

Thoughts on Project Standard in Japan

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Thoughts on project standard in Japan

Production is industry-base, almost all-case.

1. Industry makes every detail drawings.
2. (Big) Industry makes evaluation of mechanical, thermal, circuit, and electromagnetic designs.
3. KEK makes all above evaluations and drawings, only for special design or in R&D phase.

Industry situation for project standard:

1. Engineering standard? **JIS (Japan Industrial Standards)**

2. CAD software? **Different in each industry**

3. CAE software? **Different in each industry**

4. Drawing exchange? **being done by DXF/DWG/IGES...**
(but not efficient. Usually does not do.)

5. Information (documents database, parameter list) exchange?
only inside of industry.

6. Inspection(reviews)? **Done by customer specified,**
or industry self-standard rule.

Thoughts on regulations related to acc. production

- **High pressure gas regulation**

will be applied to Nb cavity, He Jacket, He pipes, GRP,
He transfer lines, He refrigerator...

(special permission for Nb,Ti, joint material is necessary)
need permission by detail drawings prior to fabrication,
need to pass the inspection at commissioning and at every year,
need responsible chief engineer for operation.

- **High voltage regulation**

will be applied to AC voltage >600V, DC voltage >750V.
(not a special regulation.)

How project standard should be?:

Possible thoughts

1. One complete project standard:

any component from any industry is perfectly exchangeable.

2. Interface standard, & different engineering standard inside:

system unit from any industry is perfectly exchangeable.

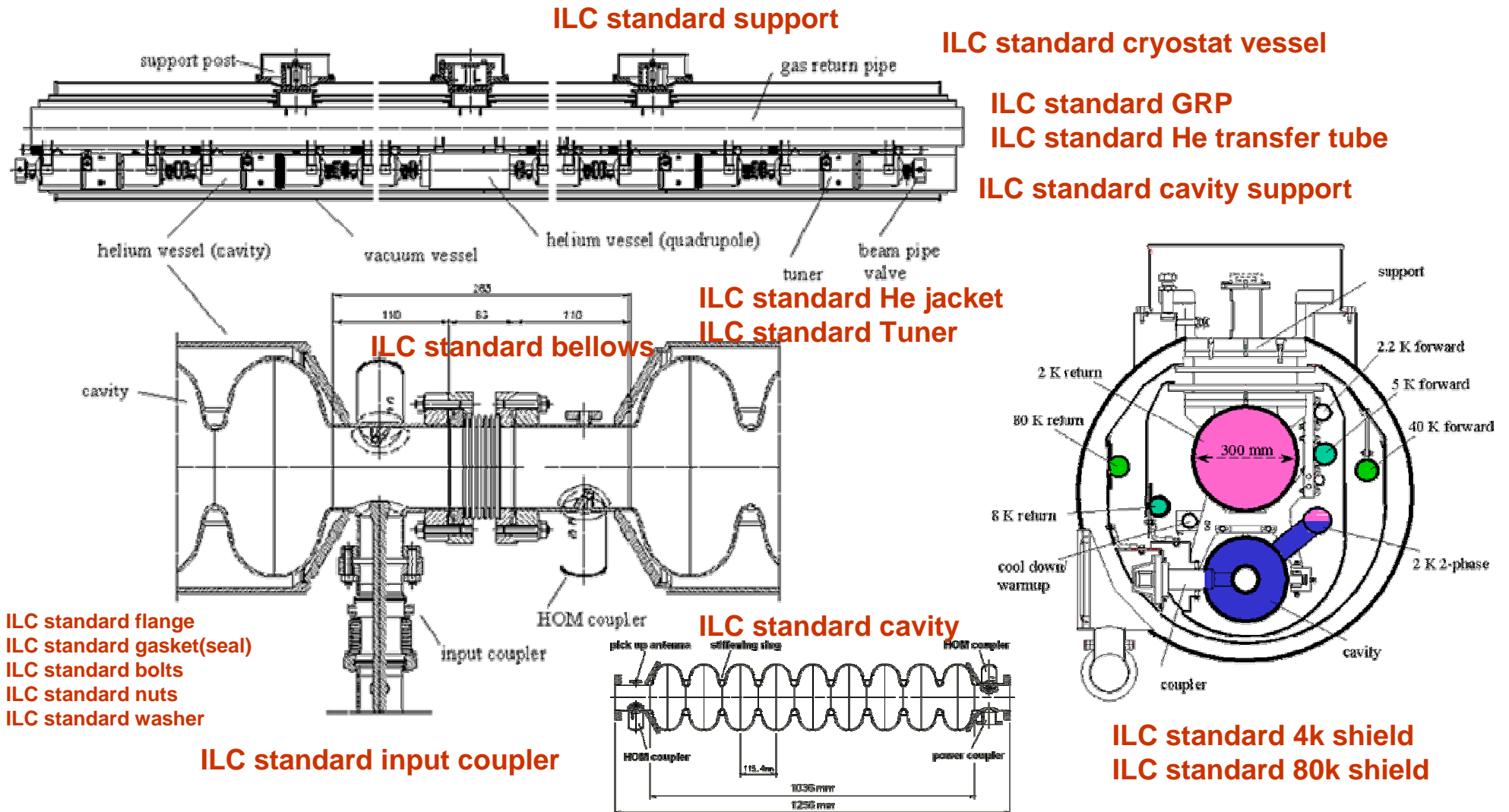
inside of system unit can be different, fabricated by each engineering standard.

3. Production share by large scale unit of accelerator:

Main Linac share by the unit of refrigerator, for example.

But keep the basic concept of engineering.

~ One complete project standard:
any component from any industry is perfectly exchangeable.



2. Interface standard, & different engineering standard inside : system unit from any industry is perfectly exchangeable. inside of system unit can be different, fabricated by each engineering standard.

System must meet ILC specification and ILC standard interface.

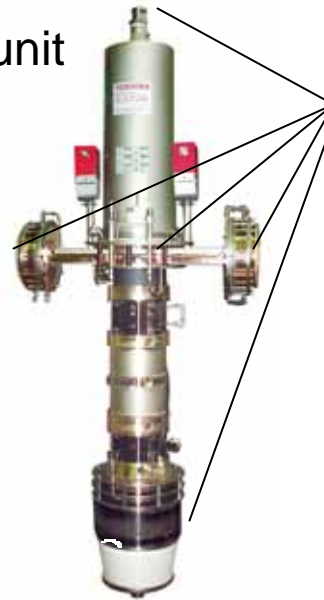


Modulator unit

ILC standard interface

AC input, pulse output
water in/out, connectors...

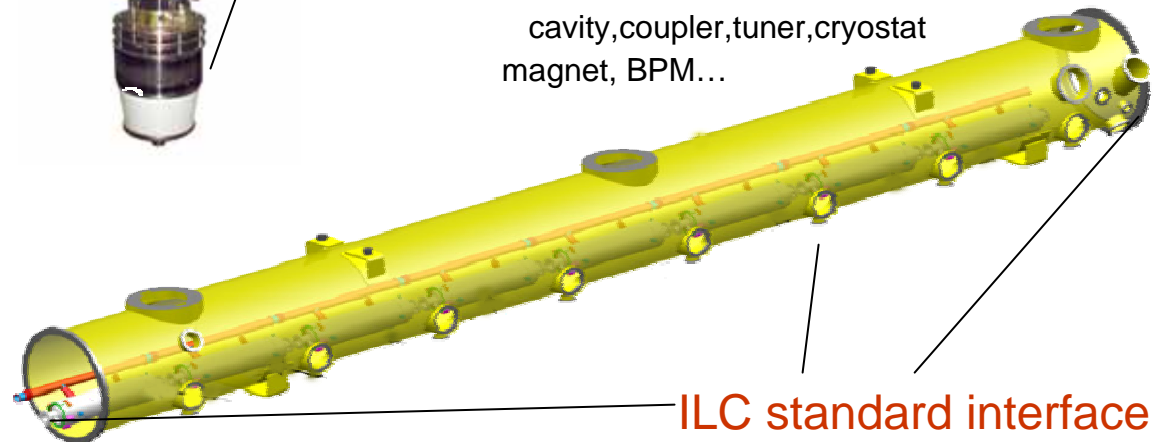
klystron unit



ILC standard interface

cryomodule unit

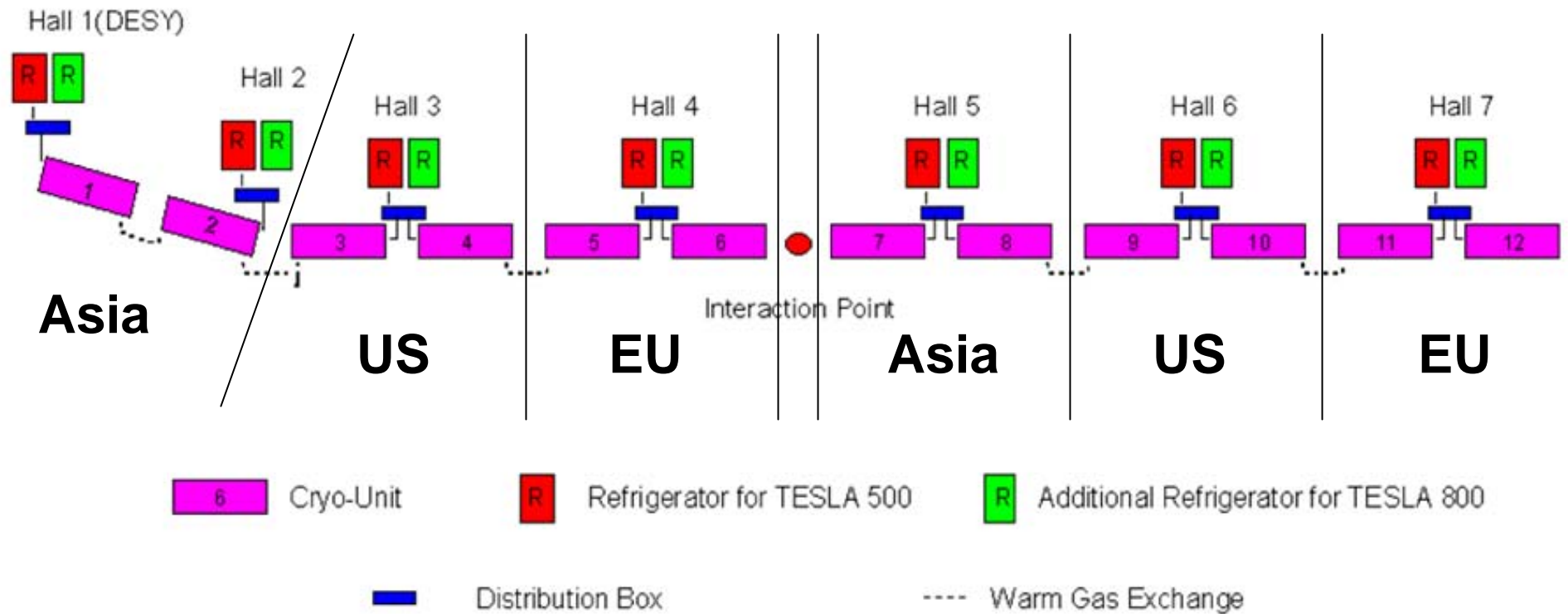
cavity, coupler, tuner, cryostat
magnet, BPM...



ILC standard interface

3. Production share by large scale unit of accelerator:

Main Linac share by the unit of refrigerator, for example.
But keep the basic concept of engineering.



Summary for project standard:

1. **Detail project standard with many unification will cost little in each industry.**



unification of CAD, CAE, engineering standard like ANSI or DIN or EU/EC will cause extra-investment(people,conversion,etc) in industry.

however, exchangeability will be good.

There is small room for improvement modification, and small engineering interest.

2. **Making Interface standard, & fabrication by each engineering standard will be cost effective and good for improvement modification and engineering competition.**



exchangeability will be good.

3. **Production share by large scale unit of accelerator**

will be also cost effective and good for operability and maintainability.



good for engineering&performance competition.