

**PRODUCT UPDATES FROM LUMMUS AG TECHNOLOGY - 2022****Ross D. Rutherford****David L. Arthur****Lummus Ag Technology****Lubbock, TX****Abstract**

As part of its continual program of product development, Lummus Ag Technology introduced numerous product improvements/enhancements and new products in 2021. These included new color feeder/gin stand controls (including an upgrade package for existing Lummus gin controls customers), a new line of high static pressure/air volume, bolted assembly Lummus centrifugal fans, and the 10' wide models of the Centurion™ Series of saw gins.

**DGC 2020 Digital Gin/Feeder Controls**

As is the case with any modern electronics, obsolescence is an ongoing challenge, and that is certainly the true with ginning technology. Many gins are operating the Lummus Series 2000 Digital Gin/Feeder Controls equipped with a monochrome operator interface terminal (OIT), which has been a very popular product for Lummus over the last twenty years. Other gins are still operating either analog controls (with dual needle meters) or original Lummus Digital Gin Controls from the early 1990's (featuring a green display). All of these legacy models of Lummus gin controls are now obsolete, especially the analog controls, the "green screens" of the original 1990's controls, and the monochrome OIT's for the Series 2000 Digital Gin/Feeder Controls. This necessitated a redesign effort to address the obsolescence and to add features and functionality previously unavailable in Lummus controls.

The new Lummus DGC 2020 Digital Gin/Feeder Controls were introduced in 2021, and they have performed extremely well. These new controls have many desirable features, including:

- Enhanced Configuration Capabilities
- Off-the-shelf components
- Simple set-up
- Multi-language capabilities (English, French, Spanish, Portuguese, and Russian)

The new OIT console for these DGC 2020 controls is shown in Figure 1.



Figure 1. DGC 2020 Digital Gin/Feeder Controls Operator Interface.

These controls are available for numerous applications, including:

- All-new Lummus 116-Saw, 170-Saw, 203-Saw Gins with Model 700 III Feeders
- Complete controls conversions for existing analog Lummus gin controls or pre-2000 (“green screen”) Digital Gin Controls
- Operator Interface Conversions for existing Series 2000 (monochrome) Digital Gin/Feeder Control Operator Interfaces
- Other applications for competitor feeders/gins (depending on configuration)

Figure 2 shows the set of controls that is furnished with new machinery or as the complete conversion for either Lummus analog gin/feeder controls or original (pre-2000 “green screen”) Lummus digital controls.



Figure 2. DGC 2020 Digital Gin/Feeder Controls (Complete Conversion).

For gins currently operating Series 2000 Digital Gin/Feeder Controls (with monochrome OIT's), a “value conversion” is available that swaps out the old console (with the monochrome OIT) for a new console (with color OIT). This option eliminates the need for a complete conversion and offers a significantly more economical upgrade.



Figure 3. DGC 2020 Digital Gin/Feeder Controls Operator Interface Conversion.

Lastly, the easy set-up/configuration is enhanced even more by offering the option of five (5) languages on the OIT (see Figure 4).

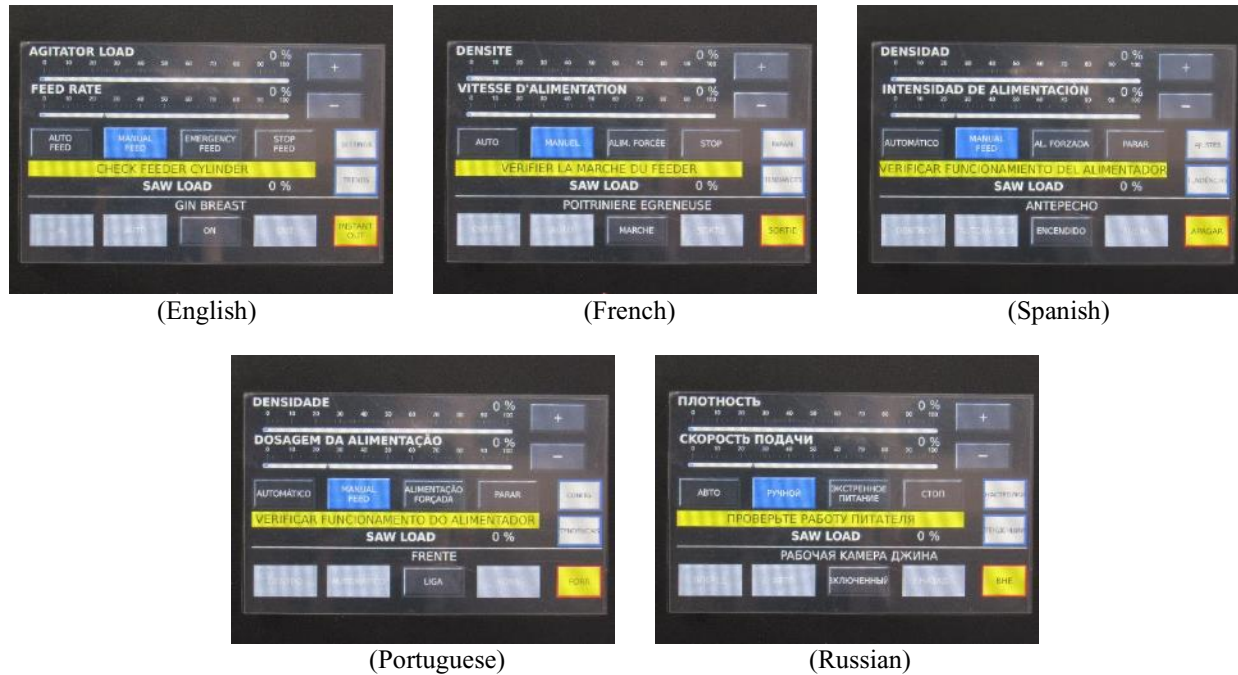


Figure 4. DGC 2020 Digital Gin/Feeder Controls Operator Interface Screens in available languages.

### **HPF Series Centrifugal Fans**

With ultra-high-capacity gin plants becoming more common, the need to offer centrifugal fans with performance characteristics far greater than in previous designs has become a necessity. As a result, Lummus set out to design a new line of centrifugal fans to address fan considerations, including:

- High-volume, high static pressure air requirements of Unloading and Drying Systems
- The need for accurate and proven fan performance in gin pneumatic conveying systems
- Serviceability of the fans over the long term

The first model in this new Lummus line of fans is the HPF-266 (**H**igh-**P**erformance **F**an, **26**" diameter inlet, **6**-blade blast wheel). Two computer model views of this fan are shown in Figure 5.

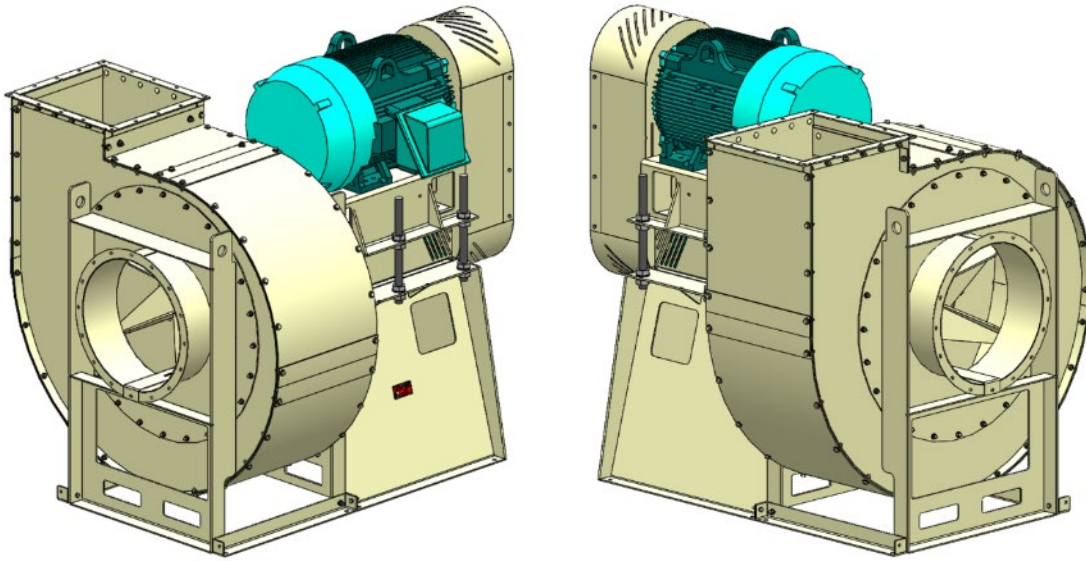


Figure 5. HPF-266 Centrifugal Fan.

The HPF series of fans feature bolted-assembly construction, allowing for removal and replacement of worn fan scrolls, rather than scabbing on patches or having to replace the entire fan body (typical in a welded assembly application). The fan scrolls are constructed from  $\frac{1}{4}$ " thick AR-400F plate (the "F" in the designation stands for "formable"). This reduces the chances of the scroll plate cracking during the rolling process. A top motor mount configuration reduces necessary floor space to install the fan. Finally, the HPF Series fan combines the best features of different fan designs, resulting in a superior product, both from a fabrication aspect and pure fan performance improvement.

The first HPF-266 fan was installed at Lone Star Farmers Cooperative Gin in Miles, Texas (see Figure 6).



Figure 6. HPF-266 Centrifugal Fan testing at Lone Star Farmers Co-op.

It was tested over the complete fan speed range, though the use of an AC Inverter drive on the fan motor. Fan performance results were commensurate with the characteristics of an AMCA (Air Movement and Control



Association) certified fan that has been marketed by Lummus for over 30 years.

### **10' Wide Centurion™ Series Gins**

The Centurion™ Series of saw gins from Lummus was introduced in 2019, and they are designed with two saw spacings on the mandrels. The saw spacing configurations for both 10' (3.05 m) and 12' (3.66 m) wide Centurion™ gins are shown in Figure 7.

Centurion™ Gins - Number of Saws		
Model (Width)	Standard Spacing	Close Spacing*
10' (3.05 m)	208	248
12' (3.66 m)	246	294

\* - Optional Saw Spacing

Figure 7. Saw Spacing Configurations for Centurion™ Series Saw Gins.

In 2021, Coley Gin & Fertilizer in Vienna, Georgia, installed two (2) of the 10' wide Centurion™ Gins with Centurion™ 700 Feeders. Both of the Coley gins feature the 208-saw arrangement. This installation is seen in Figure 8, while a frontal view of one of the feeder/gin stacks is shown in Figure 9.



Figure 8. Coley Gin & Fertilizer in Vienna, Georgia.



Figure 9. 10' Centurion™ 700 Feeder over 208-Saw Centurion™ Gin.

In contrast to the DGC 2020 Digital Gin/Feeder Controls discussed previously, the significant differences between the designs of the Centurion™ gins and the Imperial™ series of gins required a much more advanced set of gin/feeder controls. The Centurion™ Gin/Feeder Controls are shown in Figure 10.



Figure 10. DGC 2020 Digital Gin/Feeder Controls Operator Interface at the gin stand (left) and Remote Gin/Feeder Controls Interface, located in the Main Gin Controls Console (right).

In addition to the controls located at each gin/feeder, a Remote Gin/Feeder Controls Interface (shown to the right in Figure 10), located in the Main Console, allows for independent setting/adjustment of the machinery parameters for either gin/feeder without having to be physically at the gins/feeder in the plant.