Expo Rekacipta & Pameran Penyelidikan UniMAP 2009

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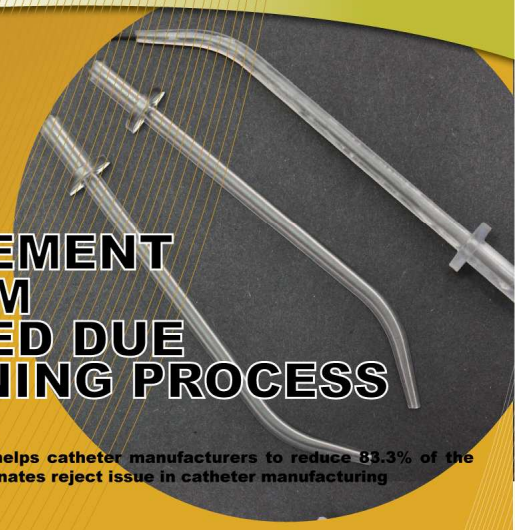


DESIGN IMPROVEMENT SIDE ARM REJECTED DUE TO BURNING PROCESS

NOVELTY OF INVENTION

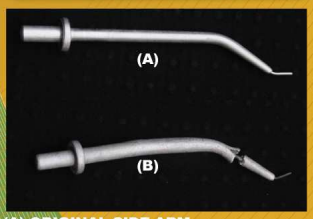
New design of side arms helps catheter manufacturers to reduce 83.3% of the cost of side arms and eliminates reject issue in catheter manufacturing processes.

OBJECTIVE

- **To reduce cost of using side arm in catheter manufacturing processes.**
- **To eliminate issues of reject side arms in burning process.**
- **To eliminate rubber thread trapped issues in threading process.**

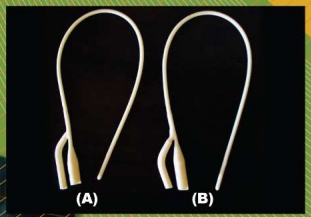
PROBLEM STATEMENT

In the shop floor, after a dipping process of side arms, operators are required to insert a rubber string into the side arm manually. Inserting this rubber string has led to a problem where the rubber string can easily break when the process takes place. When the rubber string is broken, part of it is trapped inside the side arm tube which makes the tube to be reworked by undergoing a burning process at a minimum of 600 degrees Celsius. This burning process is apparently the only solution the company can do and as a result, side arms that have gone through the burning process for a number of times will undergo some changes in material structure that leads to shrinkages and working failures. Covidien incurs nearly RM9,000 yearly to replace more than 1,000 units of new side arms due to this issue.



(A) ORIGINAL SIDE ARM
(B) ORIGINAL SIDE ARM(Working Failure)

INJECTION MOULD FOR NEW SIDE ARM



(A) CATHETER MADE FROM NEW SIDE ARM
(B) CATHETER MADE FROM ORIGINAL SIDE ARM

SUMMARY OF INVENTION

The new material proposed is Polycarbonate Clear (PC Clear) which is identified to be able to solve the issue. In addition, the cost of PC clear is much cheaper compared to aluminum alloy plus the manufacturing process is much easier. Since this new side arm is made from PC based material, the flexibility to change the design is excellent as compared to current material of side arm. This new design also eliminates sharp edges on the inner diameter of the side arm which minimize the probability of disconnecting the rubber thread in threading process. The result of producing catheter using new side arm is comparable to current aluminum alloy side arm.

ADVANTAGES

- **Reduced the side arm's cost with a new design.**
- **Eliminated issues of thread stuck and disconnected while inserting rubber thread through side arms.**
- **The results of applying the new side arm in latex dipping process is comparable to the previous results in terms of:**
  a. **The quality of catheter to be produced with lower cost.**
  b. **The reactions of latex towards the PC-Clear type of side arm body.**
  c. **Ability of the material to sustain at dipping temperature.**
- **This new design reduces 83.3% of the cost of side arm per-piece and able to eliminate 1,000 units of reject rate of side arms yearly.**