

## The Application Note

InBatch production control system project in Phthalic Paints Department on the Wonderware platform.

The first step in the InBatch control system implementation was the preparation, based on concepts agreed with the Investor, of the new technological scheme including the entire set of devices taking part in the production process realization such as tanks, mixers, valves along with the complete piping. Thanks to this, it was possible to prepare all accessible connections between system component devices. This was absolutely necessary for the control system to use the production resources entirely.

Secondly, based on the conversations with technologists and the production process observation, the concepts were prepared to create the InBatch system's new model. The trial version of model was implemented on InBatch server in the supplier's headquarter. The Investor's technologists along with our employees began to prepare the production recipes on this model. The corrections of the technological model were made in real time during the recipes production process to maximally adjust the model to the plant's needs. Technologists could learn how to operate the new system before its implementation.

The Investor's technologists along with our programmers prepared the technological model which the technological phases were generated and later implemented in the PLC controller.

Our programmers prepared the software engine which enables simple and fast InBatch technological model implementation. The PLC objective software structure in connection with the platform dedicated objects enables, greatly, to automate the application preparation process. The software structure enables, if necessary, the already working application development.

The prepared system has the possibility to simulate the particular devices work without controlling the device process. Thanks to this, the newly created recipes can be tested before the production process implementation.

All Wonderware Platform applications (IOSerwer, ApplicationServer, Historian, WIS, GR) and InBatch software were installed on operating systems working in the virtual mode. This solution minimizes the production process brakes in case of hardware failure. All what is necessary is the new server with virtual machines work mode. It is not necessary to have Wonderware platform and InBatch software (including all software components) installed on the new computer.

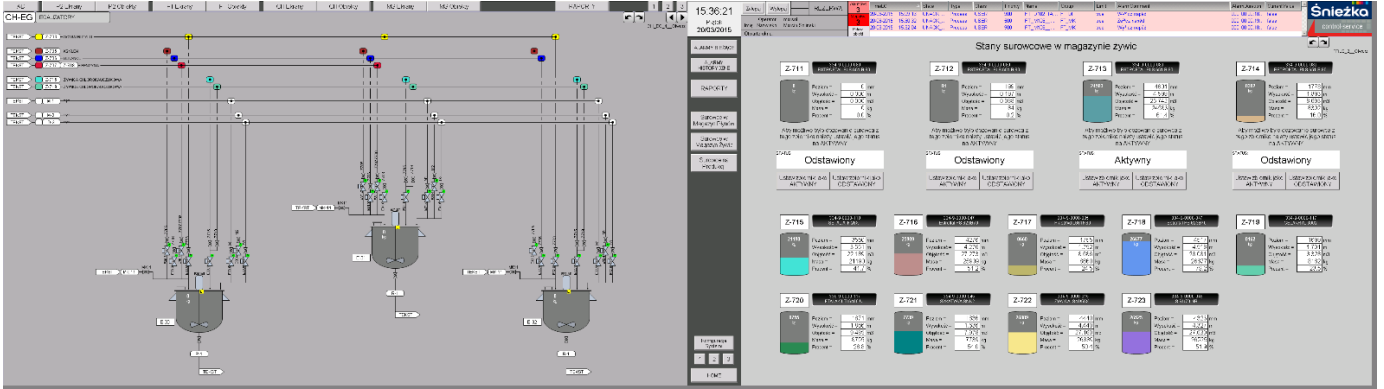
The described system was entirely virtualised on our server in VMware mode before the implementation. Thanks to this, we possess the exact system copy which enables the entire production process simulation.

Due to the virtualisation, the whole system has been precisely tested along with all process phases and even ready recipes. It is valuable help in both cases, while carrying FAT test and its implementation as well as further, possible system modifications. This work model enabled to implement and commission the IT system in the plant within two days. The hardware was precisely checked at the same time with the normal production process without disturbances.

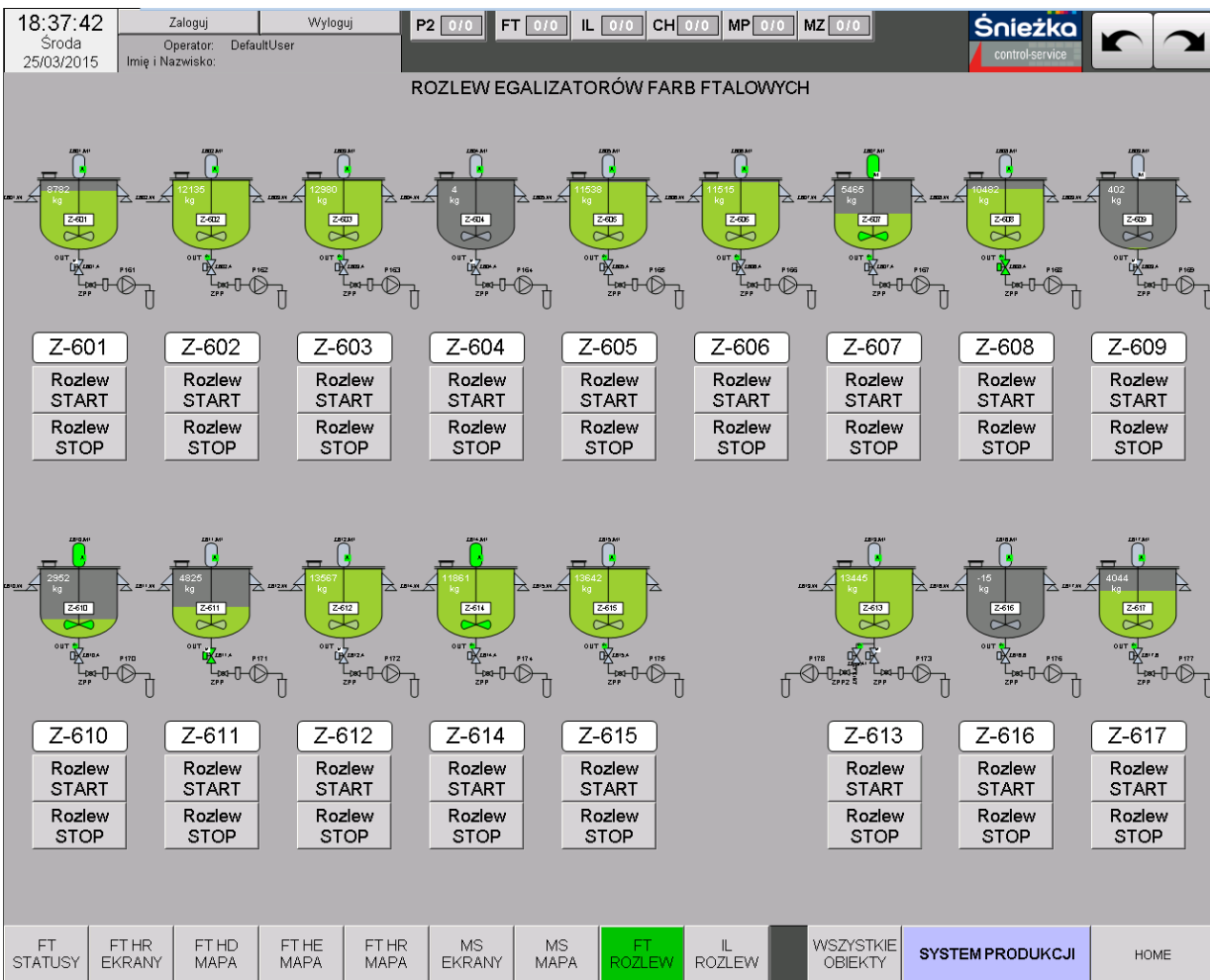
The described system includes: 1100 transfer phases (doses) and 850 process phases (mixing, recirculation, earning). The number of variables between PLC and InBatch: 65 000, between Wonderware platform and PLC: over 15 000 and between Wonderware platform and InBatch - 3000.

The project has been carried out within 4 months.

The few of the system visualisation screens are presented below:



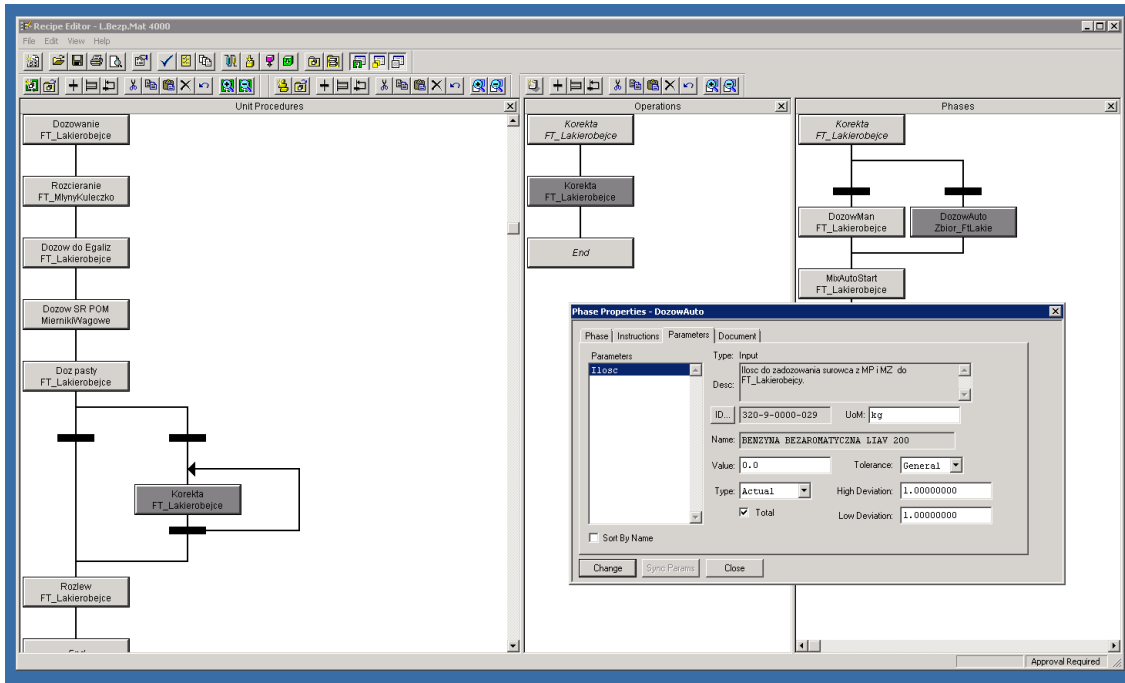
Screen 1. Egalizators and row materials status.



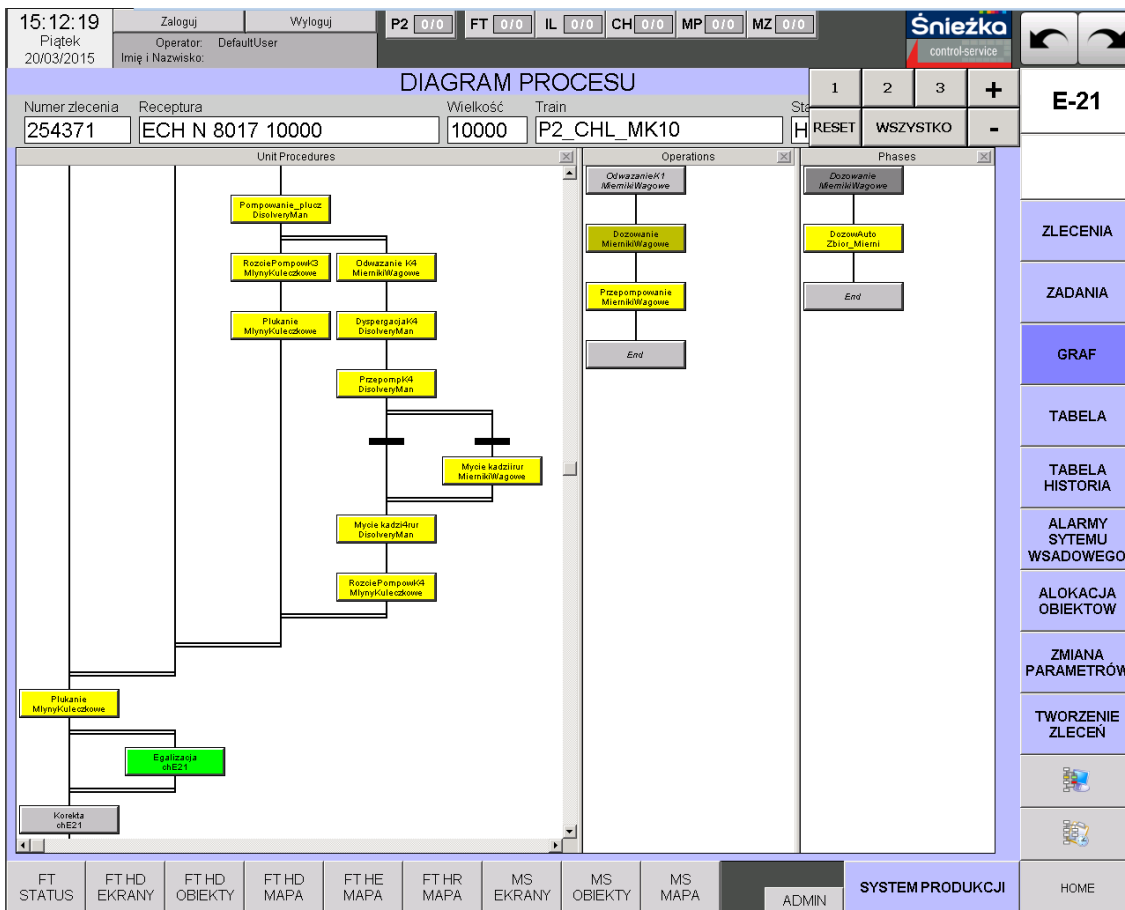
Screen 2. Egalizators overflow.

Screen 2. Main Batch's display.

Screen 3. Batch Scheduler.



Screen 4. Recipe Editor



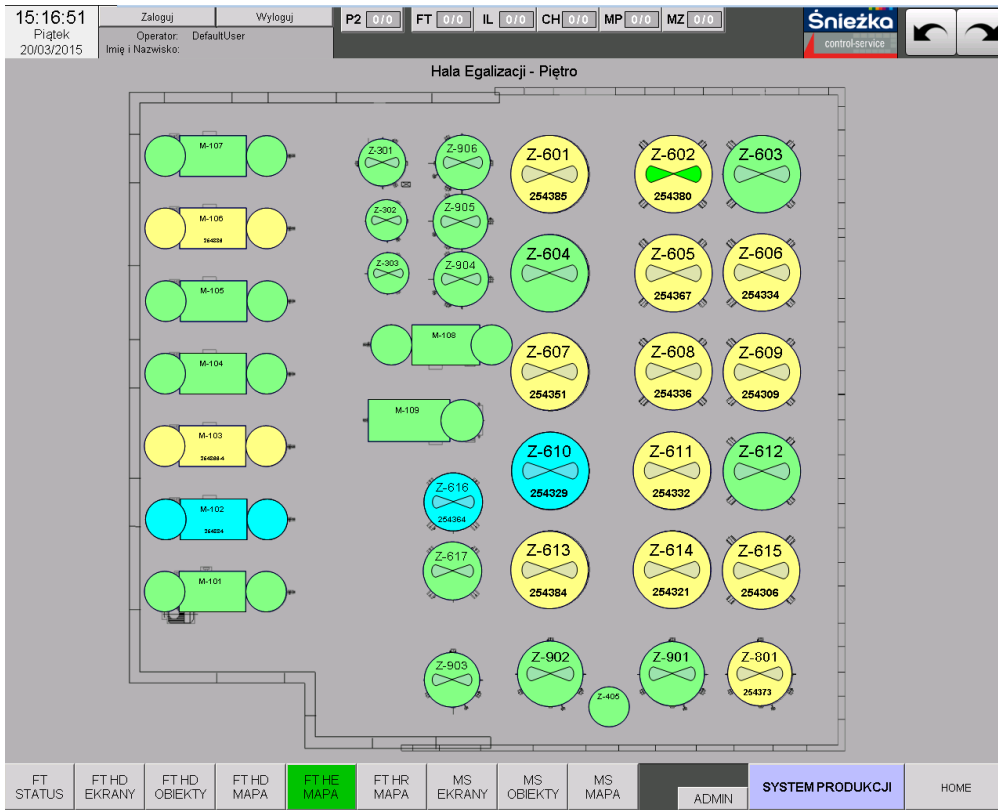
Screen 5. Process diagram

Screen 6. Container of loose materials

Numer zlecenia	Receptura	Wielkość	Train	Stan	UKRYJ PUSTE	ODKRYJ PUSTE
254329	S.KoscSl. 10000-K	10000	Supermal do 610	Run		

Parametr	Opis	Wartosc	Edycja
Ilosc	Id	5260-00018-00	
Ilosc	Name	Supermal kosc slon. ...	
Ilosc	Units	kg	
Ilosc	Target	10888.000	Allowed
Ilosc	Actual	958.50000	

Screen 7. List of manufacturing tasks



Screen 8. Equalization hall

Numer zlecenia	Receptura	Wielkość	Train	Stan	Potwierdzenie
254329	S.KoscSl. 10000-K	10000	Supermal do 610	Run	
254364	U.Popie_M-102 6T	6000	UrekPopie.616-17	Run	
254371	ECH N 8017 10000	10000	P2_CHL_MK10	Held	**
254356	LB.PALI.IND.4000	4000	FT_Lakierobejce	Run	**
254370	Zacieki i Plamy	2181	FT_D109_Zacieki	Held	**
254336	S.Nieb. 10000	10000	Supnieb608-9	Held	**
254380	S.Braz 12000	12000	FT_Z602	Run	**
254373	NSupBaza C 9000	10000	FT_801_Baza C	Run	**
254324	NLB.SOSNA.ZL.3T	3000	FT_Lakierobejce	Held	**
254359	ECH N 9010 3800	3800	P2_CHL_MK8	Run	**
254334	S.Czarny 12000	12000	Suppop605-6	Held	**
254367	S.Czarny 12000	12000	FT_Z605	Run	**

Screen 9. Daily tasks