



# From Sachets to One-Pot

Know-how to become more sustainable in the instant soup manufacturing process



# A manufacturer takes advantage, a customer takes advantage and nature takes advantage of this.

DIOSNA, the company manufacturing equipment for food and pharmaceutical industries, has developed a solution for instant food manufacturers (i.e. noodle soup). Based on statistical data of the World Instant Noodles Association, Russia ranks 12th in the world on the consumption of such products which in absolute figures is more than 2 billion servings per year. By comparison, China takes first place with more than 40 billion servings.



Many of you reading this have probably tried instant soups at least once from a cup and you remember that there are one or two sachets inside in addition to the noodles. Normally, one sachet contains the fat component and another sachet contains spices, salt, and other ingredients. To make the soup, you have to empty the contents of both sachets into the cup, pour boiling water over it, and stir it all up.



## So, what can be changed about this product and its preparation?

If we look at the technological process from a manufacturer's point of view, the obvious costs in terms of time and money to produce these sachets can reach half a million euros per year (depending on production volume). Looking deeper into the details of the production process, the sachet packaging process generates a lot of dust on-site which is not only a big loss for the business but also extremely harmful for the personnel.

Additionally, sachets are plastics that pollute the environment after use. Today the fight to minimize plastic consumption is more than a trend among consumers who not want to use a product that harms nature. It is a must!

## What else does the consumer expect from the product?

A single step product, for a quick but tasty meal. Therefore a "just pour boiling water until the meal is ready" solution is the best way to reach that goal. In this case, the consumer gets a cup with noodles with already distributed homogeneous granulated dry powder which contains all the

necessary ingredients from the recipe. DIOSNA is experienced in the manufacturing process of granulated products which includes spices, sugar, salt, flavour, and probably even fat (if provided for in the recipe). Such a granulated product is storage stable and dissolves quickly when cooked.

## How we achieve the granulate containing all the components of the recipe in a homogenous quantity?

Using a case study, we will show how DIOSNA has succeeded helping a customer in converting its production of instant noodles with additional sachets to a one-pot solution - from research and development to production.



## Case review: From sachets to a more sustainable one-pot solution

The first step for getting the ideal instant soup manufacturing process was starting with the R&D phase in which the process parameters were developed in the DIOSNA R&D center hand in hand with the customer. Our technologists first began with understanding the product characteristics of the spices, checked the raw materials and developed the R&D strategy.

Parameters were defined:

- optimal particle size distribution
- bulk density
- and shape of the particles

The challenge was to adapt the process to the hygroscopic, oil- and fat-containing, temperature-sensitive spices.

Initially, the trial for defining the ideal process began with a spices mix at the DIOSNA Laboratory mixer P 1 - 6.



<https://www.diosna.com/uk/the-pharma-experts/products/mixer-granulator/&cid=2171>

The intermediate stage before switching to the industrial granulation line contained trials on the DIOSNA fluid bed processor CAP 10-80 and P 10-60 mixing granulator.



<https://www.diosna.com/uk/the-pharma-experts/technical-centre>

To reach the target, the R&D team decided to involve a small fluid bed processor, the Minilab RC for drying of wet granules (agglomerate) and to achieve proper humidity and hardness of the final product.



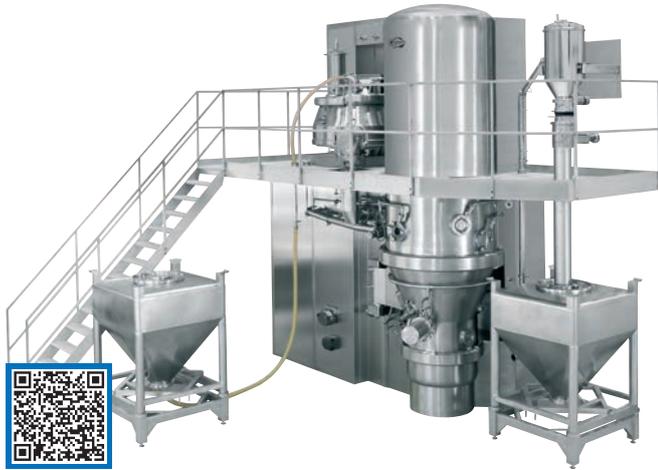
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<https://www.diosna.com/uk/the-pharma-experts/products/mixer-granulator/&cid=2189>



This stage provided high-quality results what enabled a quite easy upscaling to the CGCS granulation line



<https://www.diosna.com/uk/the-pharma-experts/products/granulation-line/&cid=2184>

The trials resulted in a product that the customer could use as a sample for tasting events with the final consumers. All the main requirements of the customer for the final product were met:

1. high homogeneity. In order to have the same quantity of ingredients for each cup, the agglomerates must have had
2. the proper shape closer to the spherical shape. This in ensures a
3. good dosing in further production processes,
4. be dust-free, quite hard, which is important for transportation,
5. no segregation, and
6. stability during storage.

In brief: The process provides a homogeneous granule (agglomerate) with high stability and good dosage.

After the project feasibility study and receiving positive feedback from the consumers, the customer decided to purchase a closed combined granulation line (CGS). This change of production and process optimization led to a significant reduction of costs, materials, and production time. The process was obtained to take less than one hour, despite the fact that the drying temperature did not exceed 40 Celsius.

## Summary

Summarizing all the above, it is worthy to say that there are many ways to increase the project's added value and to improve consumer appeal. The market is never static, it moves and changes, new manufacturers arrive, the old ones leave, tastes and trends shift, or consumer feedback vary. DIOSNA machines are constructed in a modular way, this means that equipment units can be changed or replaced to make the manufacturing of

new products or changing characteristics of existing products possible. This may be the whole mixer-granulator or some small nozzle which after replacement will provide particle coating (even hot-melt coating). DIOSNA is also flexible when it comes to develop new processes which in turn allow customers to experiment with formulations and new products with the support of experienced process engineers and technologists.