

[Drag Reduction in Pipelines](#)

Drag can be defined as the drop in pressure per unit length when fluid flows in a pipe. While, drag reduction is the power recovering in the flow of fluid in the pipe by addition of a small amount of chemical additives to a solvent in turbulent flow in order to decrease the pressure drop. Since in a whole host of widely differing engineering devices, the operating power largely used in overcoming turbulent drag, the prospect of drastically reducing drag is an exciting one, implying possibilities of great commercial benefits.

Achievements :

In the past few years, the drag reduction group accomplished large numbers of scientific achievements in the field such as :

1- Patents:

1- PI 20091070 Filed in March 2009 for “Drag reducing agent, associated methods and apparatus”.

2- PI 20093724 Filed in September 2009 for “ Drag Reducing agent, Cocoa Husk

Mucilage as a new drag reducing agent in pipelines carrying aqueous media”.

3- PI 20091794 Filed in May 2009 for “A NOVEL DRAG REDUCTION AGENT”, HALBA MUCILAGE AS NEW NATURAL FLOW IMPROVING AGENT IN PIPELINES CARRYING LIQUIDS IN TURBULENT MODE.

4- PI 20092946 Filed in July 2009 for “A Drag Reducing Composition”, Natural Polymer Mucilage Compound Formulation as drag reducing agent for liquid transportation through pipelines.

5- PI 20091830 Filed in May 2009 for “A Drag Reducing Agent (DRA)”, Okra Mucilage as a new drag reducing agent for liquid transportation through pipelines.

6- PI20100225 Filed 18 Jan 2010 for “A NOVEL DRAG REDUCTION AGENT” , FORMULATION OF NEW ORGANIC FIBERS FROM PADDY HUSK AS FLOW IMPROVER IN TURBULENT FLOW SYSTEM.

Drag Reduction and Multiphase Flow

Written by Hayder Abdulbari

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7-□□ PI2010001452 Filed 1st April 2010 for “A NOVEL PLANT DERIVED POLYMER DRAG REDUCING AGENT” , FORMULATION OF NEW ORGANIC DRAG REDUCING AGENT USING NATURAL MUCILAGE EXTRACTED FROM HIBISCUS ROSA-SINENSIS LINN LEAVES.

8-□□ PI2010001345 Filed 26th March 2010 for “EFB FIBER DRAG REDUCING AGENT”, EMPTY FRUIT BUNCH FIBER AS DRAG REDUCING AGENT FOR AQUEOUS MEDIA FLOWING THROUGH PIPELINES.

9-□□ PI2010003973 Filed 24th August 2010 for “APPARATUS AND METHOD FOR DRAG REDUCTION USING CHAIN ASSEMBLY”.

10-□□ PI2010004650 Filed 4th October 2010 for “A□ NOVEL METHOD FOR REMOVING CONTAMINANTS FROM AQUEOUS SOLUTION”.

11-□□ PI2011001146 Filed 21st March 2011 for “A Drag Reducing Composition and Method Thereof”.

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12-□□ PI2011001486 Filed 4th April 2011 for “APARATUS AND METHOD FOR DRAG REDUCTION.

13-□□ PI2011001487 Filed 4th April 2011 for “AN APARATUS AND METHOD FOR DRAG REDUCTION IN PIPELINES CARRYING GAS OIL”.

14-□□ PI2011001488 Filed 4th April 2011 for “A METHOD FOR REDUCING THE DRAG IN PIPELINES AND/OR LIKE”.

15-□□ PI2011001489 Filed 4th April 2011 for “A NOVEL PLANT-DERIVED POLYMER DRAG REDUCING AGENT”.

16-□□ PI2011001490 Filed 4th April 2011 for “A NOVEL PLANT-DERIVED POLYMER DRAG REDUCING AGENT AND METHOD FOR PREPARING SAME”.

2- Awards

1- **Gold Medal** For the best invention in industrial equipments in the Invention & New Product Exposition (INPEX 2011), Pittsburgh, Pennsylvania, USA, 15-17 June 2011, for the Invention entitled “**Novel Mechanical Technique to Improve the Flow in Pipes**”.

2- **Gold Medal** in IENA, International Trade Fair for “Ideas-Inventions-New Products Exhibition”, 28th -31st October 2010, Nuremberg Trade Fair Center, Nuremberg, Germany, for the invention titled “**Aloe Vera Mucilage as New Flow Improving Agent in pipelines Carrying Liquids in Turbulent Mode**”.

3- **Gold Medal** in Malaysia Technology Expo (MTE) 2010, Kuala Lumpur, Malaysia, 2009, 4 – 6 February 2010, for the invention titled “**Formulation a New Multipurpose Grease using Bleaching Earth and Cooking Oil Wastes (From Waste to Wealth)**”.

4- **Special Award “ The Best Invention Award”**, in Malaysia Technology Expo (**MTE**) **2009**

Kuala Lumpur, Malaysia, 2009, 19 – 21 February 2009, for the invention titled “**Formulation of High Performance, Multipurpose Grease using Gypsum from Titanium Dioxide Manufacturing Wastes**”.

5- **Gold Medal** in Soule **International Invention Fair**, SIIF 2009 , **Seoul South Korea** , December 2009, for the invention titled”

Extraction of new natural polymeric Drag Reducing Agent mucilage from cocoa fruits waste (From waste to Wealth)”.

6- **Gold Medal** in Bio-malaysia 2009 Conference and **Exhibition**, BIOINNO AWARDS, 17th -20th

November 2009,

KLCC

Exhibition Centre for the invention titled”

Aloe Vera Mucilage as New Flow Improving Agent in pipelines Carrying Liquids in Turbulent Mode

”.

7- **Gold Medal** in the 37th International **Exhibition** of Inventions of **Geneva**, Geneva, Switzerland, 2009, 1

st

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th

April 2009, for the invention titled “

Formulation of High Performance, Multipurpose Grease using Gypsum from Titanium Dioxide Manufacturing Wastes

”.

8- **Gold Medal** in Malaysia Technology Expo (**MTE**) **2009**, Kuala Lumpur, Malaysia, 2009, 19 – 21 February 2009, for the invention titled “

Formulation of High Performance, Multipurpose Grease using Gypsum from Titanium Dioxide Manufacturing Wastes

”.

9- **Gold Medal** in the 19th International Invention, Innovation and Technology Exhibition, ITEX 2008, **Kuala Lumpur** Malaysia 2008, 9th – 11th May 2008, for the invention titled “

Natural Polymer Mucilage Compound formulation as Drag reducing Agent (NDR2) for liquids Transportation Through pipelines

”.

10- **Gold Medal** in Bio-malaysia 2008 Conference and Exhibition, BIOINNO AWARDS, 7th -9th

October 2008,

KLCC

Exhibition Centre for the invention titled”

Formulation of New Natural Organic Drag Reducing Agent by Combining Chitosan and Okra Mucilage

”.

11- **Silver Medal** in Malaysia Technology Expo (**MTE**) **2011**, Kuala Lumpur, Malaysia, 2009, 17 – 19 February 2010, for the invention titled “
Novel mechanical technique to improve the flow in pipelines (UMP Octopus)”.

12- **Silver Medal** in Malaysia Technology Expo (**MTE**) **2010**, Kuala Lumpur, Malaysia, 2009, 4 – 6 February 2010, for the invention titled “
Paddy Husk Wastes as a New Natural Solid Flow Improver for Turbulent Liquid Flow in Pipelines”.

13- **Silver Medal** in International Invention, Innovation and Technology Exhibition, ITEX 2011, Kuala Lumpur Malaysia 2011, 14th – 16th May 2010 for the title “
el Mechanical Device to Improve the Flow in Pipelines”. **Nov**

14- **Silver Medal** in International Invention, Innovation and Technology Exhibition, ITEX 2010, Kuala Lumpur Malaysia 2009, 14th – 16th May 2010 for the title “
mulation of new drag reducing agent using natural mucilage extravted from hibiscus rosa-sinesis linn leaves”. **for**

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15- **Silver Medal** in Malaysia Technology Expo (**MTE**) **2009**, Kuala Lumpur, Malaysia, 2009, 19 – 21 February 2009, for the invention titled “

A New Novel Technique for Reducing the Pumping Power Losses in Pipelines Carrying High Temperature Liquids Using Minute Quantities of Suspended Solids”.

16- **Silver Medal** in the 37th International **Exhibition** of Inventions of **Geneva**, Geneva, Switzerland, 2009, 1

st

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April 2009, for the invention titled “

A New Novel Technique for Reducing the Pumping Power Losses in Pipelines Carrying High Temperature Liquids Using Minute Quantities of Suspended Solids

”.

17- **Silver Medal** in Soule International Invention Fair, SIIF 2008 , **Seoul South Korea** , 11th to 15

th

of December 2008, for the invention titled”

Formulation of New Natural Organic Drag Reducing Agent by Combining Chitosan and Okra Mucilage

”.

18- **Silver Medal** in the International Exposition of Research and Invention of Institutions of Higher Learning 2007 , 10-12 August 2007 , **Kuala Lumpur** Convention centre (KLCC),

PECIPTA

, for the invention “

Formulation of a new Drag Reducing Agent Compound (NDR1) Using Natural Materials

” .

19- **Silver Medal** in the UMP Quality Research Exhibition 2007, Kuantan, Pahang, for the Title “ **Formulation of a new Drag Reducing Agent Compound (NDR1) Using Natural Materials** ” .

20- **Bronze Medal** in International Invention, Innovation and Technology Exhibition, ITEX 2008, Kuala Lumpur Malaysia 2009, 15th – 18th May 2009 for the title “ **ALBA MUCILAGE AS NEW NATURAL FLOW IMPROVING AGENT IN PIPELINES CARRYING LIQUIDS IN TURBULENT MODE**” . **H**

21- **Bronze Medal** in the International Exposition of Research and Invention of Institutions of Higher Learning 2009 , 08th -10th October 2009 , Kuala Lumpur Convention centre (KLCC), PECIPTA , for the invention “ **Extraction of new natural polymeric Drag Reducing Agent mucilage from cocoa fruits waste (From waste to Wealth)** ” .

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