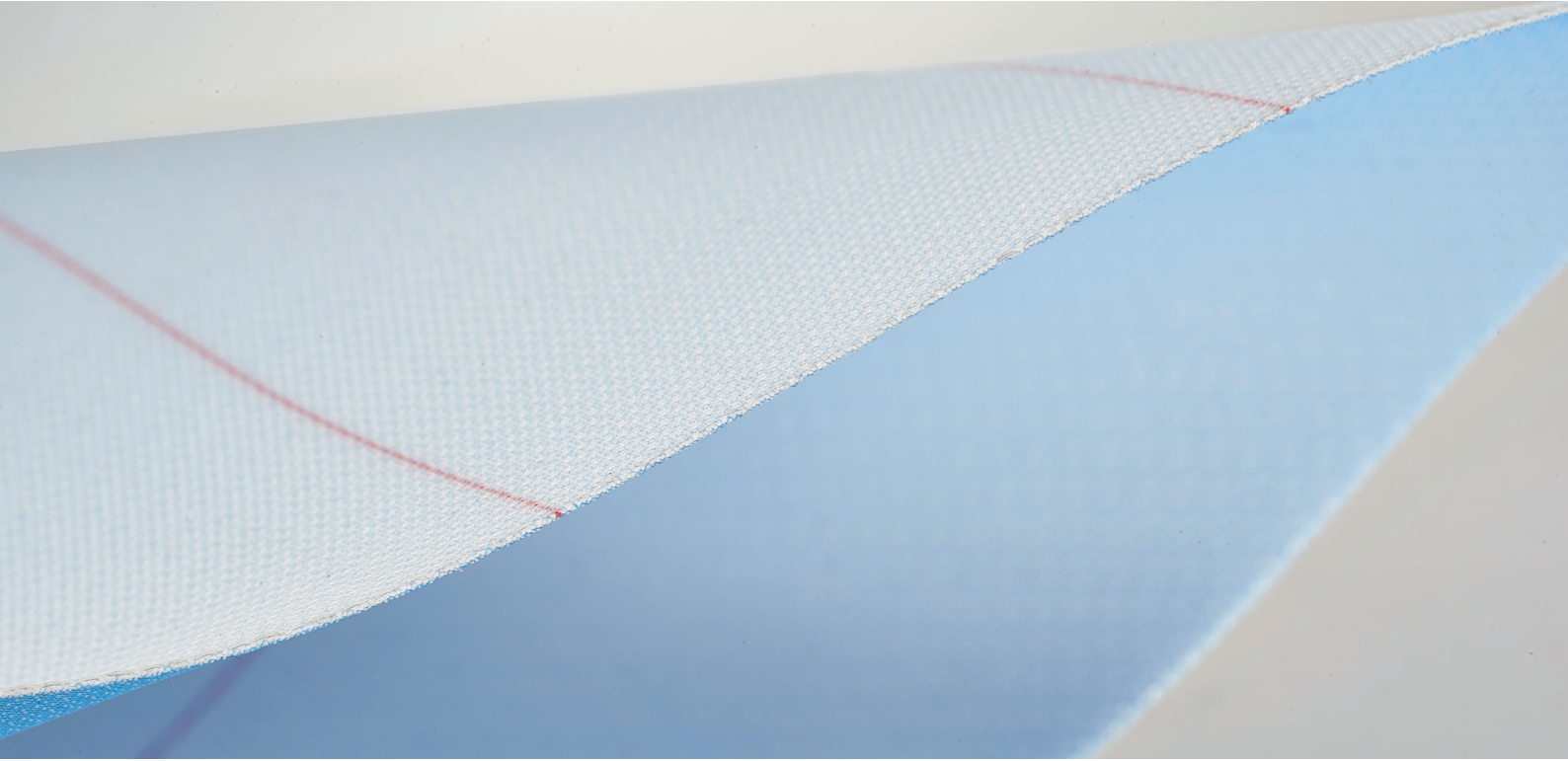


## NRG and Primoselect save energy . . . and much more



The forming section of a paper machine offers many opportunities and making the right choices this far upstream can benefit the whole production process. Easy dewatering saves on vacuum energy. Good fibre retention saves on raw materials, improves runnability and preserves paper surface quality. Both ease the burden on the press section. In addition, low drag on press section rolls reduces drive energy consumption. The latest generation of forming fabrics from Heimbach addresses all of these issues – and many more.

A unique, new, roll-side material combination named “NRG” has enabled Heimbach to create the *Primoselect* range of paper machine forming fabrics, which use less drive and vacuum energy, are kinder to the paper sheet surface, last longer and keep their shape better.

### Energy Savings

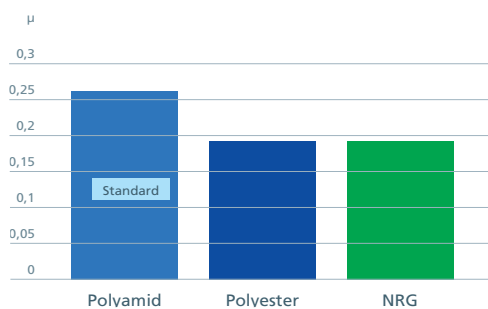
Depending on the paper and board grade, energy accounts for up to 35% of total manufacturing costs, so producers are always looking for savings in this area. And they have a good track record, as mills have cut their average energy consumption per tonne by more than 30% in the past 30 years. Most efforts have understandably focused on the energy-intensive dryer section, but there are also opportunities in the forming section, which have often been overlooked.

The main potential savings are to be found in the vacuum and drive systems, which consume almost 80% of the energy used in the forming section. *Primoselect* fabrics excel in this area, as they have helped to reduce energy use in wet-end drives by up to 25%, as well as also requiring less vacuum energy.

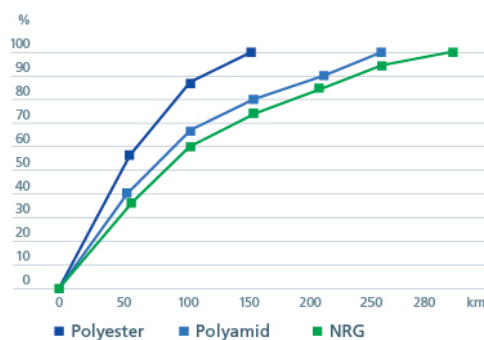
Compared with competing products, *Primoselect* fabrics have a more open structure and reduced caliper, because their high structural integrity makes a second binder yarn unnecessary. So, these thinner, more open fabrics allow water to flow through the structure more quickly, which saves on energy consumption, because less vacuum is required. The excellent dewatering also produces more energy-saving effects further down the line, as a higher-consistency paper web improves runnability thanks to the inherently stronger sheet, and requires less energy in the press section.

In addition, because NRG has an even lower friction coefficient than a standard polyamide/polyester combination, it generates even less drag on the paper machine. This is especially useful in high-drag loops or when drive power is limited.

**Coefficient of Friction pleasingly low with NRG**



**NRG: Extremely resistant to abrasion**



## Long Life

The lower friction-related drag can also mean a longer lifetime for the fabric, and long life is another big plus of using NRG. Traditionally, to make a fabric last longer, reinforcing is an option, but that can come with downsides. Using additional yarns and/or a thicker fabric may extend the operational life, but it can also reduce water throughflow and increase drag, meaning more energy is required for vacuum and drives.

In contrast to such traditional forming fabrics, *Primoselect* can be thinner because of its structure and NRG's higher wear resistance (higher than polyester). So, in addition to NRG's low friction coefficient, its high wear resistance is another factor that helps *Primoselect* fabrics to ensure low drag, with the resulting dual benefits of long operating life and low energy consumption. The thinner structure also means less internal wear, due to fewer yarns rubbing against each other. This extends the fabric's lifetime even further. All of these factors combine to ensure that *Primoselect* fabrics require fewer changeovers: in real-life examples in mills, changeovers have been reduced up to 25%.

## Staying in good Shape

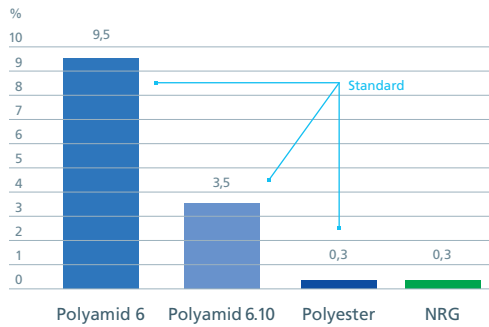
Another traditional method of extending operational life is to use polyamide for its wear resistance, but that comes with the downside of high water absorption, which can undermine a fabric's dimensional stability.

NRG's polyamide-free structure features extremely low water absorption (only 0.3%, i.e. 10-30 times less than polyamide), as well as high-strength seams. Even in very demanding positions, NRG has been proven immune to flattening and fibrillation, ensuring high dimensional stability and uniformity (e.g. less edge curl), which promotes runnability. A thicker fabric may also have a larger void volume, which can



trap fibres and negatively impact paper surface quality. In contrast, because *Primoselect* fabrics are thinner, they have less void volume and reduced fibre carry. This improves retention in the paper sheet, which lowers the amount of chemical additives used, providing both financial and environmental benefits. It also means the fabric is gentler on the paper sheet, resulting in superior surface quality.

**The material absorbs only 0,3 %**



**Real-Life Results**

*Primoselect* fabrics are already proving their worth in real-life operations. Benefits at mills producing newsprint, supercalendered (SC) paper, linerboard and packaging board have included sheet dryness in the forming section rising by +1% to +2% and run time lasting over +50% more than competitor fabrics (only 4 changes per year instead of 6). These mills have also seen forming section drive load reduced by -10% to -25%, as well as less vacuum requirement and reduced water spray.

Heimbach’s *Primoselect* forming fabrics are available in versions designed for graphic grades, packaging paper and board, as well as all other paper grades. They are offered with varying levels (50% to 100%) of NRG yarns of varying thicknesses in the machine-side cross direction, depending on what the customer wants to target the most, e.g. energy savings, dewatering, fibre retention and/or wear resistance.

To get more for less out of your forming section – start a conversation with Heimbach!

