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Prosiding

**HEDS SEMINAR ON SCIENCE & TECHNOLOGY  
(HEDS - SST) 2004  
BIDANG TEKNIK**



Pekanbaru, 7 - 8 Juli 2004



**FORUM HEDS**

**BADAN KERJASAMA PERGURUAN TINGGI NEGERI WILAYAH BARAT  
DIREKTORAT JENDERAL PENDIDIKAN TINGGI  
JAKARTA 2006**



FORUM FOR  
HIGHER EDUCATION DEVELOPMENT SUPPORT  
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Yang telah berpartisipasi dengan baik dalam  
**HEDS Seminar on Science & Technology 2004**

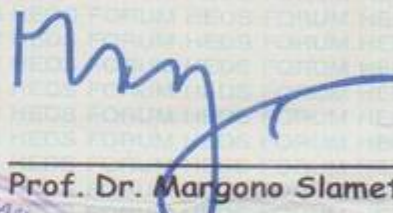
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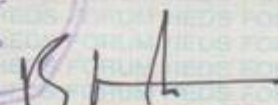
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Dinyatakan oleh :

  
Prof. Dr. Margono Slamet  
Koordinator Forum HEDS



  
Drs. Rahmad, MT  
Dekan Fak. Teknik Unri

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*Hak Cipta ada pada Forum HEDS*

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## Kata Pengantar

Forum HEDS atau Forum for Higher Education Development Support yang merupakan organ dari Badan Kerjasama Perguruan Tinggi Negeri Wilayah Barat, dan yang didukung oleh Direktorat Jenderal Pendidikan Tinggi, secara rutin setiap tahun mengundang dosen-dosen muda dari perguruan tinggi anggota untuk mengajukan usulan penelitian ilmiah di bidang ilmunya masing-masing. Di bidang Ilmu Teknik program penelitian ini disebut *Self Development Project Funding* atau disingkat SDPF. Setelah di-*review* oleh tim pakar bidang ilmu yang bersangkutan dan diseleksi kelayakannya, maka yang layak akan mendapatkan dana dari Sekretariat F-HEDS. Dosen-dosen yang diundang adalah mereka yang masih tergolong peneliti pemula, yaitu yang belum memiliki pengalaman luas dalam melakukan penelitian dan belum bergelar S3.

Hasil-hasil penelitian ini kemudian di-*review* lagi oleh tim pakar, dan yang dinilai cukup baik, penelitiannya diundang untuk menyajikan hasil penelitiannya itu di hadapan forum seminar yang khusus untuk kepentingan ini dan diselenggarakan oleh F-HEDS. Untuk bidang Ilmu Teknik seminar itu disebut *Seminar on Science and Technology* atau SST. Penelitian dilaksanakan pada tahun 2003, seminarnya diselenggarakan pada tahun 2004 bertempat di Pekanbaru, Riau pada tanggal 7 – 8 Juli 2004. Seminar didahului dengan beberapa ceramah ilmiah yang disampaikan oleh Prof. Dr. Satryo Soemantri Brodjonegoro (Dirjen Dikti), Prof. Kiyohiro Miyagi, Dr. Ir. Adjar Pratoto, Dr. Ir. Samsul Rizal dan Prof. Dr. Hiroomi Homma, serta Dr. Syaiful Bahri.

Untuk kepentingan pendokumenan dan distribusi ke berbagai perguruan tinggi dan lembaga lain di Indonesia, hasil Seminar yang berupa makalah-makalah ilmiah hasil penelitian itu kemudian diterbitkan dalam bentuk prosiding ini. Karena alasan keterbatasan dana, maka prosiding ini baru bisa diterbitkan pada tahun 2006. Diharapkan dengan terbitnya prosiding ini akan dapat menambah koleksi perpustakaan dan bahan referensi ilmiah di berbagai kampus perguruan tinggi.

Prosiding ini dari segi ilmiah maupun segi teknis pencetakan tentu mengandung berbagai kekurangan dan kesalahan. Untuk itu kami dari pihak penerbit mohon maaf yang sebesar-besarnya. Kritik dan saran untuk perbaikan penerbitan selanjutnya sangat kami harapkan dari sidang pembaca yang menaruh kepedulian terhadap penerbitan semacam ini. Sebelumnya kami mengucapkan terima kasih.

Jakarta, Januari 2006  
Atas nama penerbit,

**Margono Slamet**  
Koordinator Forum HEDS

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