
* One results sheet (Results)
* 9 calculation sheets (8 out of 9 offer additional calculation options for added flexibility)
* hidden sheets that aid the calculation process

## Purpose and main use cases

The tool was built and developed for these use cases:

* + - 1. In budgeting period for Midterm planning, light approach can be used based on previously gathered data (from experience, similar projects) to estimate future ramp up costs. The estimations may be closer to reality when using previously gathered data in a calculation process.
      2. Second use case is in the RFQ process where ramp up costs are a part of the business plan. The ramp up costs calculation tool offers more precision, calculation guidance, traceability/base line for future backchecks and supports overall understanding of the production concept between involved parties as they need to agree on the resulting costs.

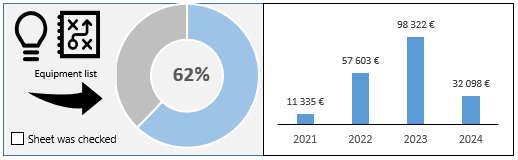
## Interface

Intended usage of the tool consists of filling the Base\_Inputs sheet first and then continuing sheet by sheet and filling additional information. These are the symbols used in the tool and an example screenshot describing their location.

### Symbols and Icons used

|  |  |  |
| --- | --- | --- |
|  | Option switch between the Light calculation approach and the FFG calculation approach - Light approach | |
|  | Option switch between the Light calculation approach and the FFG calculation approach - FFG approach | |
|  | Option switch for DPCPS - Automatic method (Available both in Light or FFG calculation approach) | |
|  | Option switch for DPCPS - Manual method (Available both in Light or FFG calculation approach) | |
|  | Option switch for IPCCF - Automatic method (Light calculation approach used) | |
|  | Option switch for IPCCF - Manual method (Light calculation approach used) | |
|  | Option switch for IPCCF - No available option (FFG calculation approach used) | |
|  | Option switch for IPCPS - Automatic method (Light calculation approach used) | |
|  | Option switch for IPCPS - Manual method (Light calculation approach used) | |
|  | Option switch for IPCPS - No available option (FFG calculation approach used) | |
|  | Macro Filter switch - No filter applied (Only allowed filter in the Base\_Inputs in filtering responsible departments) | |
|  | Button for updating the Technical ID database | |
|  | Button for opening a link to the Ramp up tool Home site | |
|  | Lightbulb - Provides hints to complete the calculation and directs to cells with missing input | |
|  | Map - Loads formulas back into their cells in case of unwanted deletion | |
|  | Navigation arrow - In PVC sheet used to quickly navigate to the PPE Equipment input table | |
|  | Navigation arrow - In PVC sheet used to quickly navigate back to the PVC main table | |
|  | | Trigger to view salaries of different employee classes in different years - hidden by default  Same is available in DPCPS, IPCPS and IPCCF |

### Example screen



a

c

d

e

f

b

1. Lightbulb – missing inputs help
2. Reset formulas button
3. Navigation arrow – used only in PVC sheet to show equipment table
4. Completion checkbox – check when the sheet is filled and/or information is complete
5. Completion graph – tracks how much information is filled in the sheet (should reach 100% when Completion checkbox is clicked)
6. Results graph – shows the results for this sheet by year

## Abbreviations used

|  |  |
| --- | --- |
| FFG | Fit for growth |
| DPCPS | Direct personnel costs, product section |
| IPCPS | Indirect personnel costs, product section |
| IPCCF | Indirect personnel costs, central function |
| OPRC | Other Personnel related costs |
| MCFTH | Material cost for training harnesses |
| PC | Production costs |
| TS | Transportation and Samples |
| PVC | Product validation costs |
| PM | Project management |
| RFQ | Request for quotation |
| D&D | Design and development |
| HR | Human resources |
| PC&L | Production, control and logistics |
| IT | Information technology |
| PPE | Production process engineering |
| SoP | Start of Production |
| Nh | Normhour |
| KSK | Customer specific harness |
| JIT | Just in time |
| WPA | Wire preparation area |
| LEPS | LEONI Production Server |
| HV | High Voltage |
| BC3O | Bordnetz control office |
| HC | Head count |
| BU | Business unit |
| QM | Quality management |
| SHE | Safety, health and environment |

## Risks associated with using the tool

As in any other calculation process, wrong result is the main risk. To avoid this, please consider these remarks:

* The quality of inputs directly influences the quality of the results
* Although the document is locked and protected from editing, no password is applied, and users are free to unlock and edit the file together with the formulas within as they wish
* The Base\_Inputs sheet and its complexity may indicate that the calculation process is automatic, however that is not the case and the user is required to doublecheck partial results of each sheet.
* Blue cells allow deletion of the build-in formula for more flexibility when needed, yet they do not indicate this state
* User may bypass the "sheet completion check" system by blindly filling the required inputs

# Calculation approaches / options

## Light Approach

This approach is easier to fill, as it requires less detailed inputs. It is more practical when we know the number of direct and indirect employees needed, or when the headcount calculation was done externally.

## FFG Approach

The FFG Approach follow LEONI standards (VA3149) more strictly, mainly calculates every indirect position separately, requiring more inputs, while also providing more accurate results.

# Calculation process

## Base inputs

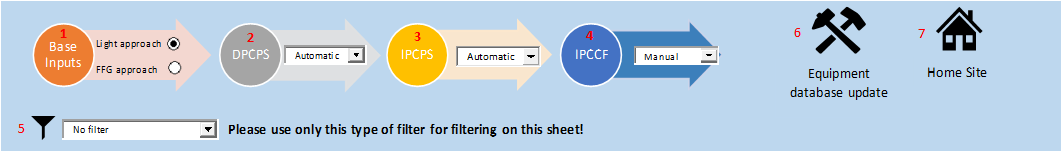
Base\_Inputs sheet is used for setting up the calculation scenario and inputs. Based on the selected approach and calculation options, only necessary input rows will be shown.

The calculation scenario and approach need to be known first, based on the decision proper selection has to be carried out. Afterwards, the PM or Sales representative need to set up their part of the inputs.

Their inputs will influence not only what is available for other departments to fill in, but also the general appearance of all other calculation sheets.

This section will not go into detail on specific inputs in the Base\_Inputs sheet as they are described in the tool itself and in following sections of this document where needed.

Exception are inputs which are macro enabled.



|  |  |  |
| --- | --- | --- |
| Nr. in picture | Item | Description |
| 1 | Option switch for the Light and FFG approach | |  | | --- | | Toggle between Light and FFG approach | | Note: It takes a few seconds before the tool manages the switch | |
| 2 | Option switch for the DPCPS sheet | Toggle between Automatic and Manual approach |
| 3 | Option switch for the IPCPS sheet | |  | | --- | | Toggle between Automatic and Manual approach | | Note: When FFG approach is chosen, IPCPS sheet is locked in FFG approach | |
| 4 | Option switch for the IPCCF sheet | |  | | --- | | Toggle between Automatic and Manual approach | | Note: When FFG approach is chosen, IPCCF sheet is locked in FFG approach | |
| 5 | Filter with macro support | Only available filter in the Base\_Inputs sheet. Regular filter would cover/uncover again inputs that aren't needed for the calculation. |
| 6 | Button for the Technical ID database update | Updates the Technical ID database in case new equipment was added. Isn't required to do. |
| 7 | Home Site | Home site enables users to download latest version of the Ramp up tool, example, manual and to provide feedback |

### Setting up the calculation approach

While the Light approach offers maximum flexibility, the FFG approach locks the IPCPS and IPCCF sheets in a standard approach for FFG.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Base\_Inputs | Light Approach | | FFG Approach | |
| DPCPS | Automatic | Manual | Automatic | Manual |
| IPCPS | Automatic | Manual | FFG | |
| IPCCF | Automatic | Manual | FFG | |
| Other sheets | No impact | | No impact | |

### Understanding the structure



**1**

**2**

**3**

**4**

**5**

|  |  |  |
| --- | --- | --- |
| Nr. in picture | Item | Description |
| 1 | Responsible department | Based on the approach, the tool contains up to 10 different departments responsible to provide inputs. |
| 2 | Description | Main description of the input required by the tool. |
| 3 | Input | Column where all the inputs in the Base\_Inputs sheet are being added. |
| 4 | Input Example | Example of an input, helps to display the correct format. |
| 5 | Additional description | If the basic description is not enough, user can consult the Additional description column for more in depth information. |

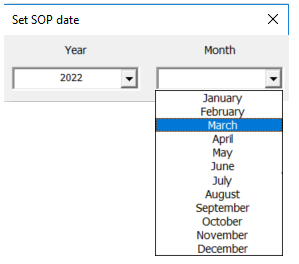
### Special inputs

Special inputs contain either complex formulas or macros.

* **Start of Production date (SoP)**

After selecting the input cell, a window will pop up.

Note: When using dual-monitor setup, the pop-up window will usually appear on the main monitor, which doesn't need to be the one where the excel tool is shown. Do not be alarmed, excel is not frozen in that case.



* **Starting dates of the prototype phases**

The input column is coloured in red when incorrectly set up or empty. After choosing the correct dates, the cell will return to default colour.

When choosing the dates, please choose from the list and start with the B Sample phase. Next phases will automatically limit the range of months, e.g. for C Sample, the range will be between Start of B Sample and start of SoP.

This is set to limit the range from which the user chooses the dates.

Empty:



Properly set up from B\_Sample phase until D\_Sample phase



* **Total employee costs and the years affected**

The years shown in the HR inputs and found between the >< symbols, are automatically set based on the PM/Sales inputs from the top of the Base\_Inputs



**1**

**2**

|  |  |
| --- | --- |
| Nr. in picture | Description |
| 1 | Total costs >>2021<< This specifies that the start of Ramp up period year is in 2021 |
| 2 | Salary increase expectation for year >> 2023 << This specifies that the percentage that the user puts in this row will affect the year 2023 |

## DPCPS

DPCPS sheet is used for calculating Direct personnel.

The calculation can be done with:

* Manual method in which the Direct personnel is written directly in the dedicated rows. No formulas are utilized. Calculation is done externally.
* Automatic method in which Base\_Inputs sheet provides most of the inputs. Directly in DPCPS there are additional options available for more precision.
* Mixed method. Here the Automatic method is chosen, but not the whole calculation approach is utilized. Some formulas are overwritten by the user.

### DPCPS Manual

When calculating with manual method, the main headcount input is entered in this sheet. Inputs required from Base\_Inputs are needed mainly to set the length of Ramp-up period, salaries and not for calculating headcount. Volume inputs is needed for the Scrap sheet, not for the headcount.

**Inputs required:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sheet | Cell | Variable | Formula | Description |
| Base\_Inputs | D10 | N/A | 3 | Start of production date (SoP) |
| Base\_Inputs | D11 | N/A | 3 | Length of the Ramp up period |
| DPCPS | Row 26 | N/A | 4 | Ordered volume |
| DPCPS | Row 34 | **A** | 5, 7 | Head count + training |
| DPCPS | Row 35 | **B** | 6, 7 | Percentage of booked costs |
| Base\_Inputs | D60 | **D** | 8 | Total costs per month in start of Ramp up period year (Direct employee) |
| Base\_Inputs | D67 | **E** | 8 | Salary increase in following year after start of Ramp up |
| Base\_Inputs | D68 | **E** | 8 | Salary increase in 2nd following year after start of Ramp up |
| Base\_Inputs | D69 | **E** | 8 | Salary increase in 3rd following year after start of Ramp up |
| DPCPS | Column AO | N/A |  | Values in SOP month. It is used for calculation of indirect HC. |
| DPCPS | C22 | **F** | 6 | Percentage of Directs' costs booked to this ramp up |
| DPCPS | B10 | N/A |  | Sheet checking procedure Yes/No |
| DPCPS | C16 | N/A |  | Switch between automatic and manual method of calculation |
| DPCPS | C40 | N/A |  | Option to show the salaries in different years |
| DPCPS | C41-44 | **C** | 7, 8 | Option to change the salaries for direct employees |

**DPCPS Manual – Formulas:**





C

|  |  |  |
| --- | --- | --- |
| Nr. of Formula | Item | Description |
| 1 | Automatic calculation or manual input of HC | Input - Switch between automatic and manual method of calculation |
| 2 | Percentage of Directs' costs booked to this ramp up | Input - How much of the costs in this sheet will be booked to the new, calculated project. Default is 100%, but in some scenarios, like ramp down with ramp up, the costs for already employed MA can be shared. |
| 3 | Month | The quantity of months is based on the length of the ramp up period.  Specific months are then populated as a range between SoP month and back to the first ramp up period month. |
| 4 | Ordered volume - calculated | Volumes need to be entered manually in manual mode.  Not used for headcount calculation, but it is used for some Indirect positions. |
| 5 | Head count + training | Input - Needed headcount of direct personnel including those in training and not yet directly producing |
| 6 | Percentage of booked costs per month | Is filled with the value **F** from C22, if there is any production in the given month.  Can be overwritten manually, if there are differences between months. |
| 7 | Direct personnel costs | Cost for each month is calculated from headcount in that month, salary in that month (depending on year) and percentage of booked costs |
| 8 | Salaries in a given year | Directs' salaries can be adjusted here, or let the tool calculate them from monthly costs **D** and yearly increases **E**.  Calculation of **C** for next year: **D** is salary expenses from current year and **E** is the increase for next year. |

### DPCPS Automatic

Automatic method focuses on calculating the headcount and the related costs from values of ordered volumes, efficiency of the production, normhours needed for one harness, etc.

Main inputs for automatic method are taken from Base\_Inputs sheet. If needed, these inputs can be fine-tuned and overridden from DPCPS sheet.

**Inputs required:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sheet | Cell | Variable | Formula | Description |
| Base\_Inputs | D10 | N/A |  | Start of production date (Base Inputs cell D10) |
| Base\_Inputs | D11 | **G** | 8, 10 | Length of the Ramp up period (Base Inputs cell D11) |
| Base\_Inputs | D14 | **O** | 2, 9 | Volume during the internal Start of production month (Base Inputs cell D14) |
| Base\_Inputs | D37 | **D** | 10, 16 | Efficiency in SoP (Base Inputs cell D37) |
| Base\_Inputs | D38 | **E** | 10 | Efficiency in start of Ramp up period (Base Inputs cell D38) |
| Base\_Inputs | D66 | **F** | 10, 11, 16 | Average fluctuation + absenteeism of direct personnel (Base Inputs cell D66) |
| DPCPS | Row 28 | N/A |  | Fluctuation and absenteeism |
| Base\_Inputs | D12 | **H** | 12 | Normhours per harness/ per set of harnesses/ per car set (Base Inputs cell D12) |
| DPCPS | C19 | **A** | 3, 4 | Custom Pilot's team size (cell C19) |
| Base\_Inputs | D23 | **B** | 3 | Select if the product is KSK or Variant (Base Inputs cell D23) |
| Base\_Inputs | D59 | **I** | 16 | Monthly working hours (Base Inputs cell D59) |
| Base\_Inputs | D36 | **J** | 16 | Training period and recruitment deadline, for Direct employees to handle SoP volumes (Base Inputs cell D36) |
| Base\_Inputs | D89 | **C** | 6 | Level of production automation [High Voltage only] (Base Inputs cell D89). |
| DPCPS | Row 35 | N/A | 18 | Percentage of booked costs (row 35) |
| Base\_Inputs | D60 | **L** | 19 | Direct employee Total costs per month, in start of Ramp up year (Base Inputs cell D60) |
| Base\_Inputs | D67 | **M** | 19 | Salary increase in following year after start of Ramp up (Base Inputs cell D67) |
| Base\_Inputs | D68 | **M** | 19 | Salary increase in 2nd following year after start of Ramp up (Base Inputs cell D68) |
| Base\_Inputs | D69 | **M** | 19 | Salary increase in 3rd following year after start of Ramp up (Base Inputs cell D69) |
| DPCPS | Column AO | N/A |  | Values in SOP month. It is used for calculation of indirect HC. |
| DPCPS | C22 | **K** | 17 | Percentage of Directs' costs booked to this ramp up (C22) |
| DPCPS | B10 | N/A |  | Sheet checking procedure Yes/No |
| DPCPS | C16 | N/A |  | Switch between automatic and manual method of calculation |
| DPCPS | C40 | N/A |  | Option to show the salaries in different years |
| DPCPS | C41-44 | **N** | 18, 19 | Option to change the salaries for direct employees |
| DPCPS | C17 | N/A | 9 | Ramp up period starting volume |

**DPCPS Automatic – Formulas:**





|  |  |  |
| --- | --- | --- |
| Nr. of Formula | Item | Description |
| 1 | Automatic calculation or manual input of HC | Input - Switch between automatic and manual method of calculation |
| 2 | Ramp up period starting volume | Input - Can be used to override the default value for ordered volume in first month of production. Default value is 1% of SOP month volume **O**. |
| 3 | Pilot team's size | Size of the pilot team is determined either from product type chosen in **B** (Variant/KSK = 15/25) or taken from input **A**  If "**A** is not empty", then Pilot team's size = **A**  If "**B** = Variant", then Pilot team's size = 15  If "**B** = KSK", then Pilot team's size = 25 |
| 4 | Custom pilot team's size | Input - Size of the pilot team can be customized |
| 5 | Pilot team's deployment | How many months before SoP is the pilot team deployed - Input taken from Base\_inputs D11 |
| 6 | Level of Automation | Input - the normhours needed to produce a harness can be lowered by this percentage.  This line shows the value of Input from Base\_inputs D89 = **C** |
| 7 | Percentage of Directs' costs booked to this ramp up | Input - How much of the costs in this sheet will be booked to the new, calculated project. Default is 100%, but in some scenarios, like ramp down with ramp up, the costs for already employed MA can be shared. |
| 8 | Month | The quantity of months is based on the length of the ramp up period **G**.  Specific months are then populated as a range between SoP month and back to the first ramp up period month. |
| 9 | Ordered volume - calculated | Volumes are calculated automatically from the SoP volume value **O**.  Volumes for every month are filled linearly starting from 1% of the final value. If value C17 is not empty, it is used as the starting percentage instead. |
| 10 | Efficiency E1 | Efficiency is calculated linearly for every month where there are ordered volumes.  The values range from values D38 (**E**) to D37 (**D**) from Base\_inputs.  Final value of efficiency is lowered by the value of fluctuation and absenteeism **F** (Base\_inputs D66)  If "vol. in current month = 0", then Eff. E1 = 0%  else If "vol. in previous month = 0", then Eff. E1 = **E**-**F**  else "Eff. In current m." = ((**D** - **E**) / **G**) + "Eff. In previous m." |
| 11 | Fluctuation and absenteeism | Input - can be overwritten manually, otherwise has the value from **F** (Base\_inputs D66) |
| 12 | Normhours per month | Calculates normhours of workcontent for given month. If there is any level of automation, normhours are lowered by percentage **C** (Base\_inputs D89) |
| 13 | Max normhours covered by pilot team | Calculates how many normhours can be produced by the pilot team without hiring any additional direct personnel  The formula considers working hours **I**, Efficiency in given month (**10**) and Pilot team size (**3**) |
| 14 | Normhours over pilot team's limit | The difference between normhours that need to be produced and normhours by pilot team. If the difference is negative, we consider 0.  This is the amount of normhours, that need to be produced by direct personnel |
| 15 | Pilot team | The size of the pilot team for every month, filled with values from formula (**3**) |
| 16 | Head count + training | Calculates the needed number of direct employees, including the pilot team and people in training.  The number of direct employees is determined by: normhours over pilot team's limit (**14**), monthly working hours **I**, efficiency in a given month (**10**)  The number of months people need to be trained in advance is determined by value **J**. If the month is in this range, the calculation uses normhour (**14**) and efficiency values (**D**-**F**) from SoP month.  Standard month:  If the month is **J** months before SoP or later: |
| 17 | Percentage of booked costs | Is filled with the value **K** from C22, if there is any production in the given month.  Can be overwritten manually, if there are differences between months. |
| 18 | Direct personnel costs | Cost for each month is calculated from headcount in that month (**16**), salary in that month **N** (depending on year) and percentage of booked costs (**17**). |
| 19 | Salaries in a given year | Directs' salaries can be adjusted here, or let the tool calculate them from monthly costs **L** and yearly increases **M**  Calculation of **N** for next year: **L** is salary expenses from current year and **M** is the increase for next year |

### DPCPS Mixed

Same as the Automatic method, but not the whole calculation approach is utilized. Some formulas are overwritten by user inputs, mainly ordered volume values.

However, when entering custom values for volumes, be sure to check and adjust the values for efficiency. If any month has 0 ordered volume, the tool automatically fills the next month's efficiency with the starting efficiency (Base\_inputs D38)

Similarly, when changing values for fluctuation for separate months, make sure to adjust efficiency value accordingly (The fluctuation value doesn't affect the month's efficiency separately for each month).

## IPCPS

IPCPS sheet is used for calculating the Indirect personnel, dedicated for the Product section.

### IPCPS Light Approach Manual

For calculating the IPCPS sheet in Light Approach Manual, Base\_Inputs data and manual inputs in IPCPS sheet are necessary.

**Inputs required:**

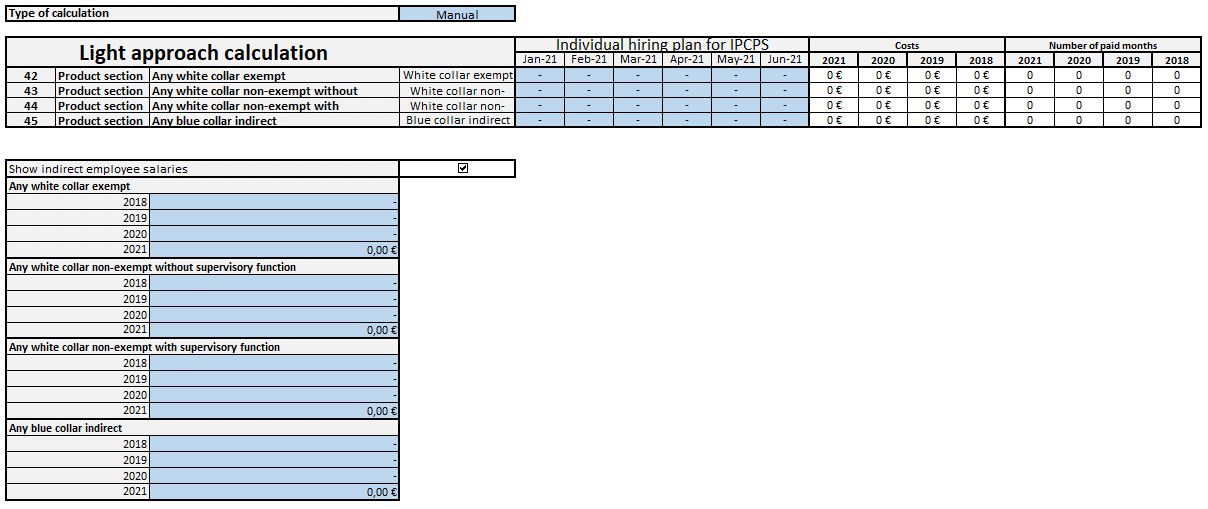
|  |  |  |  |
| --- | --- | --- | --- |
| Sheet | Cell | Variable | Description |
| Base\_Inputs | D10 | N/A | Start of Production date (SoP) |
| Base\_Inputs | D11 | N/A | Length of the Ramp up period |
| Base\_Inputs | D61 | **A** | Total costs per month in start of Ramp up period year (Indirect blue collar employee) |
| Base\_Inputs | D62 | N/A | Total costs per month in start of Ramp up period year (Indirect white collar non-exempt with supervisory function) |
| Base\_Inputs | D63 | N/A | Total costs per month in start of Ramp up period year (Indirect white collar non-exempt without supervisory function) |
| Base\_Inputs | D64 | N/A | Total costs per month in start of Ramp up period year (Indirect white collar exempt) |
| Base\_Inputs | D67 | **B** | Salary increase in following year after start of Ramp up |
| Base\_Inputs | D68 | N/A | Salary increase in 2nd following year after start of Ramp up |
| Base\_Inputs | D69 | N/A | Salary increase in 3rd following year after start of Ramp up |
| IPCPS | row 25 - 28 | **C** | Hiring plan (all blue cells) |
| IPCPS | E81 - E99 | **D** | Option to directly rewrite salaries for each category in each year |
| IPCPS | B9 | N/A | Sheet was not checked |

The calculation process can be thus influenced only by changing the above-mentioned inputs

**IPCPS Light Approach Manual – Formulas:**

The tool calculates in each year what are the costs for each category based on this formula:

Costs in a following year after start of Ramp up for specific category:



**D**

**C**

### IPCPS Light Approach Automatic

For calculating the IPCPS sheet in Light Approach Automatic, Base\_Inputs data and manual inputs in IPCPS sheet are necessary.

**Inputs required:**

|  |  |  |  |
| --- | --- | --- | --- |
| Sheet | Cell | Variable | Description |
| Base\_Inputs | D10 | N/A | Start of Production date (SoP) |
| Base\_Inputs | D11 | N/A | Length of the Ramp up period |
| Base\_Inputs | D61 | **A** | Total costs per month in start of Ramp up period year (Indirect blue-collar employee) |
| Base\_Inputs | D62 | **A** | Total costs per month in start of Ramp up period year (Indirect white collar non-exempt with supervisory function) |
| Base\_Inputs | D63 | **A** | Total costs per month in start of Ramp up period year (Indirect white collar non-exempt without supervisory function) |
| Base\_Inputs | D64 | **A** | Total costs per month in start of Ramp up period year (Indirect white-collar exempt) |
| Base\_Inputs | D67 | **B** | Salary increase in following year after start of Ramp up |
| Base\_Inputs | D68 | **B** | Salary increase in 2nd following year after start of Ramp up |
| Base\_Inputs | D69 | **B** | Salary increase in 3rd following year after start of Ramp up |
| DPCPS | B7 | **C** | DPSPC list completed on 100%; especially HC in SOP month |
| IPCPS | F16 | N/A | Start of hiring of indirect HC |
| IPCPS | F17 | **D** | Percentage out of direct people for white collar exempt is not set (cell F17) |
| IPCPS | F18 | **D** | % out of direct people for white collar without supervisory function is not set (cell F18) |
| IPCPS | F19 | **D** | % out of direct people for white collar with supervisory function is not set (cell F19) |
| IPCPS | F20 | **D** | Percentage out of direct people for blue collars indirect is not set (cell F20) |
| IPCPS | F21 | **E** | Ramp up period starting headcount - only option; not required |
| IPCPS | E81 - E99 | **F** | Option to directly rewrite salaries for each category in each year |
| IPCPS | B9 | N/A | Sheet was not checked |

The calculation process can be thus influenced only by changing the above-mentioned inputs.

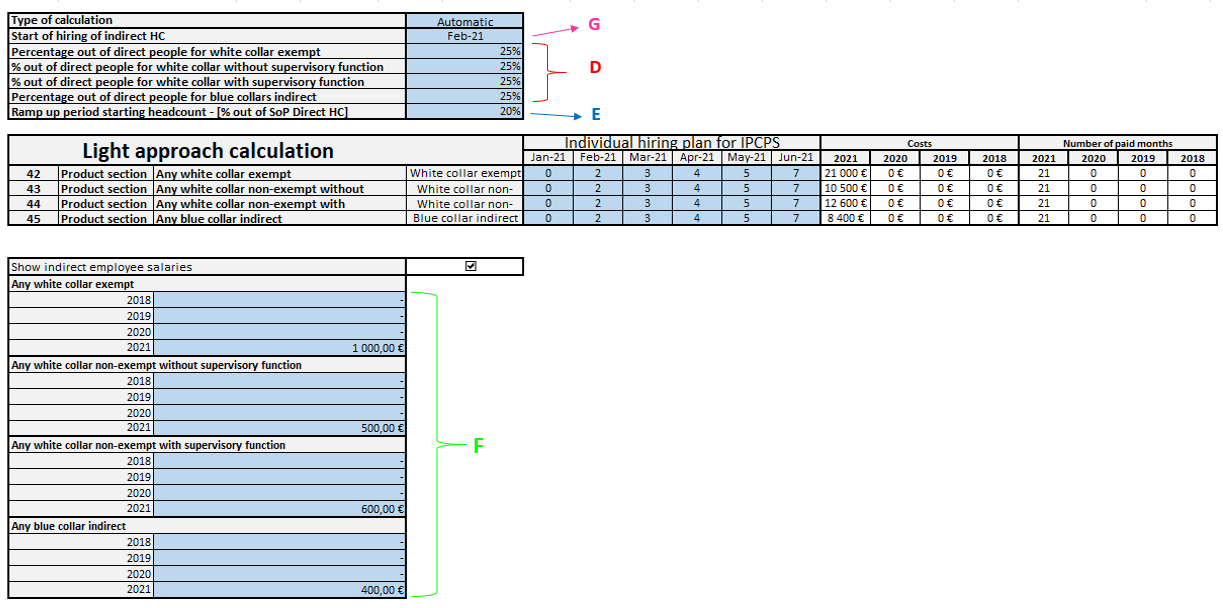
**IPCPS Light Approach Automatic – Formulas:**

The tool calculates in each year what are the costs for each category based on linear increasing of HC from 1% or own value.

Costs in a following year after start of Ramp up for specific category:

**or**

**or**



|  |  |  |  |
| --- | --- | --- | --- |
| Nr. of Formula | Item | Description | Inputs |
| 42 | Any white collar exempt | Calculated from **G** as linear increasing from 1% or **E** to 100% =( **D** x **C** )multiply by salary for specific category and specific year | ***G*** *Start of hiring of indirect HC*  ***D*** *Percentage out of direct people for white collar exempt*  ***A*** *Total costs per month in start of Ramp up period year (Indirect white collar exempt)*  ***B*** *Salary increase in specific year after start of Ramp up*  ***F*** *Can replace* ***A*** *and* ***B*** |
| 43 | Any white collar non-exempt w/o supervisory function | Calculated from **G** as linear increasing from 1% or **E** to 100% =( **D** x **C** )multiply by salary for specific category and specific year | ***G*** *Start of hiring of indirect HC*  ***D*** *Percentage out of direct people for white collar non-exempt without supervisory function*  ***A*** *Total costs per month in start of Ramp up period year (Indirect white collar non-exempt without supervisory function)*  ***B*** *Salary increase in specific year after start of Ramp up*  ***F*** *Can replace* ***A*** *and* ***B*** |
| 44 | Any white collar non-exempt with supervisory function | Calculated from **G** as linear increasing from 1% or **E** to 100% =( **D** x **C** )multiply by salary for specific category and specific year | ***G*** *Start of hiring of indirect HC*  ***D*** *Percentage out of direct people for white collar non-exempt with supervisory function*  ***A*** *Total costs per month in start of Ramp up period year (Indirect white collar non-exempt with supervisory function)*  ***B*** *Salary increase in specific year after start of Ramp up*  ***F*** *Can replace* ***A*** *and* ***B*** |
| 45 | Any blue collar indirect | Calculated from **G** as linear increasing from 1% or **E** to 100% =( **D** x **C** )multiply by salary for specific category and specific year | ***G*** *Start of hiring of indirect HC*  ***D*** *Percentage out of direct people for blue collar indirect*  ***A*** *Total costs per month in start of Ramp up period year (Indirect blue collar)*  ***B*** *Salary increase in specific year after start of Ramp up*  ***F*** *Can replace* ***A*** *and* ***B*** |

### IPCPS FFG

For calculating the IPCPS sheet in FFG Approach, Base\_Inputs data and manual inputs in IPCPS sheet are necessary.

All blue cells for each postion must be rechecked and reconsidered based on specific project and experiences.

For each position, required months before SoP are available. Costs are calculated based on number of HC on the position, required months, and salaries.

**Inputs required:**

|  |  |  |  |
| --- | --- | --- | --- |
| Sheet | Cell | In formula | Description |
| IPCPS | F34:H74 | N/A | FFG table (blue cells) |
| IPCPS | E81 - E99 | N/A | Option to directly rewrite salaries for each category in each year |
| Base\_Inputs | D9 | For each | Project scenario |
| Base\_Inputs | D10 | For each | Start of Production date (SoP) |
| Base\_Inputs | D11 | For each | Length of the Ramp up period |
| Base\_Inputs | D61 | If present | Total costs per month in start of Ramp up period year (Indirect blue collar employee) |
| Base\_Inputs | D62 | If present | Total costs per month in start of Ramp up period year (Indirect white collar non-exempt with supervisory function) |
| Base\_Inputs | D63 | If present | Total costs per month in start of Ramp up period year (Indirect white collar non-exempt without supervisory function) |
| Base\_Inputs | D64 | If present | Total costs per month in start of Ramp up period year (Indirect white collar exempt) |
| Base\_Inputs | D67 | If applicable | Salary increase in following year after start of Ramp up |
| Base\_Inputs | D68 | If applicable | Salary increase in 2nd following year after start of Ramp up |
| Base\_Inputs | D69 | If applicable | Salary increase in 3rd following year after start of Ramp up |
| Base\_Inputs | D132 | 27 | Average normhours per shift in assembly for this project |
| Base\_Inputs | D97 | 13 | Number of cutting machines in the complete plant, including the calculated project |
| Base\_Inputs | D41 | 7,13,25 | Shift model in the cutting room for this project during SoP |
| Base\_Inputs | D42 | 8,14 | Shift model in the WPA for this project during SoP |
| Base\_Inputs | D45 | 26,37,38,41 | Shift model in the assembly during SoP |
| Base\_Inputs | D71 | 5 | Number of all employees working for the particular Business unit when the calculated project reaches average normhours |
| Base\_Inputs | D133 | 26,41 | Headcount estimation in assembly per shift for this project |
| Base\_Inputs | D52 | 21,23 | Number of production segments planned in the production plant, including the calculated project |
| Base\_Inputs | D130 | 2,7,9 | Cutting Room work content ratio in the project |
| Base\_Inputs | D131 | 3,8,10 | WPA room work content ratio in the project |
| Base\_Inputs | D134 | 32,33,34 | Quantity of wires per average complete order |
| Base\_Inputs | D135 | 32,33,34 | Number of unique splices within the calculated project |
| Base\_Inputs | D138 | 32,33,34 | Number of unique twisted wire combinations |
| Base\_Inputs | D32 | 32,33,34 | Number of all procured parts |
| Base\_Inputs | D28 | 32 | Selectioin if the product is a JIT or a NON JIT |
| Base\_Inputs | D140 | 35,36 | Number of connectors within the calculated project |
| Base\_Inputs | D142 | 37,38 | Number of small harnesses in the calculated project (Under 50 wires) |
| Base\_Inputs | D143 | 37,38 | Number of medium harnesses in the calculated project (Under 200 wires) |
| Base\_Inputs | D144 | 37,38 | Number of big harnesses in project (Over 200 wires) |
| DPCPS | AO34 | 2,3,7,8,9,10 | Number of direct employees |
| PVC | Equipment list | 25 | Number of cutting machines in equipment list |
| PVC | Equipment list | 25 | Number of machines in subassembly in equipment list |
| IPCPS | B9 | N/A | Sheet was not checked |

**IPCPS FFG – Formulas:**



|  |  |  |  |
| --- | --- | --- | --- |
| Nr. of Formula | Item | Description | Inputs |
| 1 | Head of Cutting & WPA Plant | Only if greenfield or brownfield | *Project scenario* |
| 2 | Segment Leader Cutting | 0 for carry over. Number of direct employees x cutting room work content ratio / 350 | *Cutting Room work content ratio in the project*  *Number of direct employees*  *Project scenario* |
| 3 | Segment Leader WPA | 0 for carry over. Number of direct employees x WPA room work content ratio / 350 | *WPA room work content ratio in the project*  *Number of direct employees*  *Project scenario* |
| 4 | Production Engineering Team Leader Cutting & WPA | Only manual | No inputs |
| 5 | Production Engineer Cutting & WPA | If number of employees: 0 HC < **600** < 1 HC < **3000** < 2 HC | ***A****, Number of all employees working for the particular Business unit when the calculated project reaches average normhours*  *Project scenario* |
| 6 | OEE Coordinator Cutting & WPA | Only if greenfield or brownfield | *Project scenario* |
| 7 | Shift Leader Cutting | 0 for carry over. Number of direct employees x cutting room work content ratio / 50 but at least 1 HC per shift in cutting room | *Cutting Room work content ratio in the project*  *Number of direct employees*  *Shift model in the cutting room for this project during SoP*  *Project scenario* |
| 8 | Shift Leader WPA | 0 for carry over. Number of direct employees x WPA room work content ratio / 50 but at least 1 HC per shift in WPA room | *WPA room work content ratio in the project*  *Number of direct employees*  *Shift model in the WPA for this project during SoP*  *Project scenario* |
| 9 | Team Facilitator Cutting | 0 for carry over. Number of direct employees x cutting room work content ratio / 15 | *Cutting Room work content ratio in the project*  *Number of direct employees*  *Project scenario* |
| 10 | Team Facilitator WPA | 0 for carry over. Number of direct employees x WPA room work content ratio / 15 | *WPA room work content ratio in the project*  *Number of direct employees*  *Project scenario* |
| 11 | Scrap Control Cutting | Only if greenfield or brownfield | *Project scenario* |
| 12 | Scrap Control WPA | Only if greenfield or brownfield | *Project scenario* |
| 13 | Line Runner Cutting 1 | 0 for carry over. Number of cutting machines / 20 x Shift model in the cutting room | *Number of cutting machines in the complete plant, including the calculated project*  *Shift model in the cutting room for this project during SoP*  *Project scenario* |
| 14 | Line Runners WPA 1 | 0 for carry over. 1HC per Shift in the WPA room | *Shift model in the WPA for this project during SoP*  *Project scenario* |
| 15 | Line Runner Cutting 2 | 1 HC for each scenario with new production section | *Project scenario* |
| 16 | Line Runners WPA 2 | 1 HC for each scenario with new production section | *Project scenario* |



|  |  |  |  |
| --- | --- | --- | --- |
| Nr. of Formula | Item | Description | Inputs |
| 17 | Head of Product Section | 1 HC for each scenario with new production section | *Project scenario* |
| 18 | Assistant of Product Section (if needed) | 1 HC for each scenario with new production section | *Project scenario* |
| 19 | Leader QM Cutting & WPA | 1 HC only if new building | *Project scenario* |
| 20 | Leader QM Product Section | 1 HC for each scenario with new production section | *Project scenario* |
| 21 | Team Leader Q Segment | 0 for carry over. 1HC per production segments in the production plant | *Number of production segments planned in the production plant, including the calculated project*  *Project scenario* |
| 22 | Team Leader Q-Projects | 1 HC for each scenario with new production section | *Project scenario* |
| 23 | Quality Officer Q-Segment | 0 for carry over. 1HC per production segments in the production plant | *Number of production segments planned in the production plant, including the calculated project*  *Project scenario* |
| 24 | Quality Officer Q-Project | 1 HC for each scenario with new production section | *Project scenario* |
| 25 | Quality Auditor Q-Segment cutting + WPA | 0 for carry over. 1 HC per 20 machines in cutting room and subassembly for each shift in cutting room | *Project scenario*  *Shift model in the cutting room for this project during SoP*  *Number of cutting machines in equipment list*  *Number of machines in subassembly in equipment list* |
| 26 | Quality Auditor Q-Segment assembly | 0 for carry over. Headcount estimation in assembly per shift / 60 x Shift model in assembly | *Headcount estimation in assembly per shift for this project*  *Shift model in the assembly during SoP*  *Project scenario* |
| 27 | Quality Auditor Q-Project | 0 for carry over. 1 HC per 1000 normhours in assembly. | *Project scenario*  *Average normhours per shift in assembly for this project* |
| 28 | Team Leader Customer Contact | 1 HC for each scenario with new production section | *Project scenario* |
| 29 | Shift Leader QM | 0 for carry over. 1 HC if night shift (Shift model WPA > 2) | *Shift model in the WPA for this project during SoP* |
| 30 | QM Data Entry | 1 HC for each scenario with new production section | *Project scenario* |



|  |  |  |  |
| --- | --- | --- | --- |
| Nr. of Formula | Item | Description | Inputs |
| 31 | Team Leader Production Engineering | 1 HC for each scenario with new production section | *Project scenario* |
| 32 | Production Engineer | 0 for carryover. (Quantity of wires + Nr. Of unique splices x 20 + Nr. Of unique twisted wires x 10 + Nr. Of procured parts)/100/if JIT then 10 or NONJIT then 12 | *Project scenario*  *Quantity of wires per average complete order*  *Number of unique splices within the calculated project*  *Number of unique twisted wire combinations*  *Number of all procured parts*  *Selectioin if the product is a JIT or a NON JIT* |
| 33 | Prod. & Develop. Engineer I [KSK] | 0 for carryover. (Quantity of wires + Nr. Of unique splices x 20 + Nr. Of unique twisted wires x 10 + Nr. Of procured parts)/100/55 - Nr. Of Prod. & Develop. Engineer II [KSK] | *Project scenario*  *Quantity of wires per average complete order*  *Number of unique splices within the calculated project*  *Number of unique twisted wire combinations*  *Number of all procured parts* |
| 34 | Prod. & Develop. Engineer II [KSK] | 0 for carryover. (Quantity of wires + Nr. Of unique splices x 20 + Nr. Of unique twisted wires x 10 + Nr. Of procured parts)/100/55/2 | *Project scenario*  *Quantity of wires per average complete order*  *Number of unique splices within the calculated project*  *Number of unique twisted wire combinations*  *Number of all procured parts* |
| 35 | Prod. Engineer Board Design I | 0 for carryover. (Nr. Of connectors)/300/2 | *Project scenario*  *Number of connectors within the calculated project* |
| 36 | Prod. Engineer Board Design II [KSK] | 0 for carryover. (Nr. Of connectors)/300 - Nr. Of Prod. Engineer Board Design I | *Project scenario*  *Number of connectors within the calculated project* |
| 37 | Prod. Engineering Specialist I | (Nr. Of small harnesses > 0 then 1 x Shift model in the assembly during SoP + Nr. Of middle harnesses > 0 then 2 x Shift model in the assembly during SoP x Nr. Of middle harnesses + Nr. Of big harnesses > 0 then 2 x Shift model in the assembly during SoP x Nr. Of big harnesses) - Prod. Engineering Specialist II | *Project scenario*  *Shift model in the assembly during SoP*  *Number of small harnesses in the calculated project (Under 50 wires)*  *Number of medium harnesses in the calculated project (Under 200 wires)*  *Number of big harnesses in project (Over 200 wires)* |
| 38 | Prod. Engineering Specialist II | (Nr. Of small harnesses > 0 then 1 x Shift model in the assembly during SoP + Nr. Of middle harnesses > 0 then 2 x Shift model in the assembly during SoP x Nr. Of middle harnesses + Nr. Of big harnesses > 0 then 2 x Shift model in the assembly during SoP x Nr. Of big harnesses)/2 | *Project scenario*  *Shift model in the assembly during SoP*  *Number of small harnesses in the calculated project (Under 50 wires)*  *Number of medium harnesses in the calculated project (Under 200 wires)*  *Number of big harnesses in project (Over 200 wires)* |
| 39 | Product Segment Leader | 0 for carryover. | *Project scenario* |
| 40 | Prototype Shift or Segment Leader | 1 HC for each scenario with new production section | *Project scenario* |
| 41 | Shift Leader Assembly | Headcount estimation in assembly per shift for this project / Shift model in the assembly during SoP / 70 \* Shift model in the assembly during SoP | *Project scenario*  *Shift model in the assembly during SoP*  *Headcount estimation in assembly per shift for this project* |

## IPCCF

IPCCF sheet is used for calculating the Indirect personnel, dedicated for the Product section.

### IPCCF Light Approach Manual

For calculating the IPCCF sheet in Light Approach Manual, Base\_Inputs data and manual inputs in IPCCF sheet are necessary.

**Inputs required:**

|  |  |  |  |
| --- | --- | --- | --- |
| Sheet | Cell | Variable | Description |
| Base\_Inputs | D10 | N/A | Start of production date |
| Base\_Inputs | D11 | N/A | Length of the Ramp up period |
| Base\_Inputs | D61 | **A** | Total costs per month in start of Ramp up period year (Indirect blue collar employee) |
| Base\_Inputs | D62 | N/A | Total costs per month in start of Ramp up period year (Indirect white collar non-exempt with supervisory function) |
| Base\_Inputs | D63 | N/A | Total costs per month in start of Ramp up period year (Indirect white collar non-exempt without supervisory function) |
| Base\_Inputs | D64 | N/A | Total costs per month in start of Ramp up period year (Indirect white collar exempt) |
| Base\_Inputs | D67 | **B** | Salary increase in following year after start of Ramp up |
| Base\_Inputs | D68 | N/A | Salary increase in 2nd following year after start of Ramp up |
| Base\_Inputs | D69 | N/A | Salary increase in 3rd following year after start of Ramp up |
| IPCCF | row 25 - 28 | **C** | Hiring plan (all blue cells) |
| IPCCF | B9 | N/A | Sheet was not checked |

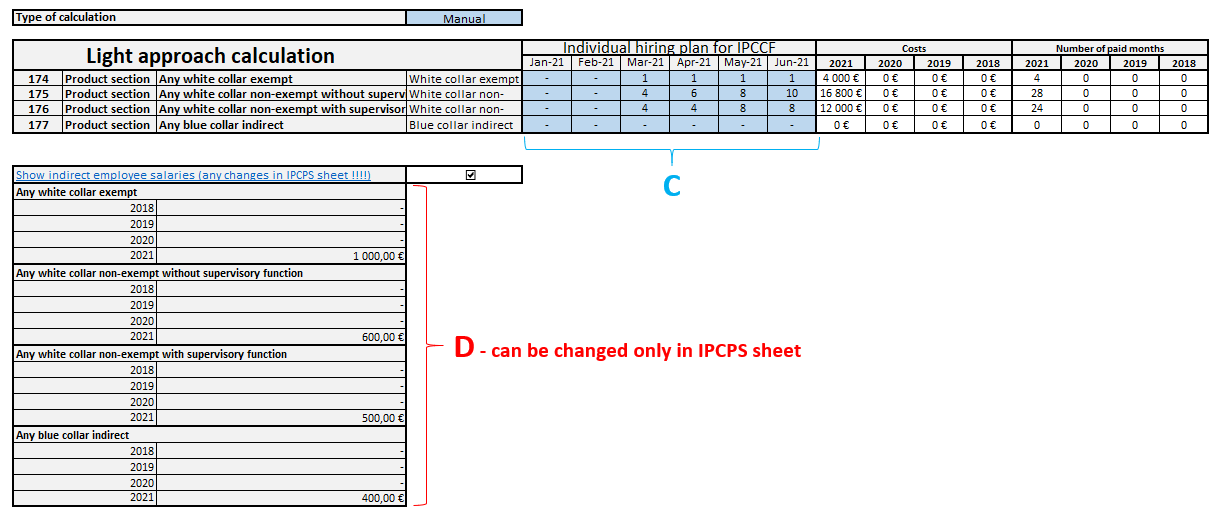
The calculation process can be thus influenced only by changing the above mentioned inputs.

**IPCPS Light Approach Manual – Formulas:**

The tool calculates in each year what are the costs for each category based on this formula:

Costs in a following year after start of Ramp up for specific category:

**D** can be manually set only in IPCPS sheet.



### IPCCF Light Approach Automatic

For calculating the IPCCF sheet in Light Approach Automatic, Base\_Inputs data and manual inputs in IPCCF sheet are necessary.

**Inputs required:**

|  |  |  |  |
| --- | --- | --- | --- |
| Sheet | Cell | Variable | Description |
| Base\_Inputs | D10 | N/A | Start of production date |
| Base\_Inputs | D11 | N/A | Length of the Ramp up period |
| Base\_Inputs | D61 | **A** | Total costs per month in start of Ramp up period year (Indirect blue collar employee) |
| Base\_Inputs | D62 | **A** | Total costs per month in start of Ramp up period year (Indirect white collar non-exempt with supervisory function) |
| Base\_Inputs | D63 | **A** | Total costs per month in start of Ramp up period year (Indirect white collar non-exempt without supervisory function) |
| Base\_Inputs | D64 | **A** | Total costs per month in start of Ramp up period year (Indirect white collar exempt) |
| Base\_Inputs | D67 | **B** | Salary increase in following year after start of Ramp up |
| Base\_Inputs | D68 | **B** | Salary increase in 2nd following year after start of Ramp up |
| Base\_Inputs | D69 | **B** | Salary increase in 3rd following year after start of Ramp up |
| DPCPS | B7 | **C** | DPSPC list completed on 100%; especially HC in SOP month |
| IPCCF | F16 | N/A | Start of hiring of indirect HC |
| IPCCF | F17 | **D** | Percentage out of direct people for white collar exempt |
| IPCCF | F18 | **D** | % out of direct people for white collar without supervisory function |
| IPCCF | F19 | **D** | % out of direct people for white collar with supervisory function |
| IPCCF | F20 | **D** | Percentage out of direct people for blue collars indirect |
| IPCCF | F21 | **E** | Ramp up period starting headcount - only option; not required |
| IPCCF | B9 | N/A | Sheet was not checked |

The calculation process can be thus influenced only by changing the above mentioned inputs.

**IPCPS Light Approach Automatic – Formulas:**

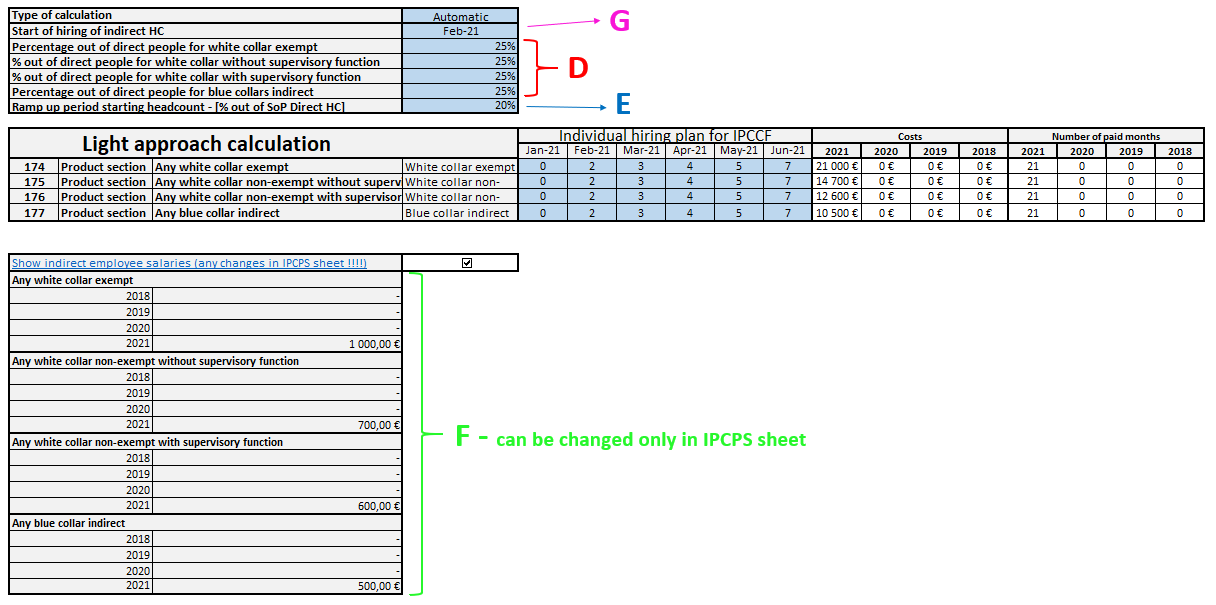
The tool calculates in each year what are the costs for each category based on linear increasing of HC from 1% or own value.

Costs in a following year after start of Ramp up for specific category:

**or**

**or**

**F** can be manually set only in IPCPS sheet.



|  |  |  |  |
| --- | --- | --- | --- |
| Nr. of Formula | Item | Description | Inputs |
| 174 | Any white collar exempt | Calculated from **G** as linear increasing from 1% or **E** to 100% =( **D** x **C** )multiply by salary for specific category and specific year | ***G*** *Start of hiring of indirect HC*  ***D*** *Percentage out of direct people for white collar exempt*  ***A*** *Total costs per month in start of Ramp up period year (Indirect white collar exempt)*  ***B*** *Salary increase in specific year after start of Ramp up*  ***F*** *Can replace* ***A*** *and* ***B*** |
| 175 | Any white collar non-exempt w/o supervisory function | Calculated from **G** as linear increasing from 1% or **E** to 100% =( **D** x **C** )multiply by salary for specific category and specific year | ***G*** *Start of hiring of indirect HC*  ***D*** *Percentage out of direct people for white collar non-exempt without supervisory function*  ***A*** *Total costs per month in start of Ramp up period year (Indirect white collar non-exempt without supervisory function)*  ***B*** *Salary increase in specific year after start of Ramp up*  ***F*** *Can replace* ***A*** *and* ***B*** |
| 176 | Any white collar non-exempt with supervisory function | Calculated from **G** as linear increasing from 1% or **E** to 100% =( **D** x **C** )multiply by salary for specific category and specific year | ***G*** *Start of hiring of indirect HC*  ***D*** *Percentage out of direct people for white collar non-exempt with supervisory function*  ***A*** *Total costs per month in start of Ramp up period year (Indirect white collar non-exempt with supervisory function)*  ***B*** *Salary increase in specific year after start of Ramp up*  ***F*** *Can replace* ***A*** *and* ***B*** |
| 177 | Any blue collar indirect | Calculated from **G** as linear increasing from 1% or **E** to 100% =( **D** x **C** )multiply by salary for specific category and specific year | ***G*** *Start of hiring of indirect HC*  ***D*** *Percentage out of direct people for blue collar indirect*  ***A*** *Total costs per month in start of Ramp up period year (Indirect blue collar)*  ***B*** *Salary increase in specific year after start of Ramp up*  ***F*** *Can replace* ***A*** *and* ***B*** |

### IPCCF FFG

For calculating the IPCCF sheet in FFG Approach, Base\_Inputs data and manual inputs in IPCCF sheet are necessary.

All blue cells for each position must be rechecked and reconsidered based on specific project and experiences.

It is possible for each position, add HC (column H) or remove HC (column G). Sharing of the costs for each position is possible to set in column F. For no sharing of the costs, 100% must be set for each position.

For each position, required months before SoP are available. Costs are calculated based on number of HC on the position, required months, and salaries.

**Inputs required:**

|  |  |  |  |
| --- | --- | --- | --- |
| Sheet | Cell | In formula | Description |
| IPCCF | F34:H161 | N/A | FFG table (blue cells) |
| Base\_Inputs | D9 | For each | Project scenario |
| Base\_Inputs | D10 | For each | Start of production date |
| Base\_Inputs | D11 | For each | Length of the Ramp up period |
| Base\_Inputs | D61 | For each | Total costs per month in start of Ramp up period year (Indirect blue collar employee) |
| Base\_Inputs | D62 | For each | Total costs per month in start of Ramp up period year (Indirect white collar non-exempt with supervisory function) |
| Base\_Inputs | D63 | For each | Total costs per month in start of Ramp up period year (Indirect white collar non-exempt without supervisory function) |
| Base\_Inputs | D64 | For each | Total costs per month in start of Ramp up period year (Indirect white collar exempt) |
| Base\_Inputs | D67 | For each | Salary increase in following year after start of Ramp up |
| Base\_Inputs | D68 | For each | Salary increase in 2nd following year after start of Ramp up |
| Base\_Inputs | D69 | For each | Salary increase in 3rd following year after start of Ramp up |
| Base\_Inputs | D24 | 68, 69, 70, 72, 123 | Selection if product is KSK or a Variant |
| Base\_Inputs | D13 | 48, 49, 50, 52, 53 | Selection if the project is in a new country for LEONI |
| Base\_Inputs | D25 | 51 | Lifetime project sales estimation |
| Base\_Inputs | D26 | 82, 90, 94, 98, 113, 118, 119, 121, 126 | Total normhour count in the chosen plant per year including this project |
| Base\_Inputs | D27 | 87, 99, 102, 103, 104, 106, 107, 115, 120, 122, 124 | Peak year Normhour count for this project |
| Base\_Inputs | D89 | 83, 84 | Number of welding machines in the complete plant, including the calculated project |
| Base\_Inputs | D90 | 85, 86 | Number of soldering machines in the complete plant, including the calculated project |
| Base\_Inputs | D91 | 88, 112 | Number of crimping applicators in the complete plant, including the calculated project |
| Base\_Inputs | D92 | 91, 92 | Number of covering machines in the complete plant, including the calculated project |
| Base\_Inputs | D93 | 93 | Number of assembly lines in the complete plant, including the calculated project |
| Base\_Inputs | D94 | 93 | Number of screwing machines in the complete plant, including the calculated project |
| Base\_Inputs | D95 | 95, 96, 113 | Number of injection tools in the complete plant, including the calculated project |
| Base\_Inputs | D96 | 101 | Number of test equipment in the complete plant, including the calculated project |
| Base\_Inputs | D97 | 107, 166 | Number of cutting machines in the complete plant, including the calculated project |
| Base\_Inputs | D98 | 108 | Number of automated machines in the complete plant, including the calculated project |
| Base\_Inputs | D39 | 115, 136 | Overal shift model in the plant during SoP, cutting room included |
| Base\_Inputs | D40 | 141, 165, 166, 167, 168, 169 | Overal shift model in the plant during SoP, cutting room excluded |
| Base\_Inputs | D41 | 116, 117, 166 | Shift model in the cutting room for this project during SoP |
| Base\_Inputs | D43 | 137 | Is night shift needed during SoP? With cutting room |
| Base\_Inputs | D45 | 121 | Shift model in the assembly during SoP |
| Base\_Inputs | D99 | 112 | The number of Lead Preparation production equipment in the complete plant, including the calculated project |
| Base\_Inputs | D100 | 112 | Number of seal applicators in the complete plant, including the calculated project |
| Base\_Inputs | D101 | 113 | Number of final Assembly production equipment in the complete plant, including the calculated project |
| Base\_Inputs | D102 | 125 | Total occupied space of the complete plant, including the calculated project |
| Base\_Inputs | D70 | 75, 130, 132, 172, 173 | Number of all employees working in the production plant when the calculated project reaches average normhours |
| Base\_Inputs | D103 | 130, 132 | Number of all product sections in the plant, including the calculated project |
| Base\_Inputs | D104 | 75 | Number of separate assembly locations/buildings within the plant |
| Base\_Inputs | D75 | 141 | Number of components in the plant together with this project, that are applicable for incoming inspection |
| Base\_Inputs | D76 | 150 | Number of raw material parts in the complete plant, including the calculated project |
| Base\_Inputs | D78 | 153, 154, 166 | Number of inbound trucks in the complete plant, including the calculated project, per week |
| Base\_Inputs | D79 | 153, 154, 168 | Number of outbound trucks, in the complete plant, including the calculated project, per week |
| Base\_Inputs | D80 | 153 | Number of inbound customs operations, in the complete plant, including the calculated project, per week |
| Base\_Inputs | D81 | 153 | Number of outbound customs operations, in the complete plant, including the calculated project, per week |
| Base\_Inputs | D105 | 172 | Selection if a hospital is around 25km from the plant |
| Base\_Inputs | D84 | 68, 69, 70 | Nr. Of routesteps |
| Base\_Inputs | D86 | 68, 69, 70 | LEPS/KSK Know-how in plant |
| Base\_Inputs | D85 | 68, 69, 70 | Number of KSK harnesses processed per day (all harnesses controlled by LEPS) |
| Base\_Inputs | D130 | 118, 119 | Cutting Room work content ratio in the project |
| Base\_Inputs | D131 | 119 | WPA room work content ratio in the project |
| IPCCF | W47 | 123 | Ncomp (average quantity of components per harness) |
| IPCCF | W48 | 123 | Npr (number of processes per harness based on WSD C4-Processes) |
| Base\_Inputs | D53 | 123 | Average normhour count per year for this project |
| Base\_Inputs | D134 | 123 | Quantity of wires per average complete order |
| Base\_Inputs | D12 | 123 | Normhours per average order |
| Base\_Inputs | D83 | 68, 69, 70 | Number of production clients |
| IPCCF | B9 | N/A | Sheet was not checked |

**IPCCF FFG Formulas:**



|  |  |  |  |
| --- | --- | --- | --- |
| Nr. of Formula | Item | Description | Inputs |
| 46 | Head of Plant & Commercial MD | Only if greenfield or brownfield | *Project scenario* |
| 47 | Assistant Plant Management | Only if greenfield or brownfield | *Project scenario* |
| 48 | General Ledger | Only if greenfield or brownfield and project is in new country for Leoni | *Project scenario*  *Selection if the project is in a new country for LEONI* |
| 49 | Finance IT | Only if greenfield or brownfield and project is in new country for Leoni | *Project scenario*  *Selection if the project is in a new country for LEONI* |
| 50 | Head of Accounting [country] | Only if greenfield or brownfield and project is in new country for Leoni | *Project scenario*  *Selection if the project is in a new country for LEONI* |
| 51 | Accounting Officer new | Calculated based on sales during the lifetime of the project. | *Project scenario*  *Lifetime project sales estimation* |
| 52 | External Tax Manager | Only if greenfield or brownfield and project is in new country for Leoni | *Project scenario*  *Selection if the project is in a new country for LEONI* |
| 53 | Internal Tax Advisor | Only if greenfield or brownfield and project is in new country for Leoni | *Project scenario*  *Selection if the project is in a new country for LEONI* |
| 54 | Internal Tax Specialist | Manual input |  |
| 55 | Head of Controlling Plant | Only if greenfield or brownfield | *Project scenario* |
| 56 | Plant Controller | Only if new BU or new building | *Project scenario* |
| 57 | HR Business Partner Plant | Only if new building | *Project scenario* |
| 58 | HR Business Partner Plant Department / Product Section | Only if new Product section | *Project scenario* |
| 59 | HR Officer level 2 | 3 HC only if new building | *Project scenario* |





**68, 69, 70**

*Picture 3.4.3.1: LEPS headcount table (formulas 68, 69, 70)*

|  |  |  |  |
| --- | --- | --- | --- |
| Nr. of Formula | Item | Description | Inputs |
| 60 | HR Employee / HR Induction Trainer | Only if new building | *Project scenario* |
| 61 | HR Employee / HR Induction Trainer | Only if new building | *Project scenario* |
| 62 | HR Recruit & Admin. Officer | Only if new building | *Project scenario* |
| 63 | HR Recruit & Adm. Officer | Only if new building | *Project scenario* |
| 64 | HR Recruit & Adm. Officer | Only if new building | *Project scenario* |
| 65 | IT Manager | Only if greenfield or brownfield | *Project scenario* |
| 66 | IM System Engineer I | Calculated based on number of indirect HC (Sum of HC in IPCPS and IPCCF) - IM System Engineer II | *IPCPS and IPCCF* |
| 67 | IM System Engineer II | Calculated based on number of indirect HC (Sum of HC in IPCPS and IPCCF) /2 | *IPCPS and IPCCF* |
| 68 | IM LEPS Admin I [KSK] | 0 for carry over and only if product is KSK. LEPS complexity is calculated based on Nr. Of routesteps, Nr. Of production clients and KSK harnesses processed per day. Based on complexity and LEPS know-how are calculated HC with help of table in picture 3.4.3.1 | *Project scenario*  *Selection if product is KSK or a Variant*  *Nr. Of routesteps*  *LEPS/KSK Know-how in plant*  *Number of KSK harnesses processed per day (all harnesses controlled by LEPS)*  *Number of production clients* |
| 69 | IM LEPS Admin II [KSK] | 0 for carry over and only if product is KSK. LEPS complexity is calculated based on Nr. Of routesteps, Nr. Of production clients and KSK harnesses processed per day. Based on complexity and LEPS know-how are calculated HC with help of table in picture 3.4.3.1 | *Project scenario*  *Selection if product is KSK or a Variant*  *Nr. Of routesteps*  *LEPS/KSK Know-how in plant*  *Number of KSK harnesses processed per day (all harnesses controlled by LEPS)*  *Number of production clients* |
| 70 | IM LEPS Admin III [KSK] | 0 for carry over and only if product is KSK. LEPS complexity is calculated based on Nr. Of routesteps, Nr. Of production clients and KSK harnesses processed per day. Based on complexity and LEPS know-how are calculated HC with help of table in picture 3.4.3.1 | *Project scenario*  *Selection if product is KSK or a Variant*  *Nr. Of routesteps*  *LEPS/KSK Know-how in plant*  *Number of KSK harnesses processed per day (all harnesses controlled by LEPS)*  *Number of production clients* |
| 71 | IM FORS SAP Admin. | Only if greenfield or brownfield | *Project scenario* |
| 72 | SAP JIT Admin. [KSK] | On if new product section and only if product is KSK | *Project scenario*  *Selection if product is KSK or a Variant* |
| 73 | External Legal Advisor | On if new product section | *Project scenario* |
| 74 | Internal Legal Advisor | Manual input | *no* |



|  |  |  |  |
| --- | --- | --- | --- |
| Nr. of Formula | Item | Description | Inputs |
| 75 | LPSplus Manager | Only if greenfield or brownfield | *Project scenario* |
| 76 | LPSplus CI Coordinator | Only if greenfield or brownfield | *Project scenario* |
| 77 | LPSplus CI Officer | If number of employees > 2000 then 1 HC; if number of employees 1000 - 2000 and number of separate locations > 1 then 1 HC | *Project scenario*  *Number of all employees working in the production plant when the calculated project reaches average normhours*  *Number of separate assembly locations/buildings within the plant* |
| 78 | Head of PPE Plant | Only if greenfield or brownfield | *Project scenario* |
| 79 | Plant PPE Assistant | 0 for carryover. If sum of HC in PPE department > 30 then 1 HC | *Project scenario* |
| 80 | Process Technology Leader | 0 for carryover. If sum of Team leaders (81, 89, 97, 102, 104, 109, 110, 115, 120, 122, 124) in PPE department > 4 then 1 HC | *Project scenario* |
| 81 | Connecting Technology Team Leader  (PPO Crimping shared function) | Only if greenfield or brownfield | *Project scenario* |
| 82 | Crimping Technologist | If total normhour count < 2 500 000 then 0 HC; if total normhour count 2 500 000 - 7 500 000 then 1 HC; if total normhour count > 7 500 000 then 2 HC | *Project scenario*  *Total normhour count in the chosen plant per year including this project* |
| 83 | PPO Welding | Only if greenfield or brownfield or new building. If new building then 1 HC. If greenfield or brownfield then 1 HC if number of welding m/c >= 5 | *Project scenario*  *Number of welding machines in the complete plant, including the calculated project* |
| 84 | Welding Technologist | If number of welding m/c >=30 then 1 HC | *Project scenario*  *Number of welding machines in the complete plant, including the calculated project* |
| 85 | PPO Soldering | Only if greenfield or brownfield or new building. If number of soldering m/c >= 10 then 1 HC | *Project scenario*  *Number of soldering machines in the complete plant, including the calculated project* |
| 86 | Soldering Technologist | If number of soldering m/c >=30 then 1 HC | *Project scenario*  *Number of soldering machines in the complete plant, including the calculated project* |
| 87 | Senior Connecting Laboratory Technician | If new building and Number of Connecting Laboratory Technicians (88) > 3 and peak year normhours > 1 500 000 then 1 HC, for other scenarios if Number of Connecting Laboratory Technicians (88) > 3 then 1 HC | *Project scenario*  *Peak year Normhour count for this project* |
| 88 | Connecting Laboratory Technician | 1 HC for each 200 crimping applicators | *Project scenario*  *Number of crimping applicators in the complete plant, including the calculated project* |
| 89 | Wire Preparation & Assembly Team Leader (PPO Cutting, Marking & Twist shared function) | Only if greenfield or brownfield | *Project scenario* |



|  |  |  |  |
| --- | --- | --- | --- |
| Nr. of Formula | Item | Description | Inputs |
| 90 | Cutting, Marking & Twist Technologist | If total normhour count < 2 500 000 then 0 HC; if total normhour count 2 500 000 - 7 500 000 then 1 HC; if total normhour count > 7 500 000 then 2 HC | *Project scenario*  *Total normhour count in the chosen plant per year including this project* |
| 91 | PPO Covering | Only if greenfield or brownfield or new building. If new building then 1 HC. If greenfield or brownfield then 1 HC if number of covering m/c >= 5 | *Project scenario*  *Number of covering machines in the complete plant, including the calculated project* |
| 92 | Covering Technologist | If number of covering m/c >=30 then 1 HC | *Project scenario*  *Number of covering machines in the complete plant, including the calculated project* |
| 93 | PPO Assembly, Screwing & RFA | Only if greenfield or brownfield and new building. If number of assembly lines or screwing m/c >= 3 then 1 HC | *Project scenario*  *Number of assembly lines in the complete plant, including the calculated project*  *Number of screwing machines in the complete plant, including the calculated project* |
| 94 | Assembly, Screwing & RFA Technologist | If total normhour count < 2 500 000 then 0 HC; if total normhour count 2 500 000 - 7 500 000 then 1 HC; if total normhour count > 7 500 000 then 2 HC | *Project scenario*  *Total normhour count in the chosen plant per year including this project* |
| 95 | PPO Foaming & Moulding | Only if greenfield or brownfield and new building. If number of injection tools >= 20 then 1 HC | *Project scenario*  *Number of injection tools in the complete plant, including the calculated project* |
| 96 | Foaming & Moulding Technologist | If number of injection tools >=100 then 1 HC | *Project scenario*  *Number of injection tools in the complete plant, including the calculated project* |
| 97 | Test Technology Team Leader (PPO Test Technology shared function) | Only if greenfield or brownfield | *Project scenario* |
| 98 | Test Technology Technologist | If total normhour count < 2 500 000 then 0 HC; if total normhour count 2 500 000 - 7 500 000 then 1 HC; if total normhour count > 7 500 000 then 2 HC | *Project scenario*  *Total normhour count in the chosen plant per year including this project* |
| 99 | Senior Test Technology Engineer | If new building and Number of Test Technology Engineers (100) and Test Technology Technicians (101) >= 5 and peak year normhours > 1 500 000 then 1 HC, for other scenarios if Number of of Test Technology Engineers (100) and Test Technology Technicians (101) >= 5 then 1 HC | *Project scenario*  *Peak year Normhour count for this project* |
| 100 | Test Technology Engineer | 1 HC for each 7 Test Technology Technicians (101) | *Project scenario* |
| 101 | Test Technology Technician | 1 HC for each 30 test equipment | *Project scenario*  *Number of test equipment in the complete plant, including the calculated project* |
| 102 | Board Manufacturing Team Leader | Only if greenfield or brownfield. 1 HC if new building and Peak year normhours > 1 500 000 | *Project scenario*  *Peak year Normhour count for this project* |
| 103 | Board Manufacturing Technician | 0 for carryover. 1 HC for each 500 000 normhours in peak year | *Project scenario*  *Peak year Normhour count for this project* |
| 104 | Machinery Workshop Team Leader | Only if greenfield or brownfield. 1 HC if new building and Peak year normhours > 1 500 000 | *Project scenario*  *Peak year Normhour count for this project* |
| 105 | CNC Machine Programmer | Only if greenfield or brownfield or new building | *Project scenario* |



|  |  |  |  |
| --- | --- | --- | --- |
| Nr. of Formula | Item | Description | Inputs |
| 106 | Machinery Workshop Technician | 0 for carryover. 1 HC for each 500 000 normhours in peak year | *Project scenario*  *Peak year Normhour count for this project* |
| 107 | LTPM Process Owner | If new building and Number of cutting m/c >= 20 and peak year normhours > 1 500 000 then 1 HC, for other scenarios if Number of cutting m/c >= 20 then 1 HC | *Project scenario*  *Peak year Normhour count for this project*  *Number of cutting machines in the complete plant, including the calculated project* |
| 108 | Automation Team (Team Leader and PPOs) | *1 HC for each 20 automated m/c* | *Project scenario*  *Number of automated machines in the complete plant, including the calculated project* |
| 109 | Maintenance Leader | 0 HC for carryover. If new building and Number of Planned Maintenance Team Leader (110) + Number of Unplanned Maintenance Team Leader (115) >= 2 and Peak year normhours > 1 500 000 then 1 HC. For other scenarios if Number of Planned Maintenance Team Leader (110) + Number of Unplanned Maintenance Team Leader (115) >= 2 then 1 HC | *Project scenario*  *Peak year Normhour count for this project* |
| 110 | Planned Maintenance Team Leader | Only if greenfield or brownfield or new building | *Project scenario* |
| 111 | Senior Planned Maintenance Technician (Wire Preparation, Final Assembly & Electrical Test) | If Number of Planned Maintenance Technician (Wire preparation, 112) + Number of Planned Maintenance Technician (Final assembly& Electrical Test, 113) > 20 then 2 HC; If Number of Planned Maintenance Technician (Wire preparation, 112) + Number of Planned Maintenance Technician (Final assembly& Electrical Test, 113) > 10 then 1 HC otherwise 0 HC | *Project scenario* |
| 112 | Planned Maintenance Technician (Wire Preparation) | 1 HC for each 40 Lead preparation production equipment + 1 HC for each 100 crimping and seal applicators | *Project scenario*  *The number of Lead Preparation production equipment in the complete plant, including the calculated project*  *Number of crimping applicators in the complete plant, including the calculated project*  *Number of seal applicators in the complete plant, including the calculated project* |
| 113 | Planned Maintenance Technician (Final Assembly & Electrical Test) | 1 HC for each 40 Assembly production equipment + 1 HC for each 20 injection tools + 1 HC for each 1 000 000 normhours count | *Project scenario*  *Total normhour count in the chosen plant per year including this project*  *Number of injection tools in the complete plant, including the calculated project*  *Number of final Assembly production equipment in the complete plant, including the calculated project* |
| 114 | Maintenance System Technician (API PRO) | If Number of Planned Maintenance Technician (Wire preparation, 112) + Number of Planned Maintenance Technician (Final assembly& Electrical Test, 113) > 20 then 2 HC; If Number of Planned Maintenance Technician (Wire preparation, 112) + Number of Planned Maintenance Technician (Final assembly& Electrical Test, 113) > 10 then 1 HC otherwise 0 HC | *Project scenario* |
| 115 | Unplanned Maintenance Team Leader | If greenfield or brownfield then 1 HC for each shift in the plant. If new building and Peak year normhour count > 1 500 000 then 1 HC for each shift in the plant. If new building and Peak year normhour count <= 1 500 000 then 1 HC for each 2 Senior Unplanned Maintenance Technician (Wire Preparation, 116) + Senior Unplanned Maintenance Technician (Final Assembly&Electrical Test, 117) | *Project scenario*  *Overal shift model in the plant during SoP, cutting room included*  *Peak year Normhour count for this project* |
| 116 | Senior Unplanned Maintenance Technician (Wire Preparation) | 0 for carryover. For other scenarios 1 HC for each 10 Unplanned Maintenance Technician (Wire Preparation, 118) but maximum 1 HC for each shift in cutting room | *Project scenario*  *Shift model in the cutting room for this project during SoP* |
| 117 | Senior Unplanned Maintenance Technician (Final Assembly & Electrical Test) | 0 for carryover. For other scenarios 1 HC for each 10 Unplanned Maintenance Technician (Final Assembly & Electrical Test, 119) but maximum 1 HC for each shift in cutting room | *Project scenario*  *Shift model in the cutting room for this project during SoP* |
| 118 | Unplanned Maintenance Technician (Wire Preparation) | 1 HC for each 150 000 normhours in the cutting room (Total normhours x Cutting Room work content) | *Project scenario*  *Total normhour count in the chosen plant per year including this project*  *Cutting Room work content ratio in the project* |
| 119 | Unplanned Maintenance Technician (Final Assembly & Electrical Test) | 1 HC for each 150 000 normhours in Final assembly & Electrical test (Total normhours x (1-Cutting Room work content - WPA room work content)) | *Project scenario*  *Total normhour count in the chosen plant per year including this project*  *Cutting Room work content ratio in the project*  *WPA room work content ratio in the project* |
| 120 | Spare Parts Warehouse Team Leader | Only if greenfield or brownfield. 1 HC if new building and Peak year normhours > 1 500 000 | *Project scenario*  *Peak year Normhour count for this project* |



|  |  |  |  |
| --- | --- | --- | --- |
| Nr. of Formula | Item | Description | Inputs |
| 121 | Spare Parts Warehouse Storekeeper | If Total normhour count > 500 000 then 1 HC for each shift in the assembly | *Project scenario*  *Total normhour count in the chosen plant per year including this project*  *Shift model in the assembly during SoP* |
| 122 | Industrial Engineering Leader | Only if greenfield or brownfield. 1 HC if new building and Peak year normhours > 1 500 000 | *Project scenario*  *Peak year Normhour count for this project* |
| 123 | Industrial Engineer | Number of HC = 0,01011 x ln (Average normhour count per year for this project x Quantity of wires per average complete order x Ncomp (average quantity of components per harness) x Npr (number of processes per harness based on WSD C4-Processes) x Normhours per average order x If KSK then 1,3 otherwise 1) | *Project scenario*  *Average normhour count per year for this project*  *Quantity of wires per average complete order*  *Ncomp (average quantity of components per harness)*  *Npr (number of processes per harness based on WSD C4-Processes)*  *Normhours per average order*  *Selection if product is KSK or a Variant* |
| 124 | Facility Management Leader | Only if greenfield or brownfield. 1 HC if new building and Peak year normhours > 1 500 000 | *Project scenario*  *Peak year Normhour count for this project* |
| 125 | Plant Layout Planner | 1 HC if total occupied space >= 10 000 m2 | *Project scenario*  *Total occupied space of the complete plant, including the calculated project* |
| 126 | Facility Management Technician | 1 HC for each 500 000 normhours in the plant per year | *Project scenario*  *Total normhour count in the chosen plant per year including this project* |
| 127 | Purchasing Officer I | Only if greenfield or brownfield. | *Project scenario* |
| 128 | Purchasing Officer II | Manual input | *no* |
| 129 | Head of QM Plant | Only if greenfield or brownfield. | *Project scenario* |
| 130 | Leader QM System | If greenfield or brownfield or new building then 1 HC. For other scenarios, bigger value 1 HC for each 1500 employees in production or 1 HC for each 2 product section but minimum 1 HC | *Project scenario*  *Number of all employees working in the production plant when the calculated project reaches average normhours*  *Number of all product sections in the plant, including the calculated project* |
| 131 | Leader QM Internal Audits | Only if greenfield or brownfield or new building. | *Project scenario* |
| 132 | Leader QM Methods | If greenfield or brownfield or new building then 1 HC. For other scenarios, bigger value 1 HC for each 1500 employees in production or 1 HC for each 2 product section but minimum 1 HC | *Project scenario*  *Number of all employees working in the production plant when the calculated project reaches average normhours*  *Number of all product sections in the plant, including the calculated project* |
| 133 | Leader QM Lab. & Calibration | Only if greenfield or brownfield. | *Project scenario* |
| 134 | Leader QM Supplier Quality | Only if greenfield or brownfield. | *Project scenario* |
| 135 | Lab. & Cal. Officer | Only if new building and existing BU | *Project scenario* |



|  |  |  |  |
| --- | --- | --- | --- |
| Nr. of Formula | Item | Description | Inputs |
| 136 | Lab. & Cal. Technician / Agent | 1 HC for each shift in the plant | *Project scenario*  *Overal shift model in the plant during SoP, cutting room included* |
| 137 | Shift Leader QM SQA | 1 HC if night shift is in the plant | *Project scenario*  *Is night shift needed during SoP? With cutting room* |
| 138 | Team Leader Supplier Quality | Only if new building and existing BU | *Project scenario* |
| 139 | Quality Officer | 1 HC if new production section | *Project scenario* |
| 140 | Data Entry SQA | Only if greenfield or brownfield or new building. | *Project scenario* |
| 141 | Quality Auditor SQA | 1 HC per each 1500 components for each shift in the plant but not in cutting room | *Project scenario*  *Overal shift model in the plant during SoP, cutting room excluded*  *Number of components in the plant together with this project, that are applicable for incoming inspection* |
| 142 | Head of PC&L Plant | Only if greenfield or brownfield or new building. | *Project scenario* |
| 143 | PC&L assistant | 1 HC if total number of HC in PC&L department (144 : 170) > 50 | *Project scenario* |
| 144 | Production Control Leader | Only if greenfield or brownfield or new building. | *Project scenario* |
| 145 | Production Control Supervisor | If Total number of Production Control officers (146) >=12 then 1 HC for each 5 Production Control officers | *Project scenario* |
| 146 | Production Control officer | Only if greenfield or brownfield + manual input based on volumes and complexity | *Project scenario* |
| 147 | MPS / S&OP officer | Only if new BU | *Project scenario* |
| 148 | Procurement Leader | Only if greenfield or brownfield or new building. | *Project scenario* |
| 149 | Procurement Supervisor | If Total number of Procurement officers (150) >=12 then 1 HC for each 5 Procurement officers | *Project scenario* |
| 150 | Procurement officer | 1 HC for each 500 raw material parts but minimum 1 HC | *Project scenario*  *Number of raw material parts in the complete plant, including the calculated project* |



|  |  |  |  |
| --- | --- | --- | --- |
| Nr. of Formula | Item | Description | Inputs |
| 151 | Import-Export & Transport Leader | Only if greenfield or brownfield or new building. | *Project scenario* |
| 152 | Import-Export & Transport Supervisor | If Total number of Import-Export & Transport officers (153) >=12 then 1 HC for each 5 Import-Export & Transport officers | *Project scenario* |
| 153 | Import-Export & Transport officer | 1 HC for each 15 Inbound trucks per week + 1 HC for each 10 Inbound customs operations per week + 1 HC for each 15 Outbound trucks per week + 1 HC for each 10 Outbound customs operations per week + 1 HC for each 40 Inbound and Outbound trucks per week but minimum 2 HC | *Project scenario*  *Number of inbound trucks in the complete plant, including the calculated project, per week*  *Number of outbound trucks, in the complete plant, including the calculated project, per week*  *Number of inbound customs operations, in the complete plant, including the calculated project, per week*  *Number of outbound customs operations, in the complete plant, including the calculated project, per week* |
| 154 | Packaging officer | 1 HC for each 15 Inbound and Outbound trucks per week but minimum 1 HC | *Project scenario*  *Number of inbound trucks in the complete plant, including the calculated project, per week*  *Number of outbound trucks, in the complete plant, including the calculated project, per week* |
| 155 | PC&L Projects Team Leader | If Total number of PC&L Projects officers (156) >=3 then 1 HC | *Project scenario* |
| 156 | PC&L Projects officer | 1 HC for greenfield and brownfield + manual input based on volume and complexity | *Project scenario* |
| 157 | KPI Control Team Leader | If Total number of KPI Control officers (158) >=3 then 1 HC | *Project scenario* |
| 158 | KPI Control officer | 1 HC for greenfield and brownfield + manual input based on volume and complexity | *Project scenario* |
| 159 | Internal Material Flow and Warehouse Leader | Only if greenfield or brownfield or new building. | *Project scenario* |
| 160 | Internal Material Flow Team Leader | If Total number of Internal Material Flow officers (161) >=3 then 1 HC | *Project scenario* |
| 161 | Internal Material Flow officer | 1 HC for greenfield and brownfield + manual input based on volume and complexity | *Project scenario* |



|  |  |  |  |
| --- | --- | --- | --- |
| Nr. of Formula | Item | Description | Inputs |
| 162 | RM Warehouse Team Leader | 1 HC if new building. For other scenarios 1 HC if Total number of RM Warehouse Shift leaders (165) + Total number of RM Storekeeper (166) >= 3 | *Project scenario* |
| 163 | FG Warehouse Team Leader | 1 HC if new building. For other scenarios 1 HC if Total number of FG Warehouse Shift leaders (167) + Total number of FG Storekeeper (168) >= 3 | *Project scenario* |
| 164 | Line Runners Team Leader | 1 HC if new building. For other scenarios 1 HC if Total number of Line Runners Shift leaders (169) + Total number of Line Runners (170) >= 3 | *Project scenario* |
| 165 | RM Warehouse Shift Leader | 1 HC for each shift in the plant but not in cutting room | *Project scenario*  *Overal shift model in the plant during SoP, cutting room excluded* |
| 166 | RM Storekeeper | 1 HC for each Inbound truck per week and for each shift without cutting room + 1 HC for each 10 cutting m/c for each shift in the cutting room but minimum 2 HC + manual input based on volumes and complexity | *Project scenario*  *Overal shift model in the plant during SoP, cutting room excluded*  *Number of inbound trucks in the complete plant, including the calculated project, per week*  *Shift model in the cutting room for this project during SoP*  *Number of cutting machines in the complete plant, including the calculated project* |
| 167 | FG Warehouse Shift Leader | 1 HC for each shift in the plant but not in cutting room | *Project scenario*  *Overal shift model in the plant during SoP, cutting room excluded* |
| 168 | FG Storekeeper | 1 HC for each Outbound truck per week and for each shift without cutting room but minimum 2 HC + manual input based on volumes and complexity | *Project scenario*  *Overal shift model in the plant during SoP, cutting room excluded*  *Number of outbound trucks, in the complete plant, including the calculated project, per week* |
| 169 | Line Runners Shift Leader | 1 HC for each shift in the plant but not in cutting room | *Project scenario*  *Overal shift model in the plant during SoP, cutting room excluded* |
| 170 | Line Runner | 1 HC for greenfield and brownfield + manual input based on volume and complexity | *Project scenario* |
| 171 | SHE Manager | 1 HC for greenfield and brownfield | *Project scenario* |
| 172 | SHE Nurse | 1 HC if number of all employees in the plant > 1000 and Hospital is not around 25km from the plant. | *Project scenario*  *Number of all employees working in the production plant when the calculated project reaches average normhours*  *Selection if a hospital is around 25km from the plant* |
| 173 | SHE External Dr. | *0,2 hours of Doctor presence per employee per year if number of all employees in the plant > 5000* | *Project scenario*  *Number of all employees working in the production plant when the calculated project reaches average normhours* |

## OPRC

OPRC sheet is used for calculating other costs associated with personnel. The calculation is done partially in an automatic way based on Base\_Inputs, but requires also special attention in planning business trips, which is a manual process. Additionally, special costs for training and expats can be included (only manual input).

### OPRC - Light and FFG approach

This sheet works the same way in both the Light and FFG approach. The only difference is how the indirects are calculated, but that is not relevant when filling this sheet.

**Inputs required:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sheet | Cell | Variable | Formula | Description |
| OPRC | Row 18 | N/A | 3 | Average travel arrangements |
| OPRC | Row 20 | N/A | 5 | Additional training costs |
| OPRC | Row 21 | N/A | 6 | Average expat costs |
| Base\_inputs | D10 | N/A | 1 | Start of production date |
| Base\_inputs | D11 | N/A | 1 | Length of the Ramp up period |
| Base\_inputs | D65 | **A** | 2 | Training costs for Office Employees per year |
| Base\_inputs | D18 | **B** | 4 | Average Travel arrangement length in days |
| Base\_inputs | D19 | **C** | 4 | Average Travel arrangement transportation cost |
| Base\_inputs | D20 | **D** | 4 | Average Travel arrangement daily allowance |
| Base\_inputs | D21 | **E** | 4 | Average Travel arrangement hotel cost |
| OPRC | B9 | N/A |  | Sheet checking procedure Yes/No |

### OPRC - Formulas



|  |  |  |
| --- | --- | --- |
| Nr. of Formula | Item | Description |
| 1 | Month | The quantity of months is based on the length of the ramp up period.  Specific months are then populated as a range between SoP month and back to the first ramp up period month. |
| 2 | Indirect personnel training costs | Cost of training the personnel from IPCPS and IPCCF sheets, calculated for each month.  Calculated as a total amount of employees from IPCPS and IPCCF, multiplied by monthly training costs (**A**/12) |
| 3 | Average travel arrangements | Input - how many business trips are done to the plant in the given month |
| 4 | Average travel arrangement costs | The cost of travelling for the month is calculated from the travel amount (**3**), transportation costs **C** (plane tickets, car rental...), length of travel **B**, daily allowance **D** and hotel/accommodation costs **E** |
| 5 | Additional training costs | Input - any other training costs assigned to the month |
| 6 | Additional expat costs | Input - cost for expat personnel in the given month |

## MCFTH

MCFTH sheet is used for calculating Material cost for training harnesses. This sheet is usually calculated automatically from Base\_Inputs sheet data and DPCPS.

### MCFTH - Calculation

For calculating the MCFTH sheet, Base\_Inputs data and manual inputs in MCFTH sheet are necessary.

**Inputs required:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sheet | Cell | Variable | Formula | Description |
| Base\_Inputs | D10 | **A** | For each | Start of production date |
| Base\_Inputs | D11 | **B** | For each | Length of the Ramp up period |
| Base\_Inputs | D23 | **C** | For each | Option to allocate Equipment release costs at start of ramp up period or according to the project phases |
| Base\_Inputs | D30 | **D** | 3,5 | Material costs for an average order |
| Base\_Inputs | D47 | **E** | 2 | Training sets reserved for the Training room |
| Base\_Inputs | D48 | **F** | 4 | Harnesses reserved for production training (Dummy harnesses) |
| Base\_Inputs | D46 | **G** | 5 | How many percent of average order material costs can be reused for training purposes with dummy harnesses |
| Base\_Inputs | D16 | **H** | 2,4 | Start of B sample phase |
| Base\_Inputs | D17 | **H** | 2,4 | Start of C sample phase |
| Base\_Inputs | D18 | **H** | 2,4 | Start of D sample phase |
| MCFTH | Row 17 | **I** | 2 | Training sets for training room |
| MCFTH | Row 19 | **J** | 4 | Dummy harnesses |
| MCFTH | B9 | N/A | N/A | Sheet was not checked |



Example:

**C** = Start of ramp up period

**E** = 10 training sets reserved for the Training room

**F** = 20 Harnesses reserved for production training (Dummy harnesses)

**D** = 100 € as Material costs for an average order

|  |  |  |
| --- | --- | --- |
| Nr. of Formula | Item | Description |
| 1 | Month | Months depend on Start of Production date **A** and Length of Ramp up period **B** |
| 2 | Training sets reserved for the Training room | 1. If **C** = Start of Ramp up period then **E** is at the beginning of ramp up period 2. If **C** = Per phase allocation then **E** is at the beginning of **H** phases (B sample phase, C sample phase and D sample phase) 3. Manual input, user can simply overwrite blue cells in the row 17 (**I**) |
| 3 | ∑ of costs for training sets in Training room | Number of Training sets reserved for the Training room (**2**) x Material costs for an average order **D** |
| 4 | Harnesses reserved for training (Dummy harnesses) | |  | | --- | | 1. If **C** = Start of Ramp up period then **F** is at the beginning of ramp up period | | 1. If **C** = Per phase allocation, then **F** is at the beginning of D phase (**H**) | | 1. Manual input, user can simply overwrite blue cells in the row 19 (**J**) | |
| 5 | ∑ of costs for Dummy harnesses | Number of Harnesses reserved for training (Dummy harnesses) (**4**) x **D** Material costs for an average order x (1- **G**) |

## Scrap

Scrap sheet is used for calculating operational scrap resulting from continuous production and destructive testing, especially in cutting room and Wire Preparation Area. This sheet is usually calculated automatically from Base\_Inputs sheet data and DPCPS.

### Scrap - Light and FFG approach

For calculating the Scrap sheet, only Base\_Inputs data are necessary. The calculation itself is automatic and approach selection doesn't influence it.

**Inputs required:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sheet | Cell | Variable | Formula | Description |
| Base\_inputs | D10 | N/A | 1 | Start Of Production date (SoP) |
| Base\_inputs | D11 | N/A | 1 | Length of the Ramp up period |
| Base\_inputs | D30 | **B** | 3 | Material costs for an average order |
| Base\_inputs | D51 | **C** | 3 | Percentage rate of Destructive testing from a batch during ramp up period |
| Base\_inputs | D50 | **D** | 3 | Out of total materials used in harnesses/orders, what percentage of it is eligible for Operational scrap? |
| DPCPS | Row26 | **A** | 2 | Ordered volume - calculated |
| Scrap | B9 | N/A |  | Sheet checking procedure Yes/No |

The calculation process can be influenced only by changing the above mentioned inputs

### Scrap - Formulas



|  |  |  |
| --- | --- | --- |
| Nr. of Formula | Item | Description |
| 1 | Month | The quantity of months is based on the length of the ramp up period.  Specific months are then populated as a range between SoP month and back to the first ramp up period month. |
| 2 | Ordered volume | Ordered volume is taken over from DPCPS Row26 |
| 3 | ∑ of Operational scrap | The tool calculates in each month what are the scrap costs based on this formula:  ∑ |

## PC

PC sheet is used for calculating costs associated with space and consumables. Consumables are calculated automatically based on Base\_Inputs data, space or lease costs allow for more flexibility if automatic method is not adequate.

### PC - Light and FFG approach

For calculating the PC sheet, Base\_Inputs data and specific "In PC sheet" data are utilized. The calculation itself can be automatic and left as is, but blue cells are available either as a list or a manual overwriting option.

**Inputs required:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sheet | Cell | Variable | Formula | Description |
| Base\_Inputs | D10 | N/A | 1 | Start Of Production date (SoP) |
| Base\_Inputs | D11 | N/A | 1 | Length of the Ramp up period |
| Base\_Inputs | D109 | **I** | 3 | Muster area surface needed for the project prototypes, before B-Sample phase (Base Inputs cell D109) |
| Base\_Inputs | D110 | **J** | 3 | Start of Production surface requirement for the calculated project (Base Inputs cell D110) |
| Base\_Inputs | D56 | **B** | 4 | Monthly costs per m2 of production space (running costs of a Production plant) (Base Inputs cell D56) |
| Base\_Inputs | D57 | C | 4 | Monthly costs per m2 of special /muster production space (running costs of a Production plant) (Base Inputs cell D57) |
| PC | Row 21 | **A** | 4 | Selection of m2 needs per month |
| PC | Row 22 | **D** | 6 | Space related costs in the plant |
| PC | Row 23 | **E** | 6 | Percentage of booked costs for space/surface |
| Base\_Inputs | D30 | **H** | 7 | Material costs for an average order (Base Inputs cell D30) |
| Base\_Inputs | D49 | **G** | 7 | Estimation of costs for consumables out of average order material costs in percentage (Base Inputs cell D49) |
| DPCPS | Row 26 | **F** | 7 | Ordered volume - calculated |

### PC – Formulas

Space/lease costs are mainly dependant on Base\_Inputs data and specifically project phases.



#### Prerequisities

|  |  |  |
| --- | --- | --- |
| Nr. of Formula | Item | Description |
| 1 | Month | The quantity of months is based on the length of the ramp up period.  Specific months are then populated as a range between SoP month and back to the first ramp up period month. |

#### Space/lease costs

|  |  |  |
| --- | --- | --- |
| Nr. of Formula | Item | Description |
| 2 | Selection of space type for costs calculation | Selection of space type adds more options regarding the needed m2 to the calculation methodology. Selection can be done on monthly basis and the selectable options are:   * **Automatic mode** - Tool automatically calculates space needs based on Base\_Inputs and project phases * **Muster area** - Tool will use special/muster space input (Base\_Inputs D109) * **Production area** - Tool will use SoP space requirement input (Base\_Inputs D110) * **Not yet in use** - Tool will select 0 m2 need for that month   Note: If cells below will be manually overwritten, this Selection will become without function. |
| 3 | Selection of m2 needs per month | The formula consists of 4 methods, that are chosen by the selector of calculation mode in the row before.  If "Automatic mode" = Yes, tool checks what phase applies to a specific month in its respective column  If "No production", then 0  If "Muster", then special/muster space input **I**  If "B\_Sample" phase, then SoP space requirement input **J**  If "C\_Sample" phase, then SoP space requirement input **J**  If "D\_Sample" phase, then SoP space requirement input **J**  If "Muster area" = Yes, then special/muster space input **I**  If "Production area" = Yes, then SoP space requirement input **J**  If "Not yet in use" = Yes, then 0 m2 need for that month  Selection of m2 needs is calculated automatically, but is allowed to be overwritten |
| 4 | Space related costs in the plant | Formula uses Muster area costs per m2 or Production area costs per m2 based on selected mode and phases.  Muster costs are considered if they are provided and the specific month is between "No production" and "B-sample" phases. |
| 5 | Percentage of booked costs for space/surface | Not a formula. This row is by default pre-filled with 100%. Overwriting possible.  Useful when space need is calculated and is located in an existing plant, but part of it in a specific month is still used and maintained by another project. |
| 6 | ∑ of all Space costs | Simple formula that potentially reduces the previously in (4) calculated costs based on the provided percentage in (5).  ∑ of all |

#### Consumables

|  |  |  |
| --- | --- | --- |
| Nr. of Formula | Item | Description |
| 7 | ∑ Consumable costs during production | ∑ |

#### ∑ of all costs

|  |  |  |
| --- | --- | --- |
| Nr. of Formula | Item | Description |
| 8 | ∑ of all the costs for PC sheet | Formulas in this section provide costs for this sheet allocated to applicable years. |

## TS

TS sheet is used for calculating transportation costs and samples. Samples can be calculated from Base\_Inputs data, Average Sample option was also introduced in case of additional need. Transportation costs are a combination of Base\_Inputs and a manual input of needed transports per month, Special air freight costs are also possible to be manually considered in the Table.

### TS - Light and FFG approach

For calculating the TS sheet, Base\_Inputs data and specific "In TS sheet" data are utilized. Calculation steps need to be observed here as some items are calculated automatically and some need manual intervention to get a result.

For example, the row 16 allows users to specify count of needed transports, but the cost per one transport is set in Base\_Inputs. Exactly same methodology applies for row 24.

User during the calculation process needs to assess whether these costs will be incurred.

**Inputs required:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sheet | Cell | Variable | Formula | Description |
| Base\_Inputs | D10 | N/A | 1 | Start of Production date (SoP) |
| Base\_Inputs | D11 | N/A | 1 | Length of the Ramp up period |
| Base\_Inputs | D23 | N/A | 0 | Option to allocate Equipment release costs at start of ramp up period or according to the project phases |
| Base\_Inputs | D16 | N/A | 0 | Starting date of B\_Sample phase |
| Base\_Inputs | D17 | N/A | 0 | Starting date of C\_Sample phase |
| Base\_Inputs | D18 | N/A | 0 | Starting date of D\_Sample phase |
| TS | Row 16 | **A** | 2 | Transports between plants per month |
| TS | Row 17 | **B** | 3 | Special air freight costs |
| TS | Row 24 | **O** | 11 | Number of average samples to send/transport |
| Base\_Inputs | D73 | **C** | 4 | Average price of two-way transport costs between main and secondary plant |
| Base\_Inputs | D34 | **D** | 5 | Number of new connectors, previously not used in Leoni |
| Base\_Inputs | D31 | **E** | 5 | Average price of a connector in the average order |
| Base\_Inputs | D127 | **F** | 6 | Number of foamed grommets |
| Base\_Inputs | D120 | **G** | 6, 7 | Coefficient for scrapping - Foaming |
| Base\_Inputs | D30 | **H** | 6, 7, 8 ,9 | Material costs for an average order |
| Base\_Inputs | D126 | **I** | 7 | Number of non-foamed, water-tight grommets |
| Base\_Inputs | D129 | **J** | 8 | Number of screwing parts |
| Base\_Inputs | D122 | **K** | 8 | Coefficient for scrapping - Screwing |
| Base\_Inputs | D128 | **L** | 9 | Number of Eboxes (Sicherungsbox/halter) |
| Base\_Inputs | D123 | **M** | 9 | Coefficient for scrapping - Vision test |
| Base\_Inputs | D54 | **N** | 11 | Estimate price for an average sample transportation and material costs |

### TS – Formulas



#### Prerequisities

|  |  |  |
| --- | --- | --- |
| Nr. of Formula | Item | Description |
| 0 | Prerequisites | Formulas in the table above are using phase dates and cost allocation in their calculations.  Specifics are explained in their respective formulas further below. |
| 1 | Month | The quantity of months is based on the length of the ramp up period.  Specific months are then populated as a range between SoP month and back to the first ramp up period month. |

#### Special transports

|  |  |  |
| --- | --- | --- |
| Nr. of Formula | Item | Description |
| 2 | Special transports between plants per month | This is an input row and no calculation is being done. The row serves to establish the number of transports per month that comes into the formula **4**. |
| 3 | Special Air freight costs | This is an input row and no calculation is being done. The row serves to manually record costs in case special air freight is needed. These costs are summed up in the formula **4**. |
| 4 | ∑ of costs for Special transportations | Formula which on monthly basis multiplies the input from row 16 times average sample costs and adds up the air freight costs. All in the specific month. |

#### Samples and transportation

|  |  |  |
| --- | --- | --- |
| Nr. of Formula | Item | Description |
| 5 | Samples and transportation - Connectors for test modules | Formula first checks whether the costs will be allocated into the first Ramp up period month or in first month of B Sample phase.  Afterwards the number of new connectors is multiplied by the price of a connector, multiplied by 5 which represents the number of samples. Finally, 100euros is added as an average for transport. |
| 6 | Samples and transportation - Grommets-Foamed parts | Formula first checks whether the costs will be allocated into the first Ramp up period month or in first month of B Sample phase.  Afterwards the number of foamed grommets is multiplied by the price of the average order material costs and again multiplied by the scrapping coefficient for foaming. Finally, 100 euros is added as an average for transport. |
| 7 | Samples and transportation - Grommets-Non-Foamed parts | Formula first checks whether the costs will be allocated into the first Ramp up period month or in first month of B Sample phase.  Afterwards the number of nonfoamed grommets is multiplied by the price of the average order material costs and again multiplied by the scrapping coefficient for foaming. Finally, 100 euros is added as an average for transport. |
| 8 | Samples and transportation - Screwing | Formula first checks whether the costs will be allocated into the first Ramp up period month or in first month of B Sample phase.  Afterwards the number of screwing parts is multiplied by the price of the average order material costs and again multiplied by the scrapping coefficient for screwing. Finally, 100 euros is added as an average for transport. |
| 9 | Samples and transportation - Vision test | Formula first checks whether the costs will be allocated into the first Ramp up period month or in first month of B Sample phase.  Afterwards the number of Ebox parts is multiplied by the price of the average order material costs and again multiplied by the scrapping coefficient for vision test. Finally, 100 euros is added as an average for transport.  *V* |
| 10 | Samples and transportation - Number of Average Samples | This is an input row and no calculation is being done. The row serves to establish the number of average samples per month that comes into the formula **11**. |
| 11 | Samples and transportation - Average Sample | Simple multiplication between inputs from previous row 24 and the Average sample cost from Base Inputs.  *Average Sample* |

#### Total costs

|  |  |  |
| --- | --- | --- |
| Nr. of Formula | Item | Description |
| 12 | ∑ of costs for Samples and their transportations | Formula that sums up the "Sample and Transportations" part of the table. Special transports aren't included here (row 16 and 17) |
| 13 | ∑ of all Transports and Samples' costs | In this part, the complete table is summed up. Result is shown on monthly basis and also all together. |

## PVC

PVC sheet is used for calculating product validation costs and is separated into 2 sections. First section consists of quality costs that are calculated automatically yet are allowed to be manually input as well. Second section is calculated automatically based on Base\_Inputs data and equipment list import provided by the PPE department responsible here in this sheet.

### PVC - Light and FFG approach

For calculating the PVC sheet, Base\_Inputs data, specific "In PVC sheet" data and PVC PPE table data are needed.

**Inputs required:**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Sheet | Cell | Variable | Formula | Description |
| Base\_Inputs | D10 | N/A | 1 | Start of Production date (SoP) |
| Base\_Inputs | D11 | N/A | 1 | Length of the Ramp up period |
| Base\_Inputs | D23 | N/A | 0 | Option to allocate Equipment release costs at start of ramp up period or according to the project phases (Base Inputs cell D23) |
| PVC | BW3 | N/A | N/A | Equipment list in PVC |
| Base\_Inputs | D16 | N/A | 0 | Starting date of B\_Sample phase (Base Inputs cell D16) |
| Base\_Inputs | D17 | N/A | 0 | Starting date of C\_Sample phase (Base Inputs cell D17) |
| Base\_Inputs | D18 | N/A | 0 | Starting date of D\_Sample phase (Base Inputs cell D18) |
| Base\_Inputs | D36 | N/A | 2 | Training period and recruitment deadline prior SoP, for Direct employees to handle SoP volumes (Base Inputs cell D36) |
| Base\_Inputs | D142 | **A2, A11, A24** | 2, 11, 24 | Number of small harnesses in the calculated project (Under 50 wires) (Base Inputs cell D142) |
| Base\_Inputs | D143 | **B2, B11, B24** | 2, 11, 24 | Number of medium harnesses in the calculated project (Under 200 wires) (Base Inputs cell D143) |
| Base\_Inputs | D144 | **C2, C11, C24** | 2, 11, 24 | Number of big harnesses in project (Over 200 wires) (Base Inputs cell D144) |
| Base\_Inputs | D60 | N/A | 2 | Total costs per month in start of Ramp up period year (Direct employee) (Base Inputs cell D60) |
| Base\_Inputs | D67 | N/A | 2 | Salary increase in following year after start of Ramp up (Base Inputs cell D67) |
| Base\_Inputs | D68 | N/A | 2 | Salary increase in 2nd following year after start of Ramp up (Base Inputs cell D68) |
| Base\_Inputs | D69 | N/A | 2 | Salary increase in 3rd following year after start of Ramp up (Base Inputs cell D69) |
| Base\_Inputs | D30 | **H** | 4, 6, 7, 8, 11, 17, 18, 19, 20, 21, 22, 23, 24, 27, 29, 30, 31 | Material costs for an average order (Base Inputs cell D30) |
| Base\_Inputs | D74 | N/A | 5 | Estimation of transport costs for 10 average car sets of material between Leoni and customer plants (Base Inputs cell D74) |
| Base\_Inputs | D138 | **B6** | 6 | Number of unique twisted wire combinations (Base Inputs cell D138) |
| Base\_Inputs | D115 | **A21** | 20, 21 | Coefficient for scrapping - Subassembly (Base Inputs cell D115) |
| Base\_Inputs | D135 | **A9** | 9 | Number of unique splices within the calculated project (Base Inputs cell D135) |
| Base\_Inputs | D136 | **B21** | 21 | Number of splices allocated to a welding machine (Base inputs cell D136) - all possible variants |
| Base\_Inputs | D137 | **C9** | 9 | Percentage of watertight splices out of all unique splices (Base Inputs cell D137) |
| Base\_Inputs | D126 | **A10** | 10 | Number of non foamed, water tight grommets (Base Inputs cell D126) |
| Base\_Inputs | D127 | **B10** | 10 | Number of foamed grommets (Base Inputs cell D127) |
| Base\_Inputs | D139 | **B19** | 19 | Average amount of all combinations terminal/cross-section/wire type/seal per applicator (Base Inputs cell D139) |
| Base\_Inputs | D120 | **A25** | 25 | Coefficient for scrapping - Foaming (Base Inputs cell D120) |
| Base\_Inputs | D9 | N/A | 13 | Project scenario (Base Inputs cell D9) |
| Base\_Inputs | D19 | **G** | 7, 14 | Average Business trip duration in days (Base Inputs cell D19) |
| Base\_Inputs | D20 | **G** | 7, 14 | Average Business trip transportation costs (Base Inputs cell D20) |
| Base\_Inputs | D21 | **G** | 7, 14 | Average Business trip daily allowance per day (Base Inputs cell D21) |
| Base\_Inputs | D22 | **G** | 7, 14 | Average Business trip hotel costs per night (Base Inputs cell D22) |
| Base\_Inputs | D111 | **F** | 17, 19, 20, 21, 22, 23, 25, 26, 27, 28, 29, 30, 31 | Individual samples/values for release of a machine or a process (Base Inputs cell D111) |
| Base\_Inputs | D112 | **A17** | 17 | Coefficient for scrapping - Warehouse/Dispatch (Base Inputs cell D112) |
| Base\_Inputs | D113 | **A18** | 18 | Coefficient for scrapping - Cutting room area (Base Inputs cell D113) |
| Base\_Inputs | D114 | **A19** | 19 | Coefficient for scrapping - Applicators (Base Inputs cell D114) |
| Base\_Inputs | D141 | **E24** | 24 | Number of all variants of all harnesses (Mainly based on drawings) (Base Inputs D141) |
| Base\_Inputs | D116 | **A22** | 22 | Coefficient for scrapping - Preassembly (Base Inputs cell D116) |
| Base\_Inputs | D117 | **A6, A23** | 6, 23 | Coefficient for scrapping - Assembly area (Base Inputs cell D117) |
| Base\_Inputs | D118 | **D24** | 24 | Coefficient for scrapping - Assembly boards (Base Inputs cell D118) |
| Base\_Inputs | D119 | **A26** | 26 | Coefficient for scrapping - Electrical testing (Base Inputs cell D119) |
| Base\_Inputs | D122 | **A27** | 27 | Coefficient for scrapping - Screwing (Base Inputs cell D122) |
| Base\_Inputs | D123 | **A28** | 28 | Coefficient for scrapping - Vision test (Base Inputs cell D123) |
| Base\_Inputs | D124 | **A29** | 29 | Coefficient for scrapping - Quality gate area (Base Inputs cell D124) |
| Base\_Inputs | D121 | **A30** | 30 | Coefficient for scrapping - Other test equipment (Base Inputs cell D121) |
| Base\_Inputs | D125 | **A31** | 31 | Coefficient for scrapping - Packing area is not set (Base Inputs cell D125) |
| Base\_Inputs | D128 | **B28** | 28 | Number of Eboxes (Sicherungsbox/halter) (Base\_Inputs cell D128) |
| Base\_Inputs | D129 | **B27** | 27 | Number of screwing parts (Base\_Inputs cell D129) |
| Base\_Inputs | D106 | **I** | 12, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31 | Percentage of equipment to be released in B\_Sample phase (Base Inputs cell D106) |
| Base\_Inputs | D107 | **J** | 12, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31 | Percentage of equipment to be released in C\_Sample phase (Base Inputs cell D107) |
| Base\_Inputs | D146 | **A4** | 4 | Number of total car sets dedicated for residents in the customer plants for rework (Base Inputs cell D146) |
| Base\_Inputs | D147 | **C6** | 6 | Costs for validation of twisted wires in a laboratory (Base Inputs cell D147) |
| Base\_Inputs | D148 | **A7** | 7 | Number of car sets dedicated for product audit per phase (Base Inputs cell D148) |
| Base\_Inputs | D149 | **A8** | 8 | Number of car sets dedicated for BC3O audit (Base Inputs cell D149) |
| Base\_Inputs | D150 | **B9** | 9 | Number of tests needed to validate watertightness of splices (Base Inputs cell D150) |
| Base\_Inputs | D151 | **D9** | 9 | Average standard time needed for watertightness test of one splice (Base Inputs cell D151) |
| Base\_Inputs | D152 | **C10** | 10 | Number of tests needed to validate watertightness of grommets (Base Inputs cell D152) |
| Base\_Inputs | D153 | **D10** | 10 | Average standard time needed to perform one watertightness test of a grommet (Base Inputs cell D153) |
| Base\_Inputs | D154 | **A13** | 13 | Qualification costs required to release a Plant or a Plant Section (Base Inputs cell D154) |
| Base\_Inputs | D155 | **A14** | 14 | Number of business trips related to process validation costs 2TB or SFN per phase (Base Inputs cell D155) |
| Base\_Inputs | D156 | **A12** | 12 | Average price of 1D (dimensional) board in the calculated project (Base Inputs cell D156) |

### PVC - Formulas



#### Prerequisities

|  |  |  |
| --- | --- | --- |
| Nr. of Formula | Item | Description |
| 0 | Prerequisites | Formulas in the table above are using phase dates and cost allocation in their calculations.  Specifics are explained in their respective formulas further below. |
| 1 | Month | The quantity of months is based on the length of the ramp up period.  Specific months are then populated as a range between SoP month and back to the first ramp up period month. |

#### Quality

|  |  |  |
| --- | --- | --- |
| Nr. of Formula | Item | Description |
| 2 | Additional Q‑Gate personnel | A complex formula that checks several conditions  If "inside of the ramp up period", then continue, otherwise 0  if "the ramp up period is > 4 months", then continue, otherwise take the SoP count  *SoP Q gate personnel HC =*  if "current month in training period (Base\_inputs!D36), then continue, otherwise take the SoP count (see formula above)  if "previous equals 0"; then check if the month is a starting B\_Sample date, if "Yes"; continue formula, otherwise 0  if "previous isn’t equal 0”; then continue formula:  *Additional Q gate personnel HC =* |
| 3 | Q-Gate personnel costs (as Directs) | Used to calculate the costs for Q gate personnel based on the count calculated or written above and the total costs for direct employee category in a given month.  *Q-gate personnel costs (as Directs) =* |
| 4 | Rework material for Residents (car sets) | The costs are calculated automatically. Tool checks the cost distribution setting (start of ramp up phase or allocation per phase), ten checks how many set are to be used and splits ten equally in B, C and D Sample phases.  If "cost distribution = start of ramp up; then allocate costs only in the start of ramp up month, otherwise distribute based on B, C and D sample phases   * Start of ramp up allocation   *R*   * Per phase allocation   *R*  *R*  *R*  The costs are allocated in the starting months of each phase |
| 5 | Rework material Transportation costs | This formula is connected to the formula 4, whenever costs exist in row18, formula here in row19 will add transportation costs. |
| 6 | Twisted wires validation | Tool checks the cost distribution setting and places the costs either in start of ramp up period month or at the start of the B sample phase. When appropriate checks are passed, then the formula is as following:  *Twisted wires validation =* |
| 7 | Product audit material costs | Tool checks the cost distribution setting and places the costs either in start of ramp up period month or at the start of the C and D sample phases. When appropriate checks are passed, then the formula is as following:  *Product audit material costs (D Sample phase)=* ***A7***  *Product audit material costs (C Sample phase)=* ***A7*** |
| 8 | BC3O Product audit costs | Tool checks the cost distribution setting and places the costs either in start of ramp up period month or at the start of the B sample phases. When appropriate checks are passed, then the formula is as following:  *BC3O Product audit costs =*  ***G*** *=* |
| 9 | Water tightness of splices | Tool checks the cost distribution setting and places the costs either in start of ramp up period month or at the start of the B sample phases. When appropriate checks are passed, then the formula is as following:  *Water tightness of splices =*  (employee costs are per applicable year) |
| 10 | Water tightness of foamed grommets | Tool checks the cost distribution setting and places the costs either in start of ramp up period month or at the start of the B sample phases. When appropriate checks are passed, then the formula is as following:  *Water tightness of foamed grommets =*    (employee costs are per applicable year) |
| 11 | PPAP of harnesses | Tool checks the cost distribution setting and places the costs either in start of ramp up period month or at the start of the C, D Sample and SoP phases. When appropriate checks are passed, then the formula is as following:  *PPAP of harnesses =*  2 = RL/LL considered  5 = Sample count  3 = Prototype phases |
| 12 | 1- Dimensional boards | Tool checks the cost distribution setting and places the costs either in start of ramp up period month or splits the result based on percentage of equipment released in each phase. When appropriate checks are passed, then the formula is as following:   * Start of ramp up allocation   *1 - Dimensional boards =*   * Per phase allocation   *1 - Dimensional boards =*  *1 - D boards C Sample =*  *1 – D boards D Sample =* |
| 13 | Plant or Plant Section Qualification costs | Tool allocates release costs written in Base\_inputs into the first month of the Ramp up period. These costs are considered only when specific scenarios are chosen.  If "start of ramp up period month"; then continue, otherwise 0  If "Greenfield", then Base\_Input!154 (**A13**)  if "Brownfield", then Base\_Input!154 (**A13**)  if "New production section, BU already established", then Base\_Input!154 (**A13**)  if "New production section and new BU"; then Base\_Input!154 (**A13**) |
| 14 | Process validation costs (2TB or SFN) | Tool checks the cost distribution setting and places the costs either in start of ramp up period month or at the start of the B, C and D Sample phases. When appropriate checks are passed, then the formula is as following:   * Start of ramp up allocation   *Process validation costs (2TB or SFN) =*   * Per phase allocation   *Process validation costs (2TB or SFN) B Sample =*  *Process validation costs (2TB or SFN) C Sample =*  *Process validation costs (2TB or SFN) D Sample =* |
| 15 | Travelling costs associated with Audits | Travelling costs can be planned in the OPRC sheet together with other business trips, but if additional business trips are needed for the Quality points, they can be added here. The input is completely manual and will be used as is in the summary. |
| 16 | ∑ of all Quality costs | Sum of all the previous Quality costs in the specific month. |

#### Process and Equipment release costs

|  |  |  |
| --- | --- | --- |
| Nr. of Formula | Item | Description |
| 17 | Warehouse / Dispatch area equipment | Tool checks the cost distribution setting and places the costs either in start of ramp up period month or at the start of the B, C and D Sample phases.  Next steps include checking the equipment count for this designation multiplying by the needed samples, material costs, specific coefficient and percentage of equipment to be released in that phase.   * Start of ramp up allocation   *Warehouse/Dispatch area equipment =*     * Per phase allocation   *W/D area eq. B Sample Phase =*  *W/D area eq. C Sample Phase =*  *W/D area eq. D Sample Phase =* |
| 18 | Cutting room area equipment | Tool checks the cost distribution setting and places the costs either in start of ramp up period month or at the start of the B, C and D Sample phases.  Next steps include checking the equipment count for this designation multiplying by the needed samples (50x2 as longest/shortest wires per machine), material costs, specific coefficient and percentage of equipment to be released in that phase.   * Start of ramp up allocation   *Cutting room area equipment =*     * Per phase allocation   *Cutting room area eq. B Sample Phase =*    *Cutting room area eq. C Sample Phase =*  *Cutting room area eq. D Sample Phase =* |
| 19 | Crimping applicators | Tool checks the cost distribution setting and places the costs either in start of ramp up period month or at the start of the B, C and D Sample phases.  Next steps include checking the equipment count for this designation multiplying by the needed samples, average releasable combination per applicator, material costs, specific coefficient and percentage of equipment to be released in that phase.   * Start of ramp up allocation   *Crimping applicators =*     * Per phase allocation   *Crimping applicators B Sample Phase =*    *Crimping applicators C Sample Phase =*    *Crimping applicators D Sample Phase =* |
| 20 | Subassembly area equipment | Tool checks the cost distribution setting and places the costs either in start of ramp up period month or at the start of the B, C and D Sample phases.  Next steps include checking the equipment count for this designation multiplying by the needed samples, material costs, specific coefficient and percentage of equipment to be released in that phase. (additional step of multiplying by 4, represents additional samples - largest/smallest cross-section for variant with 1500mm length and 80% length of the machine's capability…)   * Start of ramp up allocation   *Subassembly area equipment =*     * Per phase allocation   *Subassembly area equipment B Sample Phase =*    *Subassembly area equipment C Sample Phase =*    *Subassembly area equipment C Sample Phase =* |
| 21 | Subassembly area - Splicing machines | Tool checks the cost distribution setting and places the costs either in start of ramp up period month or at the start of the B, C and D Sample phases.  Next steps include checking the equipment count for this designation multiplying by the number of splice to be released per machine, needed samples, material costs, specific coefficient and percentage of equipment to be released in that phase.   * Start of ramp up allocation   *Subassembly area - Splicing machines=*     * Per phase allocation   *Subassembly area - Splicing machines B Sample Phase =*    *Subassembly area - Splicing machines C Sample Phase =*    *Subassembly area - Splicing machines D Sample Phase =* |
| 22 | Preassembly area equipment | Tool checks the cost distribution setting and places the costs either in start of ramp up period month or at the start of the B, C and D Sample phases.  Next steps include checking the equipment count for this designation multiplying by the number of needed samples, material costs, specific coefficient and percentage of equipment to be released in that phase.   * Start of ramp up allocation   *Pre-assembly area equipment =*     * Per phase allocation   *Pre-assembly area equipment B Sample Phase =*    *Pre-assembly area equipment C Sample Phase =*    *Pre-assembly area equipment D Sample Phase =* |
| 23 | Assembly area equipment (without lines) | Tool checks the cost distribution setting and places the costs either in start of ramp up period month or at the start of the B, C and D Sample phases.  Next steps include checking the equipment count for this designation multiplying by the number of needed samples, material costs, specific coefficient and percentage of equipment to be released in that phase.   * Start of ramp up allocation   *Assembly area equipment (without lines) =*     * Per phase allocation   *Assembly area equipment (without lines) B Sample Phase =*  *Assembly area equipment (without lines) C Sample Phase =*  *Assembly area equipment (without lines) D Sample Phase =* |
| 24 | Assembly area - Boards | Tool checks the cost distribution setting and places the costs either in start of ramp up period month or at the start of the B, C and D Sample phases.  Next steps include multiplication of all variants by the number of average material per variant, by the specific coefficient and percentage of equipment to be released in that phase.   * Start of ramp up allocation   *Assembly area - Boards =* ***E24***   * Per phase allocation   *Assy area - Boards B Sample Phase =* ***E24***  *Assy area - Boards C Sample Phase =* ***E24***  *Assembly area - Boards C Sample Phase =*  ***E24*** |
| 25 | End processes - Foaming equipment | Tool checks the cost distribution setting and places the costs either in start of ramp up period month or at the start of the B, C and D Sample phases.  Next steps include checking the equipment count for this designation multiplying by the number of needed samples (25 here), material costs, specific coefficient and percentage of equipment to be released in that phase.   * Start of ramp up allocation   *End processes - Foaming equipment =*     * Per phase allocation   *End processes - Foaming equipment B Sample Phase =*    *End processes - Foaming equipment C Sample Phase =*    *End processes - Foaming equipment D Sample Phase =* |
| 26 | End processes - Electrical testing equipment | Tool checks the cost distribution setting and places the costs either in start of ramp up period month or at the start of the B, C and D Sample phases.  Next steps include checking the equipment count for this designation multiplying by the number of needed samples (2 = 1 good and 1 bad sample per testing module), material costs, specific coefficient and percentage of equipment to be released in that phase.   * Start of ramp up allocation   *End processes - Electrical testing equipment =*     * Per phase allocation   *End processes - Electrical testing equipment B Sample Phase =*  *End processes - Electrical testing equipment C Sample Phase =*  *End processes - Electrical testing equipment D Sample Phase =* |
| 27 | End processes - Screwing equipment | Tool checks the cost distribution setting and places the costs either in start of ramp up period month or at the start of the B, C and D Sample phases.  Next steps include checking whether screwing equipment is present, if yes, then formula continues multiplying number of screwing parts times material costs, samples needed, specific coefficient and percentage of equipment to be released in that phase.   * Start of ramp up allocation   *End processes - Screwing equipment =*   * Per phase allocation   *End processes - Screwing equipment B Sample Phase =*    *End processes - Screwing equipment C Sample Phase =*    *End processes - Screwing equipment D Sample Phase =* |
| 28 | End processes - Vision Test equipment | Tool checks the cost distribution setting and places the costs either in start of ramp up period month or at the start of the B, C and D Sample phases.  Next steps include checking whether vision test equipment is present, if yes, then formula continues multiplying number of parts to be tested by the vision test, times material costs, samples needed (here 2), specific coefficient and percentage of equipment to be released in that phase.   * Start of ramp up allocation   *End processes - Vision Test equipment =*   * Per phase allocation   *End processes - Vision Test equipment B Sample Phase =*    *End processes - Vision Test equipment C Sample Phase =*    *End processes - Vision Test equipment D Sample Phase =* |
| 29 | End processes - Quality gate equipment | Tool checks the cost distribution setting and places the costs either in start of ramp up period month or at the start of the B, C and D Sample phases.  Next steps include checking the equipment count for this designation multiplying by the needed samples, material costs, specific coefficient and percentage of equipment to be released in that phase.   * Start of ramp up allocation   *End processes - Quality gate equipment =*     * Per phase allocation   *End processes - Quality gate equipment B Sample Phase =*    *End processes - Quality gate equipment C Sample Phase =*    *End processes - Quality gate equipment D Sample Phase =* |
| 30 | End processes - Other test equipment | Tool checks the cost distribution setting and places the costs either in start of ramp up period month or at the start of the B, C and D Sample phases.  Next steps include checking the equipment count for this designation multiplying by the needed samples, material costs, specific coefficient and percentage of equipment to be released in that phase.   * Start of ramp up allocation   *End processes - Other test equipment =*     * Per phase allocation   *End processes - Other test equipment B Sample Phase =*    *End processes - Other test equipment C Sample Phase =*    *End processes - Other test equipment D Sample Phase =* |
| 31 | End processes - Packing area equipment | Tool checks the cost distribution setting and places the costs either in start of ramp up period month or at the start of the B, C and D Sample phases.  Next steps include checking the equipment count for this designation multiplying by the needed samples, material costs, specific coefficient and percentage of equipment to be released in that phase.   * Start of ramp up allocation   *End processes - Packing area equipment =*     * Per phase allocation   *End processes - Packing area equipment B Sample Phase =*    *End processes - Packing area equipment C Sample Phase =*    *End processes - Packing area equipment D Sample Phase =* |
| 32 | ∑ of all process and equipment release costs | Sum of all process and equipment release costs. Doesn't include the Quality part of the table. |

#### Total costs

|  |  |  |
| --- | --- | --- |
| Nr. of Formula | Item | Description |
| 33 and 34 | ∑ of all Product validation costs | This section covers the complete costs. Quality and release costs are summed up and allocated into years where applicable. |

### PVC PPE Table

PVC PPE Table collects data about the equipment that needs to be released. Responsibility of filling the table lies on the PPE responsible.

Note: Applicators, Splicing machines, Boards, Assembly lines have their own categories that need to be chosen for a proper release costs calculation.

1

2

3

4

5



User has three options of how to proceed:

* 1. **Pasting Technical IDs (more automatic approach)**



|  |  |  |
| --- | --- | --- |
| Nr. in picture | Item | Description |
| 1 | Technical IDs need to be inserted as values. | Afterwards the tool will fill Equipment Name (2), Designation (3) and Release with Samples?(5)  Data are coming from the controlling's database and can be updated via the equipment database update button in Base\_Inputs sheet. This applies only to the Technical ID and the name.  The Designation (3) and Release with samples? (5) data are from internal database of the ramp up tool, if not preferred designation or release selection is loaded, please adjust. |
| 2 | Equipment name | Equipment name is in this approach loaded automatically. |
| 3 | Designation | Designation is in this approach loaded automatically, but many machines have more possibilities for allocation and need a manual change. This kind of an equipment will either not come with a prefilled designation or with a typical one chosen.  If a machine is set to be released with samples, but doesn't have a designation, the costs planned will be 0. |
| 4 | Number of Equipment needed | Number of equipment needed has to be inserted as values the same way as the Technical ID.  The needed quantities are always input manually. Pasting with values is allowed. |
| 5 | Release with samples? | In this approach the tool will estimate the correct answer. Same as in designation, user should adjust if incorrect for his calculated project. |

* 1. **Manually filling the table**



|  |  |  |
| --- | --- | --- |
| Nr. in picture | Item | Description |
| 1 | Technical ID | Technical IDs aren't necessary anymore and can be skipped. |
| 2 | Equipment name | Optional column, but helps to create more visibility into what is calculated |
| 3 | Designation | Needs to be set. In manual approach, user has to select a designation from the list. In case of reoccurring designations, next ones can be copied as long as they are a perfect match to the list's options. |
| 4 | Number of Equipment needed | In each approach this is a mandatory and a manual input. |
| 5 | Release with samples? | A mandatory input. In this approach user has to pick manually if the specific equipment is or isn't releasable be samples. |

* 1. **Compiling the equipment list**

A specific approach when user compiles the equipment based on the designation.

e.g. 10 different cutting room machines are input as:



Functionally it is the same as filling 4 different types into 4 different lines as long as the equipment count is the same.

The tool needs from this table the designation (this finds the specific coefficient for that area) and number of equipment needed to be released, in case it is releasable.

## Results sheet

Result sheet is used to present the results of the calculation. Additionally users can record notes or remarks of the calculation process in the comment section, access a summary report with more details (row39 toggle), check costs distribution on monthly basis (column I) and in case of a FFG approach, a hiring plan is also presented (row 113 toggle).



**1**

**2**

**3**

**4**

|  |  |  |
| --- | --- | --- |
| Nr. in picture | Item | Description |
| 1 | Results table | Represents the total Ramp up costs distributed into applicable years  The table is automatically calculated, however "Additional" inputs can be edited.  If this option is used, explanation in the comment sheet has to be provided. |
| 2 | Comment section | Comment section is used for recording any information that may be useful to recall later.  (e.g. who provide which data, how was something calculated if it was manually inserted into the tool, or why are costs in the "Additional costs" section etc…) |
| 3 | Summary | |  | | --- | | Summary is an option that can be toggle on or off. | | When toggled on, the summary is a table that provides more detailed look into the specific items of the results | |
| 4 | Hiring Plan | Hiring Plan will be possible to toggle on only when the FFG approach was calculated  The Hiring Plan provides an overview of when should which position be hired to be in line with the calculated costs.  Personnel is accumulated throughout the months meaning that the last month before SoP, all the hired personnel will be on that month's payroll. |



**5**

**6**

|  |  |  |
| --- | --- | --- |
| Nr. in picture | Item | Description |
| 5 | Monthly distribution costs | This table provides information on monthly basis. It's possible to isolate specific prototype phases and get a picture of the costs per that phase.  Note: There are many costs that are placed into start of a particular prototype phase's month, this should be observed, and an average used to level the costs throughout applicable phase. |
| 6 | Graph representation | Graph to show the personnel costs and the HC curve throughout the ramp up period |

# Quick Guide

