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PIB 15-05
Changed Requirements for Gas Supply for COMPexPro, BraggStar M, LPXpro, and LEAP

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Introduction

As a part of a renewed EU conformity declaration, new risk analyses have been done for the COMPexPro, BraggStar M, LPXpro, and LEAP series with the purpose to further improve laser safety. Consequently, all new COMPexPro, BraggStar M, LPXpro, and LEAP lasers will no longer use gases classified as “toxic” for the gas supply.

With a concentration of less than 0.2% fluorine (F_2) or less than 5% hydrogen chloride (HCl), the gas pre-mixtures are classified as “harmful” gases. Therefore, all fluorine-based COMPexPro, BraggStar M and LPXpro lasers can be used only with the premix gas. In the case of chlorine-based lasers, the single gas supply with an HCl amount of 4.5% is still available.

Explanation

From the technical point of view, there are no advantages in using single gases instead of premix gas for the COMPexPro, BraggStar M and LPXpro series. Gas actions, like halogen injections (HI), were not used for these lasers.

In addition, currently most COMPexPro customers are already using premix gas, resulting in an easier gas installation and the advantage of using gases classified as just “harmful” rather than “toxic.”

For the LEAP series, the gas requirements have been changed only for the LEAP 130K. This laser will still use a single gas supply, but with a much lower fluorine concentration of 0.18% F_2 in Neon for the halogen gas. Accordingly, the required gas actions have been adapted to the lower fluorine concentration.

Laser Tube Design Changes

In addition to the change of gas requirements, the design of the laser tubes has also been changed. The overpressure relief valve of the laser tube has been replaced by a rupture disk. This rupture disk is a metal membrane that bursts at a specific pressure and is the safety device preventing the pressure inside the laser tube from becoming too high.

Such a disk has the advantage of being able to seal the tube much better than an overpressure valve and it works only one time. Several software routines are designed to prevent it from rupturing, so if the rupture disk breaks, the reason needs to be evaluated in detail.

Another advantage of the new design is that if the rupture disk breaks, the released gas flows over the halogen filter, so that no halogen gas is released to the laser housing.

All new lasers equipped with a rupture disk have the new gas requirements and are labeled with serial numbers that start with 20000 at the end, like this:

- GEP.xxxxxxx.2000
- GEP.xxxxxxx.2001
- Etc.

Overview of Gas Requirements

COMPexPro / BraggStar M	**F-Version**	**XeCl-Version**
COMPexPro 50	Premix only	Premix or Single Gases[1]
COMPexPro 102/110	Premix only	Premix or Single Gases[1]
COMPexPro 201/205	Premix only	Premix or Single Gases[1]
BraggStar M	Premix only	Premix or Single Gases[1]
LPXpro	**F-Version**	**XeCl-Version**
LPXpro 210	Premix only	Premix or Single Gases[1]
LPXpro 220	Premix only	Premix or Single Gases[1]
LPXpro 240	Premix only	Premix or Single Gases[1]
LPXpro 305	Premix only	Premix or Single Gases[1]
LEAP	**F-Version**	**C-Version**
LEAP 130	Single Gases[2]	Single Gases

[1] With 4.5% HCl and 0.9% H_2 in Helium
[2] With 0.18% F_2 in Neon

For a detailed overview of the gases required for each laser, please refer to the newest *Site Preparation Manual* of each laser:

Doc. #	**Rev.**	**Description**
D148975	AA	Site Preparation Manual COMPexPro RD
D148978	AA	Site Preparation Manual LPXpro RD
D137269	AD	Site Preparation Manual LEAP 130

Conclusion

With these steps, Coherent was able to improve the laser safety and to reduce the safety requirements needed. These changes affect all new COMPexPro, BraggStar M, LPXpro and LEAP lasers. Coherent will no longer be delivering these laser series with the “old” design.

In all lasers with the “old” design, Coherent will, however, still be able to replace laser tubes that do not have the rupture disk.

Use the attached customer letter to inform all affected customers.

For any questions or comments regarding this PIB, please contact:

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