REXEED
Achieving a new level of comprehensive dialyzer performance
The Features of REXEED

The **new Membrane REXBRANE** and **new JACKET** enable the best and comprehensive Performance by Uniform Dialysate Flow Distribution with Patient friendly Features.
REXEED Concept

Ultimate Small MW Clearance and Comprehensive Performance

1. Uniform Flow Distribution of Dialysate
2. Uniform Flow Distribution of Blood
3. World first 2.5 $\text{m}^2$ Polysulfone Membrane
4. Smaller Priming Volume
5. Retained Biocompatibility Advantage
A Combination of **new Jacket** and **REXBRANE** gives the uniform Flow

Uniform Dialysate Flow Distribution gives great Clearance Performance

**New Jacket**
- Full Baffle
- Short Taper Structure

**REXBRANE**
- Waved Fiber
- Proprietary Biocompatibility
- Small Priming Volume
- The largest PS ever-2.5 m²
Totally New Jacket Design
PC Simulation-1: Effect of Full Baffle

APS

REXEED
Short Taper Optimization by Comp. Simulation

- Baffle panel partially surrounding bundle
- Baffle panel wholly surrounding bundle

**Optimized Short Taper Length**

- Long and gradual taper
- Short & sharp taper

**Flowing Power**

- Flowing Power vs. Optimized Short Taper Length

**Bigger Header**
Uniform Dialysate Distribution

Dialysate

Uneven
dialysate distribution

Homogenous
dialysate distribution
Impact of Dialysate Flow Distribution on Blood Return (Image)

Uniform Pressure

Un-uniform Pressure
Ideal Pressure Image inside of Jacket

Pressure Distribution

Blood Side: $P_1 \approx P_2$

Dialysate: $P_3 \approx P_4$

Fiber

Housing
Demonstration of Dialysate Uniform Flow

<Dye Analysis>

Each fraction was analyzed for BPB Absorbance
Demonstration of Dialysate Uniform Flow

- **REXCEED-15A (199.6)**
- **OPTIFLUX 200NR (199.2)**
- **Polyflux-21R (191.0)**

**Time Course of Absorbance of Dye**

Qb=200mL, QD=500mL/min

○ Ideal

× Broad
× Tailing
Proof of Good Flow Distribution-2
- Visualization of Dialysate Flow by MRI -

MR Imager
receiver coil
Dialysate & Blood pumps
dG-DTPA: Contrast Agent

Wooden Support frame
Flexible receiver coil

Dialyzer

2005 ASN
Quick and complete Penetration

X No Dialysate Penetration
Average Speed of Dialysate Flow in MRI

2005 ASN TH-PO629
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Waved Fibers make the most of Polysulfone Membrane
REXBRANE: A New Waved Fiber

Designed to maximize the Performance in conjunction with new Jacket Structure

<table>
<thead>
<tr>
<th>Fiber Type</th>
<th>Description</th>
<th>Diameter (μm)</th>
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<tbody>
<tr>
<td>APS-S</td>
<td>Straight</td>
<td>200</td>
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<td>REXEED-A</td>
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<td>185</td>
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<td>Fresenius FX</td>
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<td>Polyflux 21R</td>
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Uniform Pressure Balance Image for Blood and Dialysate

Expectation
1. Uniform Blood Return
2. Less residual Blood
3. Higher SM Clearance
4. Uniform Performance
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In Vitro Performance of REXEED-25 and other Dialyzers

<table>
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<tr>
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<th>REXEED-25</th>
<th>Optiflux 200NR</th>
<th>EXELTRA-210 Plus</th>
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<td><strong>MG Clearance</strong></td>
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(in vitro, bovine plasma, Qb=400mL/min, Qd=800mL/min, Qf=17, 20, 25mL/min)
REXCEED-S PERFORMANCE
manufacturer’s published data

UREA CLEARANCE

Flow Rates Qb 300/Qd 500 (mL/min)
REXEED-A Concept

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# Priming Volumes

1. Less Priming Volume with same Surface Area
2. Larger Surface Area with NO Priming Volume Increase

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<tr>
<th></th>
<th>1.5</th>
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unit: m

- 81-90
- 91-100
- 101-110
- 111-120
- 121-130
- 130<
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Excellent Biocompatibility of Asahi’s PS

- Surface Analysis by Atomic Force Microscopy
- Image of Soft Gel Layer Effect on Biocompatibility
- WBC
- C3a
Technical Aspects of REXEED

Clinical Experience
Clinical Evaluation of REXEED-15 and PES

- REXEED-15
- PES

membrane surface area 1.5m²

Qb=200mL/min
Qd=500mL/min

Reduction rate (%)

BUN  Crea  UA  iP  β2-MG

Albumin loss (g/session)

Kushiro Urology Clinic
The 20th Congress for High Performance Membrane, '05
Clinical Evaluation of REXEED-25 and FB-250F

Average weight of dialysis patients  75.8±17.6Kg  n = 8

Qb=200mL/min
Qd=500mL/min
4hrs

REXEED-25    CTA (2.5m²)

*** P<0.0001
**  P<0.01
Mean ± SD

Kidney Center, Shirasagi Hospital
The 20th Congress for High Performance Membrane, '05
France - Cabestany

% Removal Rate

- b2m
  - FX 60: 63.0%
  - REXEED-15A: 70.7%
- Phosphore
  - FX 60: 55.9%
  - REXEED-15A: 69.1%
- Créatinine
  - FX 60: 69.1%
  - REXEED-15A: 68.1%
- Urée
  - FX 60: 80.2%
  - REXEED-15A: 79.5%

n=10, Qb=300 Qd=500
Minimum Heparin Requirement (Average)

[U/kg/hr]

- REXEED-15: 2.5 ± 0.26
- APS-15S: 5.5 ± 2.4

(U/Kg/hr)

- APS-S
- PS-UW
- BS-U

Mean ± S.D
*P<0.05

Saitama School of Medicine
Complications and possible Causes to Dialyzers

Solute Permeability

- Dialysis-related Amyloidosis
- Numbness
- Fatigue
- Hypotension
- Swelling
- Pain
- Hypertension
- Gout
- Anemia
- Arrhythmia
- Headache
- Itch
- Coughing

Biocompatibility

REXEED will Help the Pts by well Balanced SMW Permeability and Biocompatibility