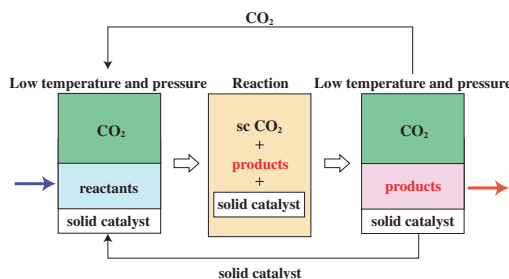


Green Sustainable Chemistry with Supercritical Carbon Dioxide Solvent

Organic reactions with solid catalysts under supercritical carbon dioxide are green sustainable because: i) high reaction rates due to increased solubility of reactant gases in supercritical fluid, thereby eliminating mass transfer resistance; ii) easy separation of catalysts and products, iii) eliminating the use of organic solvents. Catalytic ring hydrogenation of phenol to KA oil (the mixture of cyclohexanol and cyclohexanone) was demonstrated with the green chemical process. A charcoal-supported rhodium catalyst was highly active for the ring hydrogenation of phenol to KA oil at 328 K under supercritical carbon dioxide, while gas reactions at > 453 K palladium is reported to be a suitable catalyst for this reaction.



Multi-phase catalytic reaction system with supercritical carbon dioxide

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AIST Today Vol. 3, No.11 (2003) 4-6

Energy Science & Technology

Successfully Test of Fault Current Limiter by Series-parallel Resonant LC Circuit

The Fault Current Limiter (FCL) is new instrument for reduction of fault current, and many kinds of FCL are investigated.

Desired properties of FCL are maintenance-free and non mechanical drive or external control.

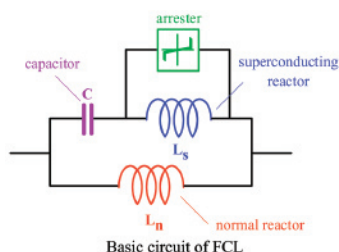
We have been studying about series-parallel resonant LC circuit type FCL.

Merits of this FCL are S/N transition is not needed and quick recovery from over current state to normal state.

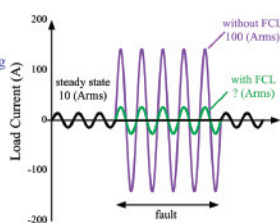
We theoretically and experimentally investigate about series-parallel resonant LC circuit type FCL.

Experimental results show that ...

- Fault current was successfully limited during fault.
- Anytime fault occurred or how long it was, this FCL was effective.
- FCL system returned to steady state within 1/4 cycle.
- The peak of load current was about double of threshold current I_0 .



◆ Steady State = Series Resonance
voltage of L_s is low
arrester is OPEN



Experimental results of FCL

◆ Over Current State = Parallel Resonance
voltage of L_s is high
arrester is SHORT

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AIST Today Vol. 3, No.10 (2003) 19