

LHC: FSG Yoke laminations with oxidation

- Rev. 4 date 13.10.06 - Added the fifth group of lamination (Ref. NC-CERN 410) and updated summary table*
Rev. 3 date 08.09.06 - Added the fourth group of lamination (Ref. NC-CERN 404)
Rev. 2 date 07.08.06 - Added the third group of lamination (Ref. NC-CERN 399)
Rev. 1 date 30.06.06 - Added the second group of lamination (Ref. NC-CERN 393)
Rev. 0 date 01.06.06 - Report about cleaning of first group of lamination batches delivered with oxidation (Ref. NC-CERN 378 rev.3)

Introduction

Here below is reported the list of all the batches of FSG laminations received from 26/04/06 on showing severe oxidation. As already done in the past the lamination were stacked into pack and the cleaning operation was done at the latest stage during the assembling operation for the half yoke preparation, before the assembly into the cold mass

List of lamination batches

The batches of laminations coming from FSG with oxidation are:

Group 1 (NC-CERN 378 Rev. 3)	Group 2 (NC-CERN 393)	Group 3 (NC-CERN 399)	Group 4 (NC-CERN 404)
FSG 0485,	FSG 0532,	FSG 0533,	FSG 0551,
FSG 0494,	FSG 0525,	FSG 0552,	FSG 0553,
FSG 0497,	FSG 0536,	FSG 0548,	FSG 0559,
FSG 0500,	FSG 0534,	FSG 0546,	FSG 0547,
FSG 0495,	FSG 0531,	FSG 0544,	FSG 0573.
FSG 0496,	FSG 0535,	FSG 0543,	
FSG 0499,	FSG 0527.	FSG 0542,	
FSG 0498,		FSG 0539.	
FSG 0522,			
FSG 0523,			
FSG 0526,			

Group 5 (NC-CERN 410)
FSG 0561,
FSG 0564,
FSG 0572,
FSG 0575.

Lamination delivery

The following photos have been taken at the lamination delivery in Ormet and represents the status of laminations before the stacking of the packs.



FSG 0485



FSG 0494



FSG 0497



FSG 0495



FSG 0496



FSG 0499



FSG 0500



FSG0522



FSG 0498



FSG0523



FSG 0526



FSG 0532



FSG 0525



FSG 0536



FSG 0534



FSG 0531



FSG 0535



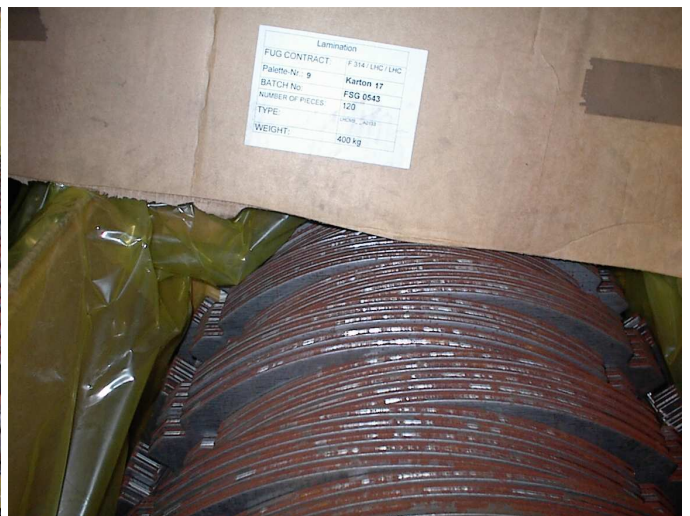
FSG 0527


FSG 0533

FSG 0552

FSG 0548

FSG 0546

FSG 0544

FSG 0543



FSG 0542



FSG 0539

Lamination cleaning

The following photos have been taken in ASG before or during the cleaning; they show the exact situation of the oxidation to be removed. In some case it covers almost the 100% of the outer surface of the yoke pack; the same is on the others packs of the same batch.



Batch FSG 0495



Batch FSG 0494



Batch FSG 0500



Batch FSG 0522



Batch FSG 0522 (details)



Cleaned lamination just before half yoke assembly



Detail of cleaned lamination

Summary

In the following table all the extra works hours, necessary in order to properly clean the yoke laminations are reported as well as the status of the laminations.

Batch id.	Extra hours	Status
FSG 0494	30	Cleaned and assembled into cold mass CM2356
FSG 0495	28	Cleaned and assembled into cold mass CM2355
FSG 0500	26	Cleaned and assembled into cold mass CM2354
FSG 0522	42	Cleaned and assembled into cold mass CM2350
FSG 0485	16	Cleaned and assembled into cold mass CM2344
FSG 0496	32	Cleaned and assembled into cold mass CM2336
FSG 0497	20	Cleaned and assembled into cold mass CM2346
FSG 0498	24	Cleaned and assembled into cold mass CM2362
FSG 0499	28	Cleaned and assembled into cold mass CM2364
FSG 0523	25	Cleaned and assembled into cold mass CM2376
FSG 0526	30	Cleaned and assembled into cold mass CM2360
FSG 0532	25	Cleaned and assembled into cold mass CM2367
FSG 0525	32	Cleaned and assembled into cold mass CM2365
FSG 0536	24	Cleaned and assembled into cold mass CM2366
FSG 0534	30	Cleaned and assembled into cold mass CM2370
FSG 0531	28	Cleaned and assembled into cold mass CM2372
FSG 0535		To be stacked
FSG 0527	27	Cleaned and assembled into cold mass CM2380
FSG 0533	25	Cleaned and assembled into cold mass CM2405
FSG 0552	24	Cleaned and assembled into cold mass CM2377
FSG 0548	30	Cleaned and assembled into cold mass CM2384
FSG 0546	26	Cleaned and assembled into cold mass CM2383
FSG 0544	26	Cleaned and assembled into cold mass CM2375
FSG 0543	26	Cleaned and assembled into cold mass CM2357
FSG 0542	28	Cleaned and assembled into cold mass CM2406
FSG 0539	20	Cleaned and assembled into cold mass CM2386
FSG 0551		To be stacked
FSG 0553	23	Cleaned and assembled into cold mass CM2391
FSG 0559	30	Cleaned and assembled into cold mass CM2393
FSG 0547	27	Cleaned and assembled into cold mass CM2389
FSG 0573	30	Cleaned and assembled into cold mass CM2397
FSG 0561	25	Cleaned and assembled into cold mass CM2270
FSG 0564	30	Cleaned and assembled into cold mass CM2398
FSG 0572	21	Cleaned to be assembled into cold mass
FSG 0575	27	Cleaned and assembled into cold mass CM2395
Total	885	

Conclusion

The time necessary about lamination cleaning depends on the level of oxidation; as shown in the previous photos the batch FSG 0522 took a lot of extra hours due to the very hard oxidation while on batches FSG0485 and FSG0497 the cleaning was easier. All the batches involved have the id. number around 500. The other batches will be cleaned and the previous list will be updated.