



The PM 4 at UPM Steyermühl was rebuilt to the modern DuoFormer CVB design.

Increase in performance by upgrade of the forming section with loadable forming blades

Small outlay – big effect

The PM 7 at UPM in Schongau (Germany) and the PM 4 at UPM in Steyermühl (Austria) were equipped with counterblade technology through rebuild of existing DuoFormers CV to the modern DuoFormer CVB concept. The paper quality was thereby improved and the dewatering capacity increased. Both machines have the fastest blade formers by far and with average speeds of around 1750 m/min are among the ten fastest newsprint machines in the world.

	PM 7 UPM Schongau	PM 4 UPM Steyermühl
Startup	1989	1990
Wire width	9,200 mm	9,650 mm
Grade	newsprint	newsprint
Furnish	DIP+TMP	DIP+TMP
Basis weight	40-49 g/m ²	40-49 g/m ²

Fig. 1: Basic data for the PM 7 UPM Schongau and the PM 4 UPM Steyermühl.

The production of graphic paper grades with gap formers has its origin in the blade former. From 1988 to 1994, Voith built numerous successful DuoFormer CF and CV blade former models.

The early blade former concepts were impressive due to their good formation, but at the same time showed certain deficiencies in retention characteristics. In addition, there were other optimization issues typical of the model, such as the sensitivity of jet impingement and cross profiles and also the sheet symmetry.

At the beginning of the nineties, the blade former lost more and more importance. With the introduction of combined roll-blade gap formers and the flexible loadable counterblades, the trend developed unequivocally toward more modern concepts such as the DuoFormer CFD.

Key component: loadable forming blades

Since being launched by Voith, this technology has become established

as the industry standard. Meanwhile, gap formers for new graphic paper machines are designed exclusively with flexible counterblades. This key technology also finds broad application in rebuild concepts for existing formers. In particular, the numerous existing blade formers offer a big market potential. Apart from a few exceptions, these machines were originally not equipped with loadable counterblades.

Rebuild concepts for blade formers

In order to meet the most varied customer requirements, two rebuild concepts with counterblade technology for blade formers were developed: the DuoFormer CB and the DuoFormer CVB. Both concepts build on the long experience of Voith gap former technology. They are tailored both to Voith blade formers and to BelBaie formers.

The arrangement of the dewatering elements follows the proven concept of the DuoFormer TQv. No forming roll but rather a curved blade shoe

is used solely as the initial dewatering element. It is designed as a separate element for the DuoFormer CB or, alternatively, as the first section of the subsequent forming suction box for the DuoFormer CVB. The most suitable concept in each case is the result of the overall evaluation of qualitative requirements and the existing machine parts.

Both rebuild concepts were developed, tested and optimized by means of intensive test runs on the Voith pilot machines. The deficiencies of the early blade former concepts were thereby eliminated. Essential success factors were, among other things, optimized geometries for jet impingement and wire support, modern wire design and the defined sequence of dewatering pulses.

Rebuild of PM 7, UPM Schongau and PM 4, UPM Steyermühl

Both machines were started up barely twenty years ago and produce mainly standard newsprint. The PM 7 at UPM in Schongau was rebuilt in 2006. The PM 4 at UPM in Steyermühl

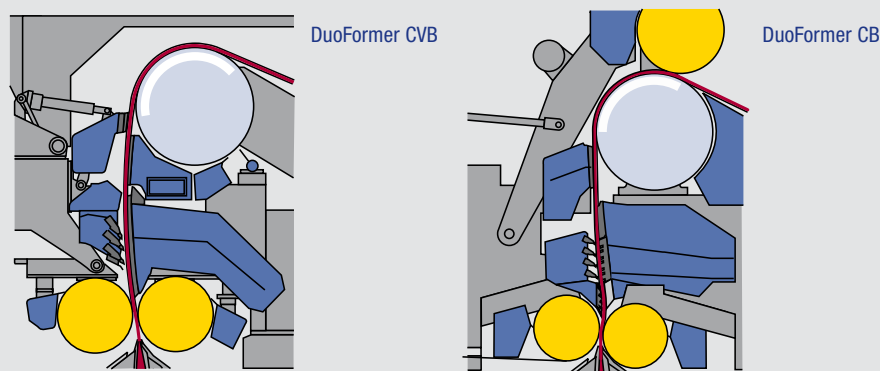


Fig. 2: Rebuild concepts for blade former with counter blade technology.

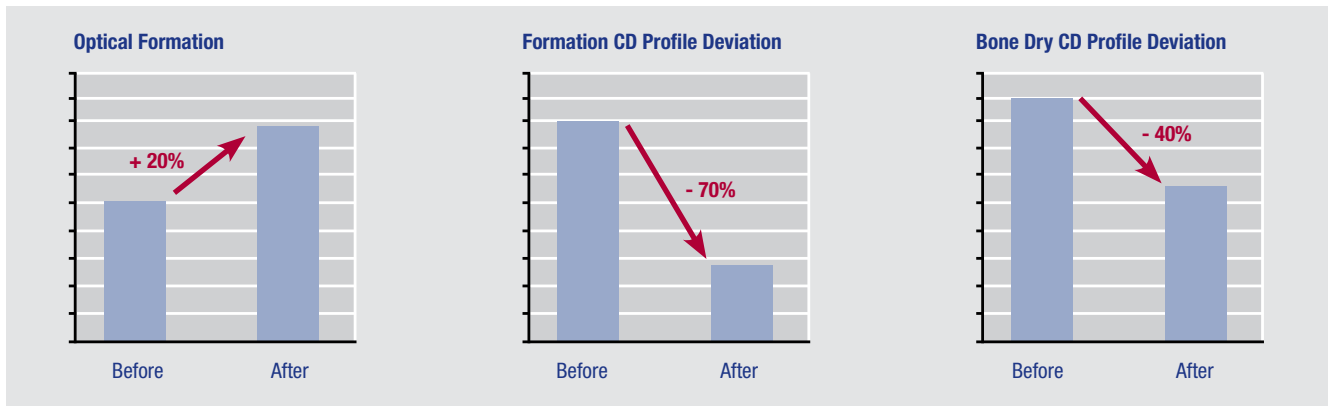


Fig. 3: The PM 4 at UPM in Steyermühl – improvement in quality through rebuild from DuoFormer CV to CVB.

mühl followed in 2007. Both formers in their original DuoFormer CV design were rebuilt to the DuoFormer CVB concept. Essentially, the blade geometry of the forming suction box was modified and at the opposite side a forming box with three loadable forming blades was installed.

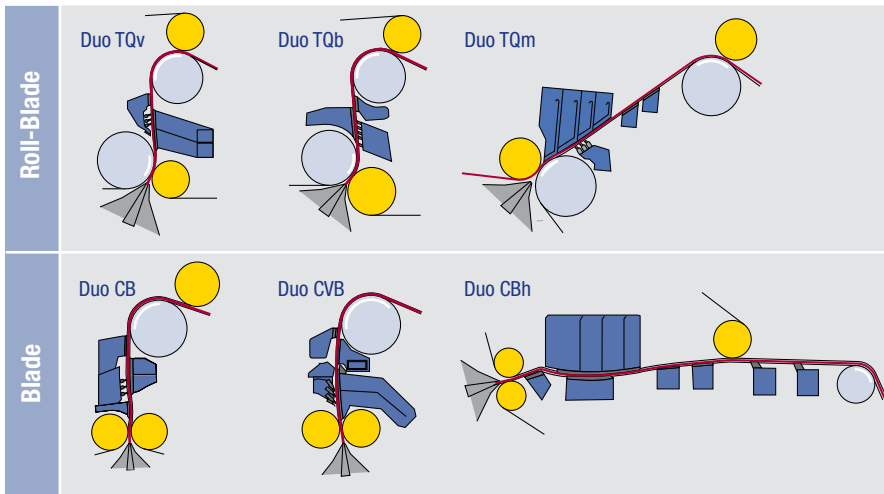
In combination with additional modifications on other machine sections, both machines increased their speed by ca. 100 m/min following the rebuild. Today, both machines are in the range of 1,750 m/min average pro-

duction speeds. They are thus the fastest blade formers in the world and are among the ten fastest newsprint formers generally. The diagrams above show some quality improvement results of the PM 4 at UPM Steyermuehl. Along with the clearly reduced cross profile deviations, the formation, in particular was improved by a good 20%. The good blade symmetry was achieved, dewatering capacity and thus process stability of the former was also increased at the same time by the installation of counterblades.

Perfect Fit rebuild concepts

The blade former rebuild concepts described supplement the already numerous solutions designed for other types of forming sections such as hybrid formers or roll-blade gap formers. These concepts also offer the most cost-efficient solution for meeting the customers’ targets. As a rule, loadable forming blade technology is used as the core element here, too, in order to be able to meet typical customer targets such as quality improvement and speed increase.

Fig. 4: Overview of rebuild concepts for graphic gap formers.



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