



FLEXIBLE FACTORY

# FlowPro\_II

## The Toolbox for Flow Manufacturing and Kanban

FlowPro\_II is an efficient tool for the realization of the principles of the "Flexible Factory". It performs all major calculations, necessary for the dimensioning of Flow Manufacturing lines and material supply via Kanban, with minimal time and resource requirements. Calculating and designing a Flow Manufacturing line is an iterative process. Basic rules and formulas are applied on the one hand, on the other hand specific know-how and experience is applied in the planning and implementation process which is not always quantifiable. FlowPro\_II is an easy to handle model, which simplifies the structured process of line and Kanban dimensioning. The time-consuming task of data analysis is reduced to a minimum in order to utilize the resources of the project team as efficiently as possible. Complexity has been reduced so that the average user with basic Microsoft Office knowledge can handle the model. Basic knowledge of Flow Manufacturing fundamentals, however, are required, as well as an introduction to the functionalities of the model.

The key feature of FlowPro\_II is that all output reports are generated as Excel worksheets. All Formulas are contained in the output so that rapid changes and "what if" calculations can be made. The user can adapt all reports to the specific requirements. The nomenclature in all screens can be individually adapted to the specific nomenclature of the organization via an integrated dictionary.

The screenshot displays two Excel worksheets from the FlowPro\_II application. The top window shows the 'LineCalc' worksheet, which provides a summary of resource requirements for various manufacturing processes. The bottom window shows the 'SetupOptions' worksheet, detailing setup parameters and inventory levels for the same processes.

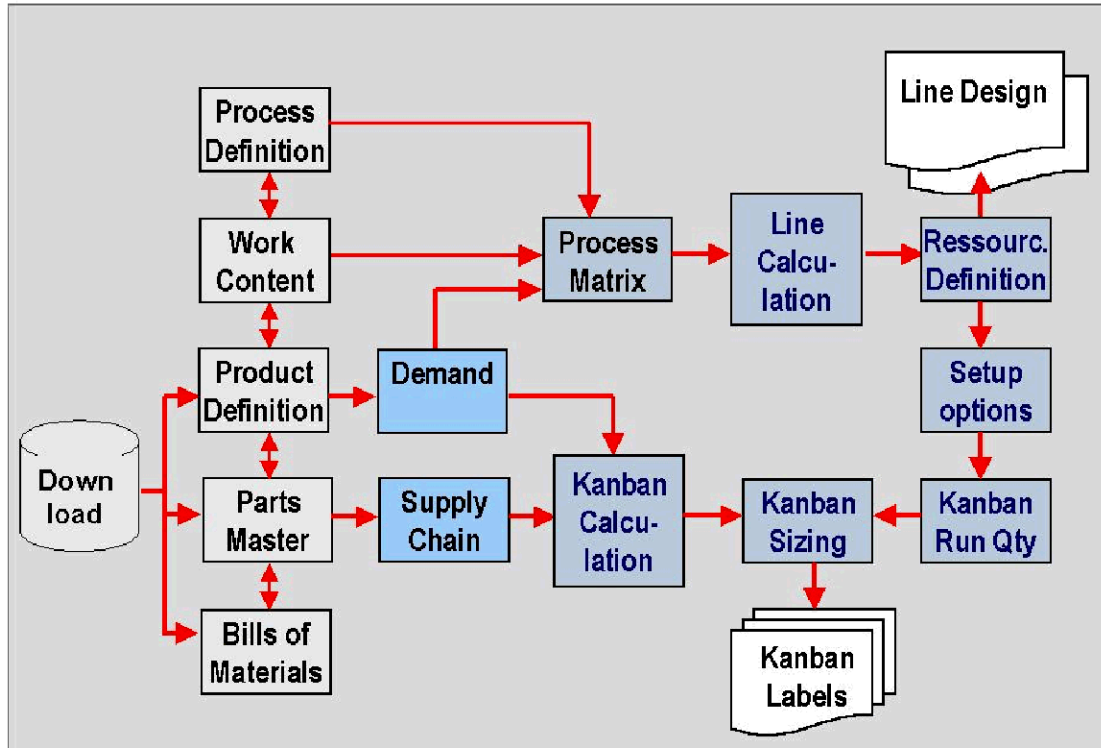
	Surface Mount 1 (1110)	Surface Mount 1 (1110)	Surface Mount 2 (1120)	Surface Mount 2 (1120)	THT Mount (1130)	THT Mount (1130)	Manual Solder (1140)	Manual Solder (1140)	In-Circuit Test (1160)	In-Circuit Test (1160)
Sum DC	870.0	870.0	460.0	460.0	483.6	0.0	483.6	0.0	0.0	870.0
Number of products	10	10	4	4	5	0	5	0	0	10
ATw	1.0	1.0	0.9	0.9	2.9	0.0	3.2	0.0	0.0	0.2
Flow Time Target	1.1	1.1	2.1	2.1	2.0	0.0	2.0	0.0	0.0	1.1
Required Resourced Sum Labor:	0.9	0.9	0.4	0.4	1.5	0.0	1.6	0.0	0.0	0.2
Planned Resources Sum Labor:	1.0	1.0	1.0	1.0	2.0	1.0	2.0	1.0	0.0	1.0
Utilization	86%	86%								
Hours per shift	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0	8.0
Number of shifts	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0
Available Minutes per day	960.0	960.0	960.0	960.0	960.0	960.0	960.0	960.0	960.0	960.0
Runtime per day	828.2	828.2	828.2	828.2	828.2	828.2	828.2	828.2	828.2	828.2

	Surface Mount 1 (1110)	Surface Mount 1 (1110)	Surface Mount 2 (1120)	Surface Mount 2 (1120)	THT Mount (1130)	THT Mount (1130)	Manual Solder (1140)	Manual Solder (1140)	In-Circuit Test (1160)	In-Circuit Test (1160)
Number of products	10.0	10.0	4.0	4.0	5.0	0.0	5.0	0.0	0.0	10.0
Sum DC	870.0	870.0	460.0	460.0	483.6	0.0	483.6	0.0	0.0	870.0
ATw	1.0	1.0	0.9	0.9	2.9	0.0	3.2	0.0	0.0	0.2
Planned Resources	1.0	1.0	0.5	0.5	2.0	1.0	2.0	1.0	0.0	1.0
Available Time for Setup	33.0	33.0	26.0	26.0	26.0	0.0	26.0	0.0	0.0	33.0
Average Setup	3.3	3.3	2.6	2.6	2.6	0.0	2.6	0.0	0.0	3.3
Number of Setups possible	4.4	4.4	2.1	2.1	0.0	0.0	0.0	0.0	0.0	98.0
Planned Setups per Day	3.2	3.2	2.4	2.4	0.0	0.0	0.0	0.0	0.0	0.0
Number of Products for Setup	10.0	10.0	4.0	4.0	0.0	0.0	0.0	0.0	0.0	10.0
Max Days of Inventory	3.2	3.2	1.7	1.7	0.0	0.0	0.0	0.0	0.0	20.0
Average Days of Inventory	1.6	1.6	0.8	0.8	0.0	0.0	0.0	0.0	0.0	10.0
Setup Time Target:	41.8	41.8	22.1	22.1	0.0	0.0	0.0	0.0	0.0	572.0
Days per Month	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0	22.0
Sum of Products	40.0	40.0	4.0	4.0	2.0	0.0	0.0	0.0	0.0	40.0

FlowPro\_II runs on Windows 98, WIN 2000, WIN XP, WIN NT. Access 2000 or higher and Excel 2000 or higher are required. Available in English and German.

Data flow and calculations:



**FlowPro\_II consists of the following key modules:**

**Integrated flow-line calculation**

- Required resources
- Utilization of resources
- Setup options
- Dimensioning of "Supermarkets"
- Optimal production-run-sizes

**Kanban calculation**

- Kanban quantities
- Number of packs
- Supply chains
- Values in each cycle
- Printing of labels

FlowPro\_II contains all functionalities for calculating all relevant data for a Mixed Model Flow Manufacturing Line, such as ATw, Takt, number of resources, total work content, number of operations, remaining time for set-up etc. FlowPro II contains all relevant tools necessary for line calculation and initial line set-up. Changes in basic parameters, such as demand data or product mix can be included immediately and the effects are calculated within seconds. During the "Running in" of a line in the first three to six months it is quite normal to make modifications to the initial design. These modifications are easily handled with FlowPro\_II. In general a line design is verified or modified after 6 to 12 months due to changes in demand or product mix. These changes can easily be reflected in the line design with FlowPro\_II.

Jung Aust Consulting LLC  
 POB 10 25 32  
 D-70021 Stuttgart  
 Germany

Tel. +49 (0)711 351 686-7  
 Fax +49 (0)711 351 686-8  
 flowpro@flexible-factory.com  
 www.flexible-factory.com